Thesis By

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DOCTOR OF PHILOSOPHY
Of the
UNIVERSITY OF IBADAN

AVAILABILITY AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY AND JOB PERFORMANCE OF ACADEMIC LIBRARIANS IN SOUTHWESTERN NIGERIA

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AVAILABILITY AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY AND JOB PERFORMANCE OF ACADEMIC LIBRARIANS IN SOUTHWESTERN NIGERIA

BY

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CERTIFICATION

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DEDICATION

I dedicate this thesis firstly, to the KING OF KINGS and the LORD OF LORDS, my GOD and MAKER whose promises are YES and AMEN, for fulfilling that which He has promised me in Jer.29:11.

Secondly, the dedication goes to my wonderful, beautiful, ever patient, kind and understanding wife, Mrs.Olajumoke Yacob-Haliso, for being part of this study even long before our marriage, for supporting me in her prayers, finances and for her encouragement and strong push when I was almost giving-up. Darling, you are a blessing.

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ABSTRACT

Information and Communication Technologies (ICTs) enhance service provision to library clientele. Librarians use ICTs to perform functions like cataloguing and classification, serials management, collection management, budgeting, circulation management, referencing, indexing and abstracting in order to improve information services to library users. However, it has been observed that most academic librarians in Nigeria still struggle with manual library operation method. Consequently, library users show dissatisfaction and complain of poor information services delivery by the academic librarians. It is in the light of this that the present study investigated availability and utilization of information and communication technologies as they relate to job performance of the academic librarians in Southwestern Nigeria.

The study was an ex-post facto type and adopted the descriptive research design. Only institutions that have made ICTs available to their personnel were selected for the study. The study population consisted of 195 academic librarians in 25 higher institutions in Southwestern Nigeria. The total enumeration technique was adopted. The major instrument used for this study was the "Availability, Utilization and Job Performance Questionnaire (AUJPQ).This was complemented with structured interview tagged Availability, Utilization and Job Performance Interview (AUJPI)" and an observation schedule. The questionnaire was validated. The reliability coefficient for ICTs availability scale was α=0.92; while ICTs utilization and Job performance scale were α=0.96 and α=0.97 respectively using the Cronbach alpha. The test- re-test reliability coefficient for interview checklist was 0.75 and 0.72 for observation schedule. Data were collected from 153

academic librarians which translate to a response rate of 78.5%. Data collected were analyzed using Pearson Product Moment correlation and Multiple Regression analysis.

The results revealed that there was a joint effect of availability and utilization of ICTs on job performance ($P<0.05$). The study also found that availability and utilization of ICTs accounted for (R^2 adjusted = 0.353), that is, 35.3% of the total variance in job performance of the academic librarians in Southwestern Nigeria. The results further showed that there were significant separate contributions of availability of ICTs ($\beta=0.204$; $t=3.317$, $p<0.05$) and utilization of ICTs ($\beta=0.390$; $t=6.163$, $p<0.05$) to job performance of the academic librarians in the southwestern Nigeria. The study also showed that there were significant relationships between: the availability of ICTs and job performance of the academic librarians ($r = 0.435$, $P<0.05$); utilization of ICTs and job performance of the academic librarians ($r = 0.542$, $P<0.05$); the availability and utilization of ICTs and job performance ($r = 0.594$, $P<0.05$).

Availability and utilization of ICTs contributed significantly to the job performance of the academic librarians collectively and individually. As the academic librarians continually use the available ICTs, the job performance of the librarians keep on improving. It is recommended therefore that university administration should make funds available for the ICTs project in academic libraries and a proper ICTs training policy be put in place.

KEY WORDS: Information and Communication Technology (ICT), Academic librarians, Job performance, Higher Institution

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Academic libraries are institutions that are established to take care of the information need of students, lecturers, researchers and other community of scholars. Their mission (academic libraries) is providing quality information service and knowledge products (print and electronic) to resident community of scholars. In the words of Wolpert (1999), "academic libraries are cost effective information service and provider of knowledge products to a resident community of scholars". In order to function and provide timely information at a faster speed to lecturers, researchers and students, it would appear that administrators of academic libraries realised the important role information and communication technologies (ICTs) play in their job performance and so made information and communication technologies (ICTs) available to their workforce.

Imholf (1996) recorded that copiers, CD-ROM databases, and facsimile facilities were made available in libraries in USA as far back as 1940. As libraries and library managers continued to serve their users with quality and timely information products, more innovative approaches that may help them realise their dreams also became imminent. The era of automation came into existence. This innovation took place first in the USA libraries in 1960 and moved to the UK libraries in 1970 then to other libraries of the world. At the initial stage, library automation was only an advanced card catalogue, just to know what a library has in its collection and systems were only in stand-alone formats but with time and greater technological advancement and research, library automation today takes care of information materials accessible *via* the World Wide Web (Mutual, 2004).

The availability of information and communication technologies may aid academic libraries to achieve their objectives. That could be the reason behind making the information and communication facilities available in libraries. It must be noted however that the physical presence of the facilities alone may not bring about job performance but what may bring about enhanced job performance could be the combined effect of availability of information and communication technologies that

are functional in nature and knowledge base to use them. In other words, when ICTs are available, functional and utilised, the librarians' job performance would improve. It must be noted that the degree of functionality of information and communication technologies in academic libraries may have correlation with its utilization (Omotunde, 2002).

From the global point of view, it appears that there is tacit consent that a relationship exists between the combination of the result of availability of information and communication technologies and utilization of information and communication technologies to enhance librarians' job performance (Ajayi, 2001). Stephen (1995) submits that the availability and utilization of information technology provides significant benefits in work measurement, cost reduction, productivity improvement and better services to customers and clients. Actually it is availability which makes utilization possible and it is utilization that makes performance attainable. So, the combined effect of availability of information and communication technologies can enhance the job performance of the academic librarians. There is need for all developed and developing nations of the world to take information and communication technologies (ICTs) as tools that aid the enhancement of job performance of the library staff through the application of the ICTs by the librarians (Rosenberg 2005; Mphidi 2004; Chuene, 2000; Lancaster & Sandore, 1997; Siddique, 1997). This cannot be achieved unless academic libraries realise the tremendous role information and communication technologies could play to enhance effective services. Rosenberg (2005) submitted that libraries need to develop a strategic information and communication plan that would enhance the deployment of ICTs in their libraries. The ICT deployment and application is done by academic librarians who are trained to man specific sectors of the library (Adedeji, 2002; Tenant, 1995).

Academic librarians in their work places perform roles by which they give services in the libraries. It becomes a truism that if there are appropriate electronic tools, they could assist (enhance) the job performance of the librarians. While the availability of information and communication technologies could be catalytic, it stands to note that they bring about changes that necessarily would amount to increasing work production and quality of work performed by librarians (Troll, 2001; Chuene, 2000). Therefore, the cutting edge of availability of appropriate information and

communication technologies and the determined and efficient use could bring about enhanced job performance of the librarians in any given library all things being equal.

However, there exists the element of uncertainty in the world of organisational effectiveness in the presence and absence of availability and utilization of information and communication technologies (ICTs) *vis-à-vis* job performance in academic libraries. This uncertainty becomes acute when the focus is on the possible implications of information and communication technologies availability and utilization in developing nations of the world like Nigeria. This is because of the fact that there could be other inhibiting factors to the job performance of the librarians in libraries because of the morbid influence of the drab environment in which libraries function in developing countries (Okon, 2005; Wanyoike, 2005; Chisenga, 2004; Okpara, 2004; Ajayi, 2002; Magara, 2002; Hann, 1995).

However, the need arises in the quest for deployment in this globalised world the absolute need for organizations that are changed with the provision of information for development to incline to the use of information and communication technologies as a matter of necessity. The aspiration on which this is based is that the application of information and communication technology is seen as an input that could enhance job performance of information professionals, whose mantle of duty is to collect, organise, preserve and make information available to their clientele(Ogunsola & Aboyade 2005; Ajayi, 2001; Wolpert, 1999).While it is commonly accepted that to some extent relationship could exist between availability and utilisation of information and communication technologies by the information professionals(librarians), the relative influence of their dependence as per job performance has not been fully and explicitly analysed in Nigeria particularly in South-West Nigeria.

Information and communication technology is a catalyst which enables academic librarians to perform effectively and efficiently. In other words, through the use of ICTs, academic librarians will be able to promote knowledge, excellence, literacy and academic productivity by gathering, processing and disseminating relevant information to students, lecturers and the university community at large. To understand the influence of ICTs and job performance in academic libraries in

developing countries like Nigeria, it would be wise to look at countries like the United States of America, United Kingdom, Japan and the likes with highly developed ICTs. According to Imhoff (1996), the use of ICTs started in libraries and information centres in the USA in 1940. Today, it should be noted however that the use of ICTs in academic libraries in the USA has moved far beyond facsimile, CD-ROM and copiers. Gorman (2001), the LITA president in 2001, stated that computerisation of library functions in the United States of America has moved far beyond automation stage to the digitisation stage. Mutula (2004) writing three years later stated that libraries in the USA serve as portals (gateways) to other libraries.

It is a common knowledge that developed nations have carefully made information and communication technologies available in their libraries. Due to this, transformation has taken place in academic libraries in other North American countries like Canada; in Central American academic libraries as in Puerto-Rico, Costa Rica; in the UK and in other European countries, in the Oceania as well as in Asian academic libraries. This transformation has totally modernised the operations of librarianship and probably enhanced the job performance of the academic librarians (Choy, 2006; Kumar & Kaur, 2005; Aman & Norliyana, 2002; Siddique, 1997).

Tedd (1997) gives three historical phases of computers in the early libraries. The first was considered as the experimental phase, the second as the introduction of the off - the- shelf turnkey phase, and finally the third phase which occurred in the 1980s was characterised as the off-the-shelf integration phase. However, Mutula (2004) suggested that the fourth phase, took place in the 1990s with the development of the Internet and web based system which made the access and use of information very possible. As a matter of fact, today, academic libraries in the most developed nations serve as gateways (portals) to other libraries and information centres.

Milne (1995) reports from Australia that academic libraries enjoy services offered through the use of the information and communication technologies. As a matter of fact, the number of library users increased drastically as soon as the libraries started using the ICTs. Bandy (2001) confirms the availability and effective utilization of the ICTs and the fast delivery of electronic information to the library users in academic libraries in Australia. McNab and Winship (1998) reporting from the UK, state that

academic libraries fully utilize Internet facilities to capacity. Internet is an information resource that brings a wide range of materials from around the world to a local machine. It is more accurate to view the Internet as a means of communication and in this capacity; it is heavily utilised by academic libraries (McNab& Winship 1996). Bennet, Cobbold and Phillip (2003) carried out a study on ICT use and firm performance in sixteen (16) OECD countries. The study adopted the interview method and the finding reveals that Australian firms adopted ICTs since 1980 and in 1990 the level of ICT availability and utilization drastically improved and as a result, the performance is also recorded very high.

William and Sawyer (2000) state that the availability and use of ICTs redefined industries and changed the nature of work and leisure. A comparative study was carried out in three service-oriented organiaations namely: hair dressing, libraries and tailoring, to measure the level of ICT availability, use, skill level of the staff and degree of performance. The finding revealed that libraries utilised ICTs more than the other two and the librarians' degree of performance was also found to be higher than the other two firms.

In Canada, the use of ICTs and job performance of librarians is recorded. A report prepared by the Canadian Association of Research Libraries (CARL) 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 challenge of the 21st Century.* On February 12, 2002 the ministers of Industry and Human Resources launched the Canadian Federal Government's innovation strategy with the release "Achieving Excellence: Investing in people, Knowledge and Opportunity and Knowledge Matters: Skills and Learning for Canadians". The best investment in this age of technology is investing on people who will use the available ICT to produce results. A well-equipped academic librarian is someone who can provide quality information to the client so that the information provided will help in decision-making process. The 2000/2001 Canadian Academic and Research Libraries (CARL) Annual report states: First-class information resources are as essential to a productive national infrastructure as a robust computer network, a well-equipped laboratory and highly qualified personnel.

This means that unless academic librarians are highly qualified to work in sophisticated ICT-based libraries, the investments made towards equipping the libraries with the recent ICT facilities will be a waste. But when librarians are well-equipped and the library itself is sophisticated with all the needed ICTs, the rate of performance and degree of productivity of the librarians who use the ICTs to capture the information will increase. By so doing, libraries (main or branch) will aid the university administration achieve its objectives. Jenkins (1997:355-63) states: *As a result of the increasing availability of electronic resources, researchers have identified electronic journals as criteria to their work. They cite improved access which results in savings in time, and thus, increased productivity.*

In Singapore, Chia, Lee and Yeo (1998) report that a committee was set up by the government and mandated to design an information technology plan for the nation. The National Library of Singapore on its part took an initiative in ensuring all libraries especially academic libraries are ICT based. From Malaysia, Tech (1997) reports that the availability and use of ICTs in academic libraries take central place in governments information and communication technology policy. In Saudi Arabia, Siddique (1997) carried out a study on the use of ICT in academic libraries and the finding reveals that out of the six universities surveyed majority of the libraries had Internet, one kind of library software or the other, CD-ROM facility, OPAC services, FAX and E-mail services. It is eight years since Siddique carried out this study and if the same study were to be carried out today; the findings would be totally different.

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) point out the great disparity in the adoption and use of ICTs in academic libraries. Mutula (2004) states that the availability and utilization of ICTs has made the academic librarians to provide quality and useful information services, to users and at the same time enhanced services and improved productivity of the librarians. Mphidi (2004) opines that having access to the Internet and World Wide Web through the use of ICTs would enhance the job performance of the academic librarians. Cram (2004) reiterates that library effectiveness should not be measured on the work load

of the librarians but with the quality of information provided to users with speed and value.

In Ghana, academic libraries enjoyed the availability and utilization of information and communication technology through the DANIDA sponsored project under the auspices of the International Federation of Library Association-Africa branch. The six universities were networked under this project and this made communication very easy and document delivery possible among the academic librarians in the six university libraries. However, the researcher made a visit between Feb 26, 2005 and March 7 to the University of Ghana in Legon to find out the progress of the DANIDA project but sad to report that the project could no more continue due to lack of funds.

Wanyoike (2005) carried out a study titled "The Camel comes of Age". The author considered academic and public libraries in Kenya and in this he stressed the role of information and communication technology in academic and public libraries. The finding reveals that even though the concept of information sharing through the African Virtual Library system is not new in Kenya, poor funding, poor communication system combined with the lack of ICT qualified academic librarians has hindered the availability and utilization of ICTs that would have improved the job of the academic librarian.

Adeya (2001) observes some of the several problems libraries face in Africa as a whole. Some of the problems according to him are inadequate computerisation, inadequate infrastructure, and inadequate human capacity. Magara (2002) reports from Uganda on the unreliability of power supply and the hindrances it has caused to the effective utilization of the Internet facility. Selinger (2000) states that the availability and use of ICT is generally good for librarians to perform their duties in a better and enhanced way and at the same time it can also extend education to the marginalised and poor ones. Fecko (1997) opines that the growth of Internet has inspired many libraries to make documents and resources from their collections available online to the public as well as worldwide.

Academic libraries in Nigeria attempted to automate library functions as far back as 1970; 1990 and the attempt still continues. TINLIB software was introduced in

leading academic libraries including that of the University of Ibadan and Ahmadu Bello University Library (Omoniwa, 2001) but due to some technical and organisational problems, no single academic library in Nigeria in general and in the South-West of Nigeria in particular uses the TINLIB software today. Obajemu and Ibegwam (2006) point out that libraries in Nigeria are still on the race to make their services totally ICT- based. The MacArthur report of 2005 titled "Developing Strong University Libraries in Nigeria," points out the need to develop effective information delivery system as a key component of university teaching and learning, and modern technology greatly enhances such system. The report also points out lack of appropriate funding system to acquire relevant information and communication tools; lack of infrastructure to provide access to electronic information. Money was not there for collection development and there have been few acquisitions, most of the collections stopped growing substantially in the mid-70s.

The University of Ibadan library which played an exemplary role in the installation and use of TINLIB software has now totally abandoned it and moved to using Alice for windows. The Hezekiah Oluwasanmi Library of the Obafemi Awolowo University has also abandoned using the TINLIB software and developed its own in-house software. So far, almost all the libraries studied are just struggling to complete the conversion exercise from TINLIB to either Alice for windows or GLAS. A good number of academic libraries (state universities and polytechnics) have introduced the X-LIB software. Moving from one library software to another is not unconnected to obsoleteness of the software or ease-of use. Changing from one software to another is not a new trend in academic libraries. For example, a study carried out by Rosenberg (2005) reveals that University of Botswana library moved from TINLIB to Innopac; the library of the University of Namibia from Urica in 1990 to Innopac in 2004/5; and University of Lesotho from Stylis in 1995 to ITS in 1996 and to Innopac in 2005.

The primary purpose of availability and utilization of information and communication technologies is to meet the information demands of the scholars in this age of transformation and change by providing high quality information sources that can be actualised by selecting, organising, processing, storing and disseminating electronically. In order to be able to serve students, lecturers and other academic community members, information professionals (academic librarians) need to

undergo training and re-training processes. Well-trained and capable academic librarians who are able to capture the needed information through the use of the information and communication Technology appear to be the only answers to the utilization of information and communication technology since they improve on job performance in Nigerian academic libraries. Information and communication technologies are introduced in academic libraries to enhance services, curtail cost of manual operations and speed up services (Chuene 2000; Oketunji, 2001; Lancaster & Sandore, 1996). Librarians show dynamism in the way they generate, manage and disseminate information to all categories of users through the use of information and communication technologies. Microcomputers have streamlined the operational workflow of routine functions as well as enhance the online search process. Computers are used for cataloguing and classification as well as for acquisition and serial management purposes also. Chuene (2000) compared manual and computerised acquisitions procedures and found out that computerised acquisition procedure is the best in making the needed information material available to the users.

Information is an important resource especially in an academic community but the information and communication technology tools to create, collect, consolidate and communicate information to all categories of users appear to be not fully available in most of the academic libraries in Nigeria in general and in South-West Nigeria in particular. It is possible that libraries do not have funds allocated to information and communication technology and it may be that libraries are seldom included in the technology master plan of the institutions. It may be that librarians may not have been able to convince the administration that libraries need information and communication technologies or it may be due to inadequate funding practice as a whole. If information and communication technologies are available in academic libraries in Nigeria, they would bring access to collections and electronic resources; advance in automation exercise, advance in Internet information provision and advance in job performance would be real. Library administrators and academic staff may have been struggling with unreliable power supply, on and off access to the Internet but low bandwidth and inadequate funding were reported as hindrances to the job performance of academic librarians.

1.2 Statement of the Problem

Information and Communication Technologies (ICTs) enhance service provision to library clientele. Librarians use ICTs to perform functions like cataloguing and classification, serials management, collection management, budgeting, circulation management, referencing, indexing and abstracting in order to improve information services to library users. However, it has been observed that most academic librarians in Nigeria still struggle with manual library operation method. Consequently, library users show dissatisfaction and complain of poor information services delivery by the academic librarians. It is in the light of this that the present study investigated availability and utilization of information and communication technologies as they relate to job performance of the academic librarians in Southwestern Nigeria.

1.3 Objectives of the Study

The general objective of this research work was to investigate the level of availability and utilization of information and communication technologies in academic libraries in Southwestern Nigeria, and the relationship of this to job performance in the selected academic libraries.

The specific objectives of the work were to:

1. find out the quantity of available information and communication technologies in Southwestern Nigeria's academic libraries;
2. determine the degree of utilization of information and communication technologies in Southwestern academic libraries;
3. investigate factors that may be responsible for the inadequate availability and under-utilization of information and communication technologies in Southwestern academic libraries in Nigeria;
4. find out if any relationship exists between availability and utilization of information and communication technology and work performance; and
5. find out the relative contribution of ICT availability and utilization to effective job performance of librarians in academic libraries of Southwestern Nigeria.

1.4 Research Questions

In order to achieve the objectives stated above, attempts were made to find answers to the following questions:

1. What are the types of library services that are automated in academic libraries in the Southwestern Nigeria?
2. How are the academic libraries connected to the Internet in Southwestern Nigeria?
3. what is the bandwidth connectivity for academic libraries in Southwestern Nigeria?
4. do academic libraries in the Southwestern Nigeria have ICT strategies and training policy?
5. What are the types of information and communication technologies available in selected academic libraries in Southwestern Nigeria?
6. What is the degree of utilization of ICTs in academic libraries in the Southwestern Nigeria?
7. What are the organisational, human and cultural factors that affect the availability and utilization of information and communication technologies in the academic libraries of study?
8. How has the availability and ICT use contributed to effective job performance in academic libraries?

1.5 Hypotheses

In order to achieve the objectives of the study, the following hypotheses were formulated:

H01: There is no significant relationship between the availability of ICTs and job performance of librarians in academic libraries of study.

HO2: There is no significant relationship between the utilization of ICTs and job performance of librarians in academic libraries of study.

HO3: There is no significant relationship between availability and utilization of ICTs and job performance in academic libraries.

HO4: Availability and utilization of ICTs does not contribute to effective job performance of librarians in the academic libraries of study.

The above formulated hypotheses were tested at x=0.05 level of significance.

1.6 Scope of the Study

This study concentrated on the availability and utilization of information and communication technologies in academic libraries, and how this enhances effective work performance of the academic librarians in Southwestern Nigeria. The ICTs of concern in this work include desktop computers, laptop, printers, scanners, photocopiers, CD-ROM databases, facsimile, telephone, multimedia, computer servers, workstations, Internet, e-mal services, digital cameras, video camera, TV set, operating and application software, customized library software and so on.

1.7 Significance of the Study

The study would enable us to know the extent of the available ICTs and their level of utilization and relationship to effective work performance. It is assumed that the research findings would provide empirical basis for Universities, Polytechnics, and Colleges of Education managements and other stakeholders to appreciate the value of funding ICTs in libraries. The research findings could lead to relevant recommendations/suggestions to university proprietors to put the necessary machineries in place toward making ICTs available and utilised.

The presence of information communication technologies in today's organizations (including libraries) has expanded dramatically. Some estimates indicate that, since the 1980s, about 50 percent of all capital investment in organisations has been in computer and information technologies (Westland & Clark, 2000). The primary reason for investing so much on computer and other technologies is to enhance services and increase the level of productivity. Yet for technologies to improve performance and increase the level of productivity, they must be accepted by the management in the organisations and effectively utilized. Researchers like Davis, Bagozzi and Warshow (1989), and Compeau and Higgins (1995) studied how and why individuals/organisations adopt new information technologies. For Davis *et al* (1989) and Compeau and Higgins (1995) the intentions or usage of the technologies was their focus of study and considered usage as a dependent variable. While other researchers like Loenard-Barton and Deschamps (1988) focused on implementation success at the organisational level, others like Goodhue (1995): Goodhue and Thompson (1995), among others focused their study on task-technology fit. Each of these streams make important and unique contribution to the literature on user

acceptance of information technology. These contributions are akin to the objectives of the present study. The use of information technology in any organisation enables the workers perform the tasks assigned to them in a better way. ICT availability and utilization is central to organisational growth and prosperity.

1.8 Justification of the study

The importance of this research work on the relationship between ICT availability and utilization and job performance of academic librarians in Southwestern Nigeria is underscored by the current emphasis in the service industry on quality service delivery and customer satisfaction. The literatures on ICTs indicate that availability and utilization of relevant ICTs enhance service provision to library clientele. This empirical study therefore, makes relevant contribution to the on-going discourse on the subject.

Besides, such a study as this will be instructive to academic librarians in evaluating and improving the ever declining status of academic libraries in Nigeria.

Furthermore, the focus on academic librarians who bear primary responsibility as managers and policy makers directly involved in the day to day execution of library functions provide a unique approach that locates the buck where it starts and stops. These particular groups of persons have generally more specialized knowledge of specific ICTs and their uses, and of libraries in which they work-all of which translates to improved quality of information available to this research.

Importantly also, this study addresses the availability and utilization of ICTs and job performance in the Southwestern Nigeria. This geo-political zone comprising 6 states of the federation is especially of strategic importance to a study of this nature. This is because it consists a majority of the nation's first generation universities, including the premier university as well as a good distribution of third generation and private universities, and federal, state and privately owned polytechnics and colleges of education. It is hoped therefore, that this study will generate statistical data and theoretical knowledge that can be painlessly generalised to various categories of institutions in Nigeria, and possibly across Africa.

It is intended that this study will not only establish the relationship between ICT availability, utilization and job performance of academic librarians in southwestern Nigeria, but will also provoke further research that will expand the scope of Library and Information studies.

1.9 Definition of Terms

For the purpose of clarity and precision, the following terms are defined to indicate their meanings in the context of this study.

Information and communication technologies: These are the hardware, software, telecommunication technology and human skills used to gather, process and disseminate information to the people who need it.

Utilisation: This is the extent to which ICTs are put to use in library work activities.

Job Performance: The manner by which academic librarians carry out their individual services using the available ICTs to achieve a desired goal.

Academic librarians: These are librarians possessing the minimum academic qualification of Masters degree in library and related fields of study and who work in academic libraries.

Academic libraries: They are libraries of tertiary institutions that serve the teaching and research needs of students and staff.

Training: This is the systematic acquisition of skills, knowledge and attitudes that lead to an acceptable level of human performance on a specific activity in a given context.

1.9.1 Theoretical Framework

This study adopts the socio-technical theory. The theory by Leavitt (1965) states that any production system requires both a technological organisation (equipment, processes, methods) and a work organisation (relating to those who carry out the necessary tasks to each other, i. e., the social system). The theory indicates that an organisation is not just a technical or social system but it is the structuring of human activities round various technologies (tasks, people, structure and technology) as shown below. Information is the lubricant within and between the various sub-units of the system. It enables the organisation to keep and within its environment that relevant and beneficial product to the environment (society).

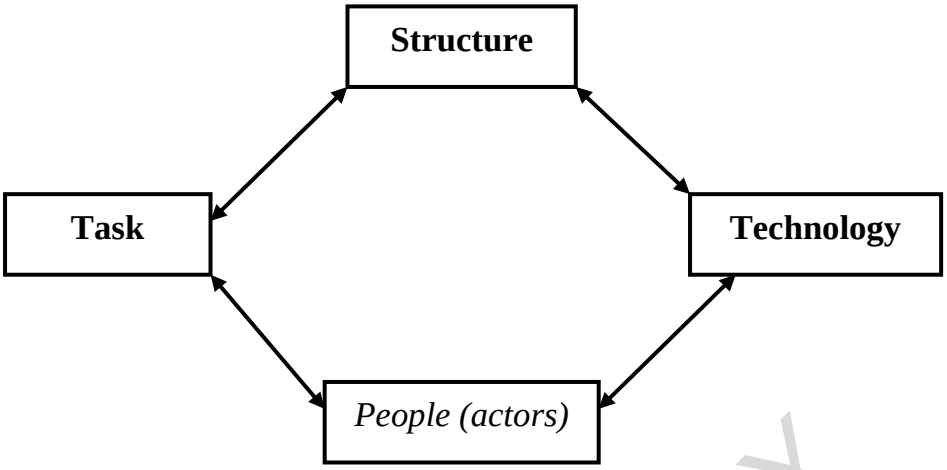

Fig. 1: Adapted from Leavitt's Diamond Organization Model (Leavitt, 1965)

Technologies are considered to be tools that help organisations to get work done, and mechanisms for transforming input to output through the use of information. All the variables are interdependent through the interface of information. The model suggests that there is a relationship between the use of technology and the people who will perform the task. Here technology is an enabler (independent variable) or a tool and people are the actors (independent variable) while task and extent of information use are dependent variables.

Relevance of the Model to this Study

Leavitt's diamond model affirms and creates insight on how the variables (availability, utilization and job performance) in the present study are related and interact for organisational effectiveness of academic libraries. The model enables the researcher to envision the phenomena of information rich and information poor in academic libraries and the possible implications for effective job performance and finally, organisational effectiveness. Academic libraries are socio-technical systems. They, therefore, operate with principles of System Theory. They are by and large flagrantly open systems in that their input of energies and the conversion of output into further energy input consist of transactions between them and their environments (Katz & Kahn, 1966)

How Academic Libraries Work as Social Systems

In systems theory, a socio-technical system acquires inputs, then transforms or processes the input and generates the output. The environment (all sorts of **users** in the university) will receive the output and analyse the output to give the feedback to the organisation (the library satisfaction or dissatisfaction). If the environment accepts the output, the cycle continues but if the environment does not accept the output, the system must change the output it produces or it will fail. Within a system, there are subsystems and they are interrelated. System theorists contend that successful organisations are clear about their purposes and will behave in appropriate goal oriented ways. Organisations will have subsystems and each subsystem is related directly or indirectly to the others and each serves a distinct function (see Figure I).

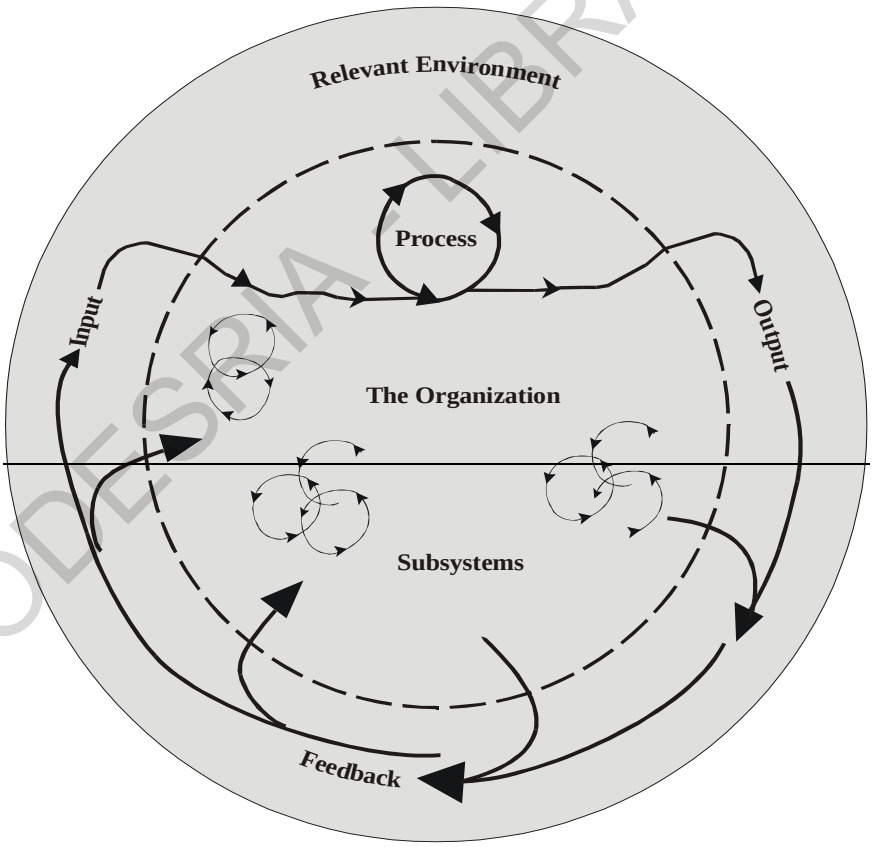

Figure II Model of an Organization as a system

Figure 2: System Theory Model

Relevance of System Theory to this Study

The library as a system exists for the benefits of the larger organisation -University, to support the teaching, learning and research activities of the institution. Within the system (library) there are subsystems (circulation, reference, serials etc) that provide services to the students, teachers and the university community at large. Each subsystem within the system is as vital as the system itself. The use of ICT in the library is to enhance services, improve performances and speed-up the transmission of information to the people who need it. For this reason, academic libraries in Nigeria need to employ the services of information and communication technologies so that quality and timely information can be provided to the students and lecturers who are the bona fide users of the libraries.

Conceptual Model

Availability of information and communication technologies does not necessarily imply utilization. However, what is not available also cannot be utilised, but what is made available is a function of the information capacity of the source. Availability and utilization are independent variables whereas job performance (work activities) is a dependent variable. The degree of performance depends on the level of quality of ICT use by the academic librarians and the degree of utilization also depends on user's acceptance of the technology.

However, if ICTs are effectively utilised by the library facilitators (academic librarians) there is a likelihood that their job performance would improve. Their performance may result in the production of high quality information services to end users (academic staff, students, and other researchers).It must be noted that ICTs are introduced into the academic libraries for the purpose of capturing, processing, storing, retrieving and dissemination of high quality services to end users. It is therefore postulated further that availability which is physical presence and functionality of ICTs could have direct effect on work performance of the librarians in academic libraries.

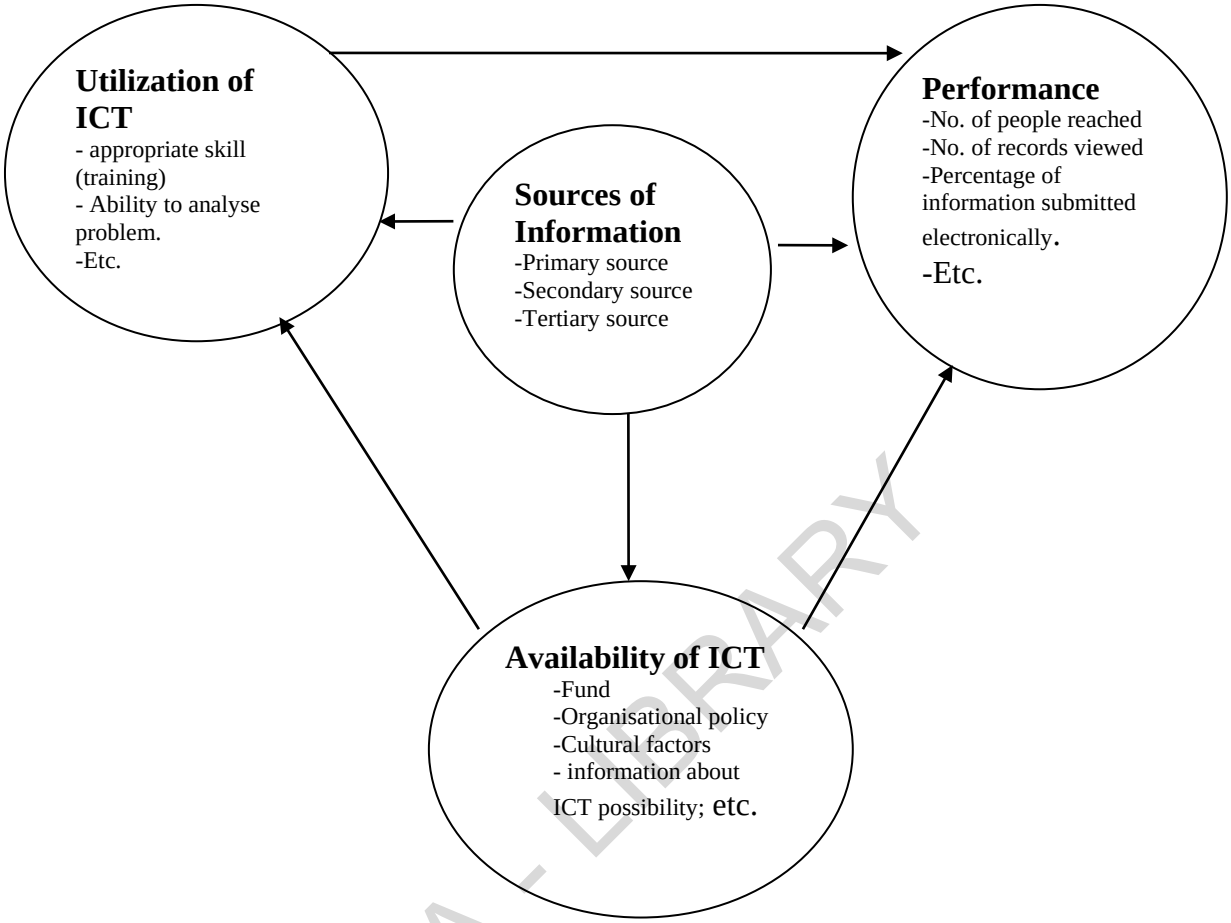

Fig 3: Model of ICT Availability, Utilization and Job Performance

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explored extensively the literature implication on availability and Utilization of information and communication technologies (ICTs) and job performance of academic librarians in academic libraries both globally and in South-West Nigeria. The chapter through a review of literature also determined the situation in Nigeria in the realm of the research focus as at the time of the study. The review of literature is carried out under the following sub-topics:

I. Information and Communication Technologies and their Implications for Effective Functioning of Academic Libraries
II. Availability of Information and Communication Technology in Nigerian Academic Libraries
III Utilization of Information and Communication Technology in Nigerian Academic Libraries
IV. Human Resources Development and ICT Utilization in Africa and Nigerian Academic Libraries
V. The Effect of ICT on Librarians' Job Performance in Academic Libraries in Nigeria and Beyond
VI. Factors Influencing the Availability and Utilization of ICTs in Academic Libraries
VII. Summary of review of Literature

2.2 Information and Communication Technologies and their Implications for Effective Functioning of Academic Libraries

According to Ogunsola and Aboyade (2005), information plays a very important part in human life. The 20th century however paved way for information to increase in an immeasurable scale due to the progress made by human invention in the area of information and communication technologies. Today, the changes brought by the availability and utilization of this dynamic revolution called information and communication technologies (ICTs), has a significant effect on access to information technology (IT), in the home , at work and in educational establishments. These could mean improved job performance of workers in every facet of life. The speed of change brought by the modern technologies has had a significant positive effect on the way people work, live and recreate globally.

The smooth and rapid change brought by the ICTs increased access to information and improved workers performance worldwide. Ogunsola and Aboyade (2005) submit that rapid communication and increased access to information enhanced the ways jobs are done by workers. Communication can be described as the process of transmitting and receiving ideas, information and messages. The World Bank defines ICT as "The set of activities which facilitate by electronic means the processing, transmission and display of information" (Rodriguez & Wilson, 2000). According to Ogunsola and Aboyade (2005), ICTs "refer to technologies people use to share, to distribute, gather information and to communicate through computers and computer networks." Marcel (2000) in Ogunsola and Aboyade (2005) describe ICTs as complex varied sets of goods, applications and services used for producing, distributing, processing , transmitting information (including telecoms) TV and radio broadcasting, hardware and software, computer services and electronic media.

Information and communication technology (ICT) represents a cluster of associated technologies defined by their functional usage in information access and

communication embodiment of which one is the Internet. Hargittai (1999) in Ogunsola and Aboyade (2005) defined the Internet as:

> …a worldwide network of computers, but sociologically it is also important to consider it as a network of people using computers that make vast amount of information available. Given the two (basic) services of the system communication and information retrieval-the multitude of services allowed …is unprecented (pp.7-14).

Capron (2000) submits that ICT constitutes mails, telephone, TV, radio, books, newspapers, and periodicals as the traditional ways users send and receive information. The use of the Internet has revolutionized access to information for the business world, libraries, education and individuals. The area of revolution includes; e-mail, World Wide Web, file transfer protocol, UseNet and telnet. Through the use of ICTs, academic librarians can improve services to the people they serve and at the same time, they will be able to increase their output. They can provide electronic cataloguing, electronic on-line public access catalogue, electronic acquisition, and serials control, electronic interlibrary loan, and electronic circulation functions (Ogunsola & Aboyade, 2005).

ICTs are embedded in networks and services that affect the local and global accumulation and flow of public and private knowledge. According to the United Nations Economic Commission for Africa (ECA), ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities (ECA, 1999). It is not uncommon to find definitions of ICTs that are synonymous with those of information technology (IT). For instance, Foster (1994) defines IT as "the group of technologies that is revolutionising the handling of information and embodies a convergence of interest between electronics, computing and communication". Duncombe and Heeks (1999) simplify the definition by describing ICTs as an "electronic means of capturing, processing, storing and disseminating information".

2.2.1 Characteristics of Information and Communication Technology

Information and communication technology can facilitate development goals because its unique characteristics dramatically improve communication and the exchange of information in academic libraries and other organisations thereby strengthening and creating new economic and social networks. Boohene (2002) highlights eight unique characteristics of ICTs *viz:*

1. ICT is pervasive and cross-cutting. ICT can be applied to the full range of human activity from personal use to business and government. It is multifunctional and flexible, allowing for tailored solutions – based on personalisation – to meet diverse needs.
2. ICT is a key enabler in the creation of networks and thus allows those with access to benefit from exponentially increasing returns as usage increases.
3. ICT fosters the dissemination of information and knowledge by separating content from its physical location. This flow of information is largely impervious to geographic boundaries – allowing remote communities to become integrated into global networks and making information, knowledge and culture accessible, in theory, to anyone.
4. The 'digital' and 'virtual' nature of many ICT products and services allow for zero or declining marginal costs. Replication of content is virtually free regardless of its volume, and marginal costs for distribution and communication are near zero. As a result, ICT can radically reduce transaction costs.
5. ICT's power to store, retrieve, sort, distribute, filter and share information seamlessly can lead to substantial efficiency gains in production, distribution and marketing. ICT streamlines supply and production chains and makes many business processes and transactions leaner and more effective.
6. The increase in efficiency and subsequent reduction of costs brought about by ICT is leading to the creation of new products, services and distribution channels within traditional industries, as well as innovative business models and whole new industries. Intangible assets like intellectual capital are increasingly becoming the key source of value.

7. ICT facilitates disintermediation, as it makes it possible for users to acquire products and services directly from the original provider, reducing the need for intermediaries. This cannot only be a considerable source of efficiency, but has in fact been one of the factors leading to the creation of the so-called 'markets of one' leveraging ICT's potential to cater to the needs or preferences of users and consumers on an individual basis.
8. ICT is global. Through the creation of and expansion of networks, ICT can transcend cultural and linguistic barriers by providing individuals and groups with the ability to live and work anywhere, allowing local communities to become part of the global network economy without regard to nationality , and challenging current policy, legal and regulatory structures within and among nations.

The above characteristics suggest that information and communication technology has the potential, if conceived by the library management as a means and not an end in itself, to be a powerful facilitator of development. However, the fact that ICT can, in theory, assist development efforts does not mean that it will necessarily do so. In order for ICT to positively foster development goals, it must be employed efficiently. Hedman (2005) points out the great change brought by ICTs. According to this author, the use of ICTs has brought a great change to librarianship in practice. ICT offers access to every person without any barrier. It has helped the librarians to retrieve the needed information and at the same time assisted them to direct end-users without any difficulty or tension.

ICTs play important roles in organisations of all kinds and in society's ability to produce, access, adapt and apply information. According to Morale – Gomez and Melesse (1998), ICTs have the ability to facilitate the transfer and acquisition of knowledge. Okunoye (2003) points out that the use of ICT plays an important role in the ability of nations to participate in global economic activities. Traditionally, ICT has been used to simply speed up work processes. Today however, it facilitates organizational transformation and brings competitiveness and economic prosperity (Ojo, 1994; Hann *et al*., 1995). To do this, ICT requires skill and motivation. For instance, ICT can transfer information quickly and easily across large distances,

making many processes independent of geography. Michael H. Spindler, Chief Executive Officer of Apple Computers, Inc. opines as quoted by Daniels 1994):

> Today the dynamics of a truly global economy are destroying traditional concepts of time, geography, competition and strategic advantage. The challenge before us is to challenge our own thinking and to recognize that a global economy demands new structures, new management styles and new approaches to harnessing innovation.(P. 2)

Bjorn Boldt – Christmas, Director of Strategies at Scandinavian Airlines, describes the importance of being really up-to-date: It is important to know how different IT is in different parts of the world, taking note of the high technology aspects and how they could affect the business world…

ICTs are important for both the rich and the poor. They narrow the gap between the rich and the poor, the developed and the developing countries. Kofi Annan, the Secretary- General of the United Nations speaks on the revolution of the Internet:

> The Internet holds the greatest promise humanity has known for long-distance learning and universal access to quality education. It offers the best chance yet for developing countries to take their rightful place in the global economy. And so our mission must be to ensure access as widely as possible. If we do not, the gulf between the haves and the have-nots will be the gulf between the technology-rich and the technology –poor (p.1079).

The concept of ICT is also well understood by the library and information science profession worldwide. ICTs are introduced in libraries of all types (Academic, Research, School, Public etc) in order to provide quality services to all quality information seekers and in the context of this study, information and communication technologies are inseparable from information technology and are used interchangeably . When we talk of information and communication technologies, we talk of information which is a crucial resource to all decision makers. The concept of information is therefore central to ICT as information is the basis for ICT introduction, availability and utilization. Sources of information for decision-making include books, periodicals, official publications, journals, newspapers, offline databanks, CD-ROMs, e-mail, and satellites, the Internet etc.

The scientific application of knowledge has necessitated keeping abreast of the latest information and makes it necessary to keep interaction with advanced and frontier areas. So, in this age of information explosion/overload, keeping track of information resources and managing same are keys to achievement and success. Acquisition, organisation, delivery and storage of information have always been the main task of any library. Emerging new technologies offer new ways of handling these tasks.

The impact of renewing information and communication technology on communication media and information is summarised by Jha (2001) in Table 1 below.

Table 1.1: Technology (From Old to New)

	Work	**Old technology**	**New Technology**
1.	Communication	* Personal Travel * Postal	* Teleconferencing * Teletext * Satellite transmission
2.	Inputting (primary format)	* Oral presentation * Writing and typing	* Word processing *Optical scanning through computer
3.	Multiplication	* Printing	* Computer Visual Display terminals * Video discs and cassettes *Computerised photo printing
4.	Storage	* Book shelves and pamphlet * Microform in catalogue and through shelves	* Computer based digital and analogue Storage
5.	Information	* Browsing through surrogates in catalogue and through shelves	* Browsing through on-line terminals * Database software

Academic libraries are libraries existing at tertiary levels of education (Feather & Sturges, 1997). They exist primarily to assist the mother institution in achieving its goals. The functions of universities are:

- Conservation of knowledge
- Pursuit, promotion and dissemination of knowledge *via* teaching and research.
- Advancement of knowledge through research be it through pure science, applied sciences or through development-oriented research.
- Provision of quality intellectual leadership
- Promotion of social and economic modernisation
- Development of human resources for meeting demands of the contemporary global economy.

These are strong and focused objectives any University attempts to attain. Without a sound, modern and functional library, the above objectives cannot be achieved.

According to Odiase *et al*., (2000) academic libraries exist to serve the University community. Aina (2004) states that the main purpose of a University library is to support the objectives of a University, which is in the area of teaching, research and service. Mabawonku (2004) points out that academic libraries exist for the benefit of students and teachers. In order to function and serve the information users, the library needs to have both print and electronic materials. CD-ROM, e-mail, the Internet, the World Wide Web, and other related electronic devices need to be available. Cohn, Kelsey and Fiels (2001) commenting on how libraries should function state thus: A library's continuing success will depend in part on its ability to identify and communicate the contributions technologies have made to its programme.

On the basic function of academic libraries Cohn *et al*., (2001) outline the underlisted points:

- Providing access to the content of local resources (books, periodicals, media, electronic resources) that are part of the university's collection.

- Offering gateway or portal access to remote resources (books, periodicals, media, electronic resources and so on) including the ability to obtain copies in print and electronic format.
- Facilitating off-site electronic access to locate remote resource from user homes, offices, and schools.
- Providing access to human assistance in locating information.

Once the above functions are fulfilled, there is no reason whatsoever why the university should not meet its objectives.

The use of ICT is very important in every professional field. It appears that no field can function without it. In fact it is a catalyst for the creation of wealth. Khalil (2001) opines that the utilization of ICT is the primary power towards prosperity. Ojo (1994) states that the use of ICT brings prosperity. Hann *et al*., (1995) declare that the use of ICT brings competitiveness. Hagg (2002) declares that the use of ICT is very vital to facilitate services, improve on the creation and generation of information, and McKay (2001) advocates that academic libraries need to adopt newer technologies by getting rid of the older technologies.

Studies by Nwalo (2000, 2001); Atinmo *et al.*, (2000); Idowu and Mabawonku (1996); Omololayo (2002); Faulkner (1998); Adedeji (2002); Lancaster and Sandore (1997); Coherene (1992); Nwali (1999) reveal that the use of information technology is very important. Facilitation of the availability and utilization of ICTs in libraries, it seems, will make the access, retrieval and dissemination of information both practicable and operational. The use of information and communication technologies provide quality service to the users. Faulkner (1998) asserts that the use of ICT builds a strong and effective information system. Nwali (1991) speaks on the use of CD-ROM technology and its impact in academic libraries. Adedeji (2002) highlights the advantages of using IT in libraries. The use of information and communication technologies offer the under listed advantages:

- accuracy of information
- speedy retrieval of information
- increased ability to manipulate data
- reliability of information output

Lancaster and Sandore (1997) state that using information technology in academic libraries offer better services and improves the existing services. Aina (2004) states that the application of ICT has become an important field for all information professionals. Nwalo (2001) declares that cataloguers in Nigerian libraries need adequate training that will prepare them for the challenges ahead. Rowly (1998) states that computers are important for information professionals to do their job effectively. Pawankumarijha (2001) speaks on the importance of networking academic libraries for fast and easy information sharing. Susan (1999) points out that libraries experience the effect of ICT utilization which enables access to bibliographic networks, document delivery and the availability of scholarly materials to the users. This is a great change that is brought by technology. ICTs have improved the effectiveness of libraries, broken the barriers of borders and allowed users to swim both in data and information.

Riggs (2000) points out that through the sophistication of modern ICTs, users now can access intellectual resources held in various libraries throughout the world. According to Rosenberg (1998) any academic library that does not introduce information and communication technologies threatens its own survival. This, she revealed in a survey of 19 University libraries that shy away from the use of ICT. Stein (1998) advocates that academic libraries need to be linked to the Internet, because it is as essential as being connected to water and electricity. Drisfhout (2001) speaks on the effectiveness and importance of using ICTs. He further observes that computer use has the ability to transform the society.

The availability and use of E-mail in a library facilitates document delivery and resource sharing. Siddique (1997) surveyed the availability and use of ICT in Saudi-Arabian academic libraries and the study found out that E-mail, Fax, OPAC, CD-ROM, and Online searching technologies were available in most of the libraries he studied. A similar study was carried out in Puerto-Rican Universities. Ortiz-Zapata and Quantana (2001) surveyed academic libraries in Port-Rican. The survey found out that libraries feel the impact of ICTs and the use of ICTs help the librarians perform their duties better. The study also found out the availability of OPAC, CD-ROM, Optical technologies, Fax and Online searching facilities.

Pook and Denny (2001) report librarians' positive reaction towards technology. Normally, it is difficult for librarians to react positively when changes are made in a working place like libraries. For years the practice has been doing things the usual way, which is manually, the only known way. The advancement in information and communication technology in the library world has brought a big change and librarians' positive reaction to this change, according to Pook and Denny, is really encouraging. Addo (2001) writing from the University of Science and Technology Library in Kumasi, Ghana points out that the use of ICT improves academic productivity. He made this observation after the University management supplied the library with relevant technologies and using the facility to perform the routine duties. The study by Ortiz-Zapata and Quantanna (2001) reveal the improvement in academic productivity since Puerto-Rican academic libraries introduced ICTs.

The study by Tiamiyu and Olatokun (2002) show the reality of today's life situation and the contributions of using computers and related technologies in Nigeria. Not having appropriate ICTs to work with is also a hindrance to effective job performance of academic librarians. In this age of technology, Tiamiyu (2002) declares that new information and computer systems continue to create new growth and developmental opportunities for people and societies.

In today's world of service, especially in the information provision profession, change has become compulsory. Ajayi, Olatokun and Tiamiyu (2001) point out that change is a permanent feature in human organizations. Things that were done manually in the past, are now done using computers and communication technologies. Technology has become a blessing to some and a bane to others. Librarians with old time training find themselves in an uncomfortable position with respect to the various information packages provided for their functioning today and cannot just fit in unless they re-skill themselves. For younger librarians who may have made contacts with computers either in schools or other ways, it is a blessing.

Childer (2004) sees ICT impact on libraries from the training point of view. In his words:

> The most important impact on libraries should be an increased emphasis on training. Libraries must increase the amount of computer training available to their staff, professionals and paraprofessionals alike. Whether through in-house training or staff attendance of outside workshops - training must be an integral part of the libraries' staff development.

Krissof and Konard, in the book *Computer Training for Staff and Patrons,* (32) have this to say: "Training should be viewed as a necessity, not a luxury; as mandatory, not voluntary; and as comprehensive, not superficial."
Technology comes with change and challenges and the better trained a staff is, the better they can handle those changes.

Despite the increasing campaign for staff training on the use of ICT in work places, there are indications that the use of computers can be limited due to computer anxiety. Studies by Bozionelos (1996), and Igbaria *et al*., (1989), reveal that work activities by professionals can be limited due to computer related anxieties.

Other studies (Bozionelos, 1996; Briggs & Kindler, 1993) have reported the under-utilization of computers by professionals, a factor limiting the effective functioning of academic libraries. In the past, considerable research has taken place about the effect of human-computer interactions (Rose & Maguire, 1990). Human perception, evaluation, and reactions were investigated and one of the effects experienced by many individuals using computers is the arousal of negative affective reactions (Cooper & Stone, 1996). Such reactions have been variously referred to as computer aversion (Meier, 1985), computer resistance (Martinkour, Henry & Zmud 1996), computer user stress (Hudiburg, 1992), computer phobia (Jay, 1985), e-phobia (Katz, 2000), and computer anxiety (Raub, 1981).

The utilization of ICTs in academic libraries should also imply enhanced performance. Performance can be defined as the accomplishment of something or the manner in which something is carried out (Feather & Sturges, 1997). Performance in library includes specific functions performed, or specific resource, used within the library and so on. Nwalo (2000) specifically notes that library performance statistics is gathered from all sections of work within the library –cataloging, circulation, acquisition, bindery, serial consultation and frequency and pattern of clientele visit to

the library. This is to find out the effectiveness of the library by meeting the information need of the users.

In a computer based library system, work is performed better than in the library that is manually operated. This assertion is widely discussed in the literature. For instance, Lancaster and Sandore (1997) state that IT based libraries allow more activities to be performed; offer new services. An IT based library supplies more and accurate information. Tiamiyu (2000) opines that an automated circulation control system should minimally support the charge-out and charge-in of library items. Beside this, the automated library also has some other features. The computer at the circulation desk has the ability to determine:

- Who has what item (on loan)
- When the item is due (date of return)
- Which item a patron has outstanding against him/her (overdue)
- The ability to reserve and recall items (online reservation)
- Produce overdue notice
- Compile and summarise circulation statistics.

All these duties can also be done manually but computers can do them faster and be more error-free (Atinmo *et al*., 2000; Lancaster & Sandore, 1997;Ogunleye, 1997; Jegede, 2001).

Computers (ICTs) are useful in performing the following duties at the acquisition section of the library:

- Produces lists of books on order
- Send order slips and/or overdue orders to the book sellers
- Keep account
- Updating of catalogues

Serial control through the use of the computer is perhaps the most complicated task of house keeping. This is perhaps because of the unpredictable nature of serial publications. Some of the functions of the serials control system that can be handled by the computer are:

i. Listing of serials holdings
ii. Accessioning of serials (which includes relations, ordering, checking in, renewal of subscription, studying of notices when issues are not received).

However, the recent global advances in communications infrastructure, digital media, network services, and electronic commerce present transformational opportunities and fundamental challenges for libraries. Developments in these areas appear to provide opportunities for increased and enhanced library services, reducing costs and improving performance (Lancaster & Sandore, 1997; Atinmo, 2000; Adedeji, 2002; Young, 2001).

The use of ICT can transform the nature of work and improve business performance. Malhotra (2004) points out that techniques and technologies are key factors for effective business performance. Technique is a vital factor in using any modern technology. This is to say, the ability a person has to control, manipulate and interact with the machine (computer) improves performance. Strassmann (1997) states that it is not computers but what people do with them that matters. Librarians need to possess job knowledge that integrates with technological skill. They need to apply initiative (ability to apply new knowledge productively), must have the ability to work with others; possess managerial as well as supervisory skills. When librarians possess these qualities, their performance will improve. However, there should be standard metrics to measure performance. Young (2001) advocates on the importance of metrics to measure performance. A standardised metrics of performance will transform quantitative inputs and outputs data collection and structures into a quantitative output assessment framework. Lancaster and Sandore (1997) speaking on the need for performance metrics in libraries state that the nature of work in libraries is no more business as usual. Technology has totally transformed the way work is performed and has brought change. The forces of change are affecting libraries as well as librarians. The report of the National Academy of Science study states: No stereotype of libraries as quite uneventful places could survive the 1990s. Whatever stability and predictability libraries once had as ordered store houses of the treasures of the printed word were shattered by the digital revolution.

The intellectual function of libraries – to acquire, arrange, and make accessible the creative work of humankind – is being transformed by the explosion in the production and dissemination of information in digital form, especially over global networks (Library of Congress,2000). This transformational explosion and digital revolution improves performance and productivity. Christensen (1997) calls this technology

disruptive technology. He calls it disruptive because the ICT revolution made some companies lose market dominance. Christensen outlines the concept of disruptive technologies thus:

> Most new technologies foster improved product performance. I call these sustaining technologies. Some sustaining technologies can be discontinuous or radical in character …Most technological advances in a given industry are sustaining in character … Occasionally, however, disruptive technologies emerge… (these) disruptive technologies bring to market a very different value proposition …In the future, 'Internet appliances' may become disruptive technologies to suppliers of personal computer hardware and software(p. xviii).

As new emergent technologies can disrupt a corporation or industry by introducing a new value proposition, so the introduction of networked electronic services and digital media present challenges for libraries to differentiate transient trend from technology – related developments of lasting impact.

Library performance in an ICT-based electronic library system- library may have the following features:

- Percentage of population reached by the ICT
- Number of documents visited (viewed)
- Percentage of requests submitted electronically
- Cost per document or entry (records) viewed
- Percentage of total acquisitions expenditure

2.3 Availability of Information and Communication Technologies in Nigerian Academic Libraries and Elsewhere

The availability of ICTs in libraries in general and in academic libraries in particular dates as far back as the 1930s, and to the 1970s. According to Martin (1986), libraries are among the early organisations that started enjoying the benefits of ICTs. Imhoff (1996) states that some basic machines like CD-ROM, facsimile, telephones, photostat machines and others were made available in libraries in the USA as early as the 1940s. Fecko (1997) states that the introduction of computers has brought major changes in library work like: circulation, technical, acquisition, reference, and serials control. Piotrowski and Perduce (1989) carried out a survey of 200 academic libraries

in 50 states in the USA. One hundred and thirty (130) academic libraries responded to the survey indicating the major CD-ROM database availability. In Saudi Arabia, Siddique (1997) carried out a study on availability and use of IT (computer, Networks, e-mail etc) in seven academic libraries. The study showed that diversified computer-based library systems and databases and services were used in the respective libraries. It also mentioned some of the most and widely used systems like DOBIS, and MINISIS and the number of online and CD-ROM databases acquired by the libraries. In Nigeria, studies carried out by Jimba and Oladele (1997) revealed that CD-ROM use in academic libraries has provided an opportunity for users to easily access database information. For librarians it provides relevant information to their end-users without any tension. The specific finding revealed that the use of CD-ROM has provided a wide range of services, saving time and cost effectiveness in relation to search time, as opposed to a manual search which can be slow and tedious: and finally, general improvement of the efficiency of the library services . Oduwole (2001) carried out a study on the impact and use of CD-ROM databases in ten (10) Nigerian academic libraries. The result of the study revealed that high cost of subscription to CD-ROM databases was ranked high as a major constraint. Nonetheless, the introduction of CD-ROM has led to an increase in the utilization of journal collection in the reference libraries and in the status of libraries. AGRIS and CAB are found to be the most commonly used bibliographic databases on CD-ROM.

Kajogbola (2004) carried out a study on the impact of information technology on the Nigerian economy. He paid a special attention on manufacturing and services sector in the South-Western and South-Eastern zones of Nigeria and reported that in 1997 only over 600,000 computers were imported to Nigeria. Even though his study was not on the availability and utilization of ICT in academic libraries, it has something to tell us of the available computers. If not imported, computers cannot be available in academic libraries.

The real library automation exercise started in the USA in 1960 and moved to the UK in 1970. The innovation technology brought to library work can be phased into four. Initially, Tedd (1997) pointed out only three phases. The first phase, (1960) as the phase of experimentation; second phase, (1970) as the phase of the introduction of the off-the-shelf turnkey, and the third phase (1980) was characterised as the phase of

integrated systems offering circulation, acquisitions, serials control, cataloguing, and OPACs with all modules sharing a common database.

Mutula (2004) writing from Southern Africa however introduced the fourth phase in ICT availability and use in libraries. He further explains that in the late and early 1990s, academic libraries both in the USA and in the UK started serving their customers in a very specialised way. They developed portals or gateways to provide access to other portals or library information networks. Gorman (2001) discloses the availability of digital technology to provide digitised information to the users.Even though computers were first introduced in the USA, its use was not limited to only USA libraries. Great Britain followed the path of the USA in the 1980s and many other countries followed the path and adapted the method. According to Mutula (2004), the automation exercise started in the UK in the 1980s. The innovation of using computers in libraries made the availability of other ICTs possible the world over. Fecko (1997) states that libraries of various developed countries also started exploiting the services of ICTs.

CD-ROM technology has made the availability of indexes and abstracts possible to libraries that could not afford to provide on-line services. Today, technological advances have totally transformed the nature of work in all categories of libraries that have made the services of ICTs available. This advance has made the retrieval of information easy and with greater speed. Katz (1997), states that a librarian of today gets information with greater speed and with considerably less difficulty than librarians in times past. This is only possible when the most needed technology is available for librarians to work with. According to Rowly (1996), library management focuses on most relevant materials (devices) that can aid work efficiency. Webb (1998) asserts that the main and only mission for an academic library to exist is to make the necessary technology available and utilise them to provide an efficient service to the users. Breeding (2000) suggests that in the digital age, the need to function efficiently is the primary mission of any library. This need is the need to make the relevant ICTs available in the libraries. McKay (2001) advocates that libraries must adopt and use new ICTs in their day- to-day activities. In other words, libraries need to make sure that ICTs are available in the libraries.

Writing from Canada, Bentley (1998) states that academic libraries in Canada provide 'just in time' electronic materials for students and lecturers. Wilson (1998) talks of developments in academic libraries that are revolutionary in their impact and significance. Lynch (1998) speaks of the transforming and great change that has been taking place at all work places including libraries.

Milne (1995) reports from Australia on the availability and utilisation of ICTs. The report points out the tremendous increase of library users since the introduction of ICTs. The year 2000 Bulletin of the University of Science and Technology, states that University libraries and other campuses and departmental libraries have all forms of ICTs and the readiness of the library staff to provide quality services. Sturges and Feather (2003) state the availability and use of ICT in the UK academic libraries since the 1970s. Arms (2000) points out the need to have ICT-based libraries. In his words , the manual system of library operation is tedious and time consuming in Malaysia, as Teh (1997) states, it's mandatory for school and university libraries to have ICTs. Writing from Singapore, Abubakar (2002) states that the future belongs to countries that make use of ICTs.

A study carried out by Ortiz-Zapata and Quintana (2001) on the availability and utilization of ICTs in Port-Rican academic libraries reveals that there is not much of availability and utilisation made. A similar study by Pawankumarijha (2001) reveals that academic libraries in India have networked their services, and document delivery from one academic library to another library is made easy.

Coming to Africa, especially the southern and eastern parts, they have tried to provide ICT-based information services to users. Writing from Botswana, Mutula (2004) speaks on the need to make academic libraries ICT-based and on skill development of the academic librarians to effectively utilise the ICTs. Writing from University of Dar-es -Salam in Tanzania, Nwel (1996) talks of the availability of CR-ROM databases and a high rate of utilization of ICTs by students and lecturers. Nyunma (2004) states that academic staff including librarians and students utilise electronic information in university of Dar-es-Salam

In Ghana, the DANIDA project has made document delivery/resource sharing easy and practicable. Hussen (1999) states that even though the Universities enjoy the benefits of DANIDA project, there is still need to provide enough ICTs in the academic libraries. The recent visit to Balm Library, University of Ghana, by this researcher reveals that universities are no more enjoying the DANIDA project. According to the librarian who works in the ICT unit of the library, the project (DANIDA) could not continue due to the funding problem. Instead, the university libraries have created what is known as a consortium in order to support one another and share materials in both print and electronic format. Westra (1993) mentions funds as a key problem that prevents African libraries from having ICTs. Younis (1998) writing from Jordan states that being connected to the Internet is a number one priority for Jordanian University libraries. Nigeria has a population of 140 million, with 36 states and 774 local government areas. Ajayi (2002) further points out that there are 37,000 primary schools, 6,000 secondary schools, 50 research centres and 125 tertiary institutions (41 Universities) as at 2001. Of course this number is no more correct as more and more universities are emerging, increasing the number of tertiary institutions when compared to what Ajayi pointed out in 2002.The implication of this is that there are human resources available to utilize and improve the growth of the economy. He asserts that the country (Nigeria), has both the natural and human capacity to build an ICT infrastructure, yet the state of ICT development appears to be very poor.

Ogunleye (1997) reports that the automation exercise in Nigeria started as far back as 1975. This move was followed by the National Universities Commission (NUC) in conjunction with the World Bank Credit Agreement to automate their operations. In 1991 all federal universities were provided with a microcomputer and library of software called TINLIB (Inf. Navigator).At the premier university (University of Ibadan) which was far ahead in her automation exercise than the rest and was given an enhanced (updated) version of TINLIB, it appears that the circulation and cataloguing modules of the TINLIB software worked for some time but currently the circulation desk is back to the manual system of operation. The CD-ROM section of the Kenneth Dike Library at Ibadan functions very well till date.

The interview of the Vice-Chancellor of the Obafemi Awolowo University (OAU), Professor M. Makanjuola by the NTA Ibadan conducted on the 19th of August, 2004 reveals that OAU has 3 VSATS and 18 subnets. In the interview, the Vice-Chancellor (VC) revealed that most of the lecturers have Internet connectivity. When he was asked of the ICT skills of the staff, he said that about 90% of his staff were ICT literate. When he was asked of the situation in the University library, he said a big transformation was also going on.

Jagboro (2003) carried out a study about Internet use in Hezekiah Oluwasanmi Library of the Obafemi Awolowo University. The study considered only students and lecturers and the finding reveals that the OAU library provides Internet access to the students as well as the staff who may not have Internet access in their offices, and students who decide not to use the computer lab Internet facility. Abolaji (2005) states that the Hezekiah Oluwasanmi Library of the Obafemi Awolowo University started its automation exercise with eleven PCs and some peripherals all connected with a 16-port hub in a star configuration. Hezekiah Oluwasanmi Library of the Obafemi Awolowo University made the following hardware available as at Sept 1997, one (1) server; one (1) backup server Compaq Desktop Pentium); three (3) Compaq desktop Pentium (full multimedia workstations); six (6) Diskless Intel 486 workstations and attached peripherals and of course, the TINLIB library package for computerisation purpose residing in the network server were the only information technology facilities available. The number of available information and communication technologies has drastically increased to over 54 computers and more research is being carried out on library package and in-house software is being developed.

Today, literature reveals that more and more information and communication technologies are available in academic libraries in Nigeria. According to Oketunji, Daniel, Okojie and Abdulsalaam (2002),libraries in Nigeria as at 2002 had the following operating systems: DOS, WinMe, Windows 95, Windows 98, Windows 2000; WinNt and Linux. The same study also indicated the following peripheries available in all the libraries studied: Fax machines; telephone lines; photocopiers; scanners and printers. As far as library automation exercise is concerned, the study revealed the following library functions being automated: serials; collection development; circulation services; and others. The availability of CD-ROM

technology is also very encouraging in Nigerian academic libraries and utilised accordingly as (Agboola, 2002; Ajibola, 2000; & Nwali, 1991) reported.

The report submitted by the Mortenson Centre for International Library Programs at the University of Illinois, Urbana Champaign (2005) to McArthur Foundation however indicated that some university libraries in Nigeria did not have all the information and communication facilities and urged the McArthur Foundation to extend helping hands to salvage the situation. The report also pointed out that the lack of funds as a key factor for libraries not having the necessary ICTs. The report also found out that installing Internet facility was very expensive and that there was unstable power supply and insufficient staff development.

Okiy (2005) in her paper titled "Strengthening information provision in Nigerian University libraries through information and communication technologies" states that the availability of information and communication technologies would improve and increase librarians' job performance and at the same time assist students and lecturers in producing quality research works. Adeogun (2003) states that the availability of Internet facility in academic libraries provide or facilitate on-line access to the world of information to students and faculty members. Alasa and Kalechukwu (1999) outlined the benefits of ICT availability in university libraries as follows:

- quick and convenient information exchange;
- access to experienced and expert individuals in many fields;
- access to regular updates on topics of interest;
- enhancement of teamwork across geographical distance;
- transfer of data between machines;
- promotion of a great platform to have fun and be entertained;
- facilitation of the sending and receiving of e-mail;
- facilitation of electronic search; and
- facilitation of transaction/electronic borrowing.

2.4. Utilisation of ICTs in Nigerian academic Libraries and Elsewhere

It is the availability of information and communication technologies that makes utilisation possible. But, what is also available if not properly utilised, will not be able to produce the desired results and every effort that is put in making the necessary technologies available would have also been a waste**.** Lane (1990) states that no matter how much money is spent in acquisition of equipment, the calibre of planning team members, unless librarians are able to fully utilize them, it is a waste. But she continues by saying that utilization depends on the nature and quantity of available ICTs. So, utilization fully depends on the availability of functional ICTs and also on the librarian's ability to fully apply his/her skill**.** The presence of information and communication technology must be fully utilised by the academic librarians to compliment academic staff in their teaching and university administration, in helping students and researchers to produce quality research publications. The use of ICT improves workers output through ICTs like Internet, workgroup, groupware, electronic document management and portals. Workers may retrieve, store, share and update and create information with the use of ICTs.

Today**,** there is an exponential growth of literature that has caused storage problem for the librarians and speedy utilization by all categories of users. The librarian may take advantage of the computer and other available devices while searching and retrieving the required information useful to users. In India, computers are being heavily used in library and information services for information processing and repackaging and on improving products and services of library and information centres (Pawankumarijha, 2002). With the help of the most advanced technologies, libraries are now able to store information in electronic formats. This is opposed to the time when every printed material used to be stored on the shelves.

The use of information and communication technologies in academic libraries has made a significant difference in the way librarians perform their professional duties. For example, in the cataloguing section of the library service, computers and other technologies are in use. A study carried out by Oduwole (2005) reveals that sixteen (16) Federal University libraries and two (2) State University libraries have automated their cataloguing processes using the TINLIB software while two others use the LC and CD-ROM database to aid cataloguing. In the area of performance of automated cataloguing system, the author states that the efficiency of automated cataloguing

system in Nigerian academic libraries have transformed productivity though could not substantiate performance in measurable terms. It also failed to mention some of the limitations librarians faced in the cause of utilization. The common problems academic libraries face are not new. These problems are poor computer knowledge of the librarians, incessant power cuts and lack of infrastructure among others.

Badu (2004) carried out a comparative study on strategic management of information technology in university libraries in Ghana. He compared five (5) university libraries in Ghana with five (5) university libraries in the UK. The study assessed the level of automation in the two countries. The finding reveals that low level of information technology application existed in all Ghanaian university libraries. There was a positive correlation of information technology sophistication and organisational performance as the UK universities' libraries appeared to outperform their Ghanaian counterparts in terms of service development.

Igbeka and Okpala (2004) studied the usage pattern of CD-ROM database technology by students and library staff in Kenneth Dike Library, University of Ibadan. Data was collected using records of users between the years 1995 and 2001. Two sets of questionnaire were distributed to determine the number of satisfied and unsatisfied users and library staff on how to improve the services. Results showed that users were not knowledgeable on how to conduct a successful CD-ROM literature search. Lack of trained library staff also was found to be among strong reasons why CD-ROM users showed dissatisfaction.

Today, all categories of information users prefer timely access to information and speedy retrieval regardless of its location. In response to this libraries of all types are meeting users' information needs by installing modern technologies. Spitzer (1991) opines that academic libraries are using (installing) some of the modern technologies like the facsimile (or 'telefacsimile' or 'fax') machines to speed interlibrary loan requests and document delivery service. The number of libraries offering fax services is rapidly increasing. The 1991 edition of the Directory of Telefacsimile Sites In Libraries in the USA and Canada lists 3,092 sites, up to 63% over the previous years edition and about 800% over the 1986 edition. Boss (1990) reports that at least 1000 new facsimiles were installed in libraries in 1989 – double the number installed in

1988. Of course, this is belated information. Fourteen years later, libraries have made tremendous improvements in the way by which they provide information for users. Today, many other technologies are used to access and retrieve. Where facsimile facility is not available, e-mail can be used to request for materials outside the physical environment.

In Puerto Rican universities a study was carried out by Ortiz-Zapata and Quantana (2001) on how ICTs were utilised by both librarians and library users. Questionnaire were sent out to sixteen academic libraries that have implemented the use of ICTs to different levels. The finding reveals that 95% of the libraries make use of the facsimile technology. Librarians use fax in order to send orders on their collection development practices, administrative purposes and many others. On e-mail use, six university libraries were investigated. The finding reveals that 35% of the libraries indicate the full access of e-mail facility and complete use by librarians. According to the findings, e-mail was used primarily in teleconferencing purposes and interlibrary loan functions. The use of e-mail is tremendous in supporting the librarians to do their work. According to Fecko (1997), e-mail has a profound influence on the communication patterns of those who use it.

Ojedokun (2001) carried out a study on the access and usage of lnternet facility in the University of Botswana. The study was focused on students and the finding shows that computers were not enough for all categories of Internet users in the university. The major finding of this study was that a student spent only three (3) hours on the computer per week. The reason was the lack of enough available computers to accommodate all.

The use of GSM facility in academic libraries has improved the services librarians' provide to all categories of library users tremendously. Fatoki (2005) submits that the use of GSM has contributed to speedy delivery of documents needed by researchers or students. Telephones and e-mail facilities are vital tools to facilitate prompt handling and fast responses to the stream of patrons on reference queries. Usually most academic libraries have one phone each (land line) which is mostly used for administrative purposes and located in the library administrator's office. Fatoki (2005) states that now that GSM facilities are available, mobile phones can be

deployed at the enquiries desk. Ekpenyong (2003) in Fatoki (2005) carried out a survey on library use in the University of Ibadan library system for a ten-year period– 1990/1991-1999/2000. The survey revealed that only about half of the matriculated students registered in the library. This decline, in her analysis, stems from the library system's inability to reach out to its target users. She concluded that it is imperative for the library to reach the academic community by sensitising them and alerting users on the available resources in the library. Short Message Services (SMS) or text facilities available on all mobile phones, could be used to create awareness amongst the academic library clientele about upcoming events, and new arrivals. This could be flashed through a facility called "broadcast" where one text message is sent to all the library contacts listed in the address book on the mobile handset at once (Fatoki, 2005).

Becker (1998) conducted a study on Internet use by 2,250 teachers from public and private schools in the US. The study revealed that 90% of the teachers had Internet access. More than half of the teachers (59%) had Internet access at home. A majority of the teachers (68%) used Internet to find information resources for preparing their lessons. Voorbij (1999) examined the use of the internet amongst students and academics in the Netherlands. A questionnaire was distributed among 1,000 members of the academic community and three focus-group interviews were also held with faculty members. The study revealed that the web was being used primarily to search general, factual, ephemeral or very specific information.

Brown (1995) opines that the use of ICT in information and records management is significant as anything. According to Brown, the use of automated library services provide significant benefits in work measurement, cost reduction, productivity improvement, and better services to customers and clients. Freedman (2006) points out the use of Internet facility in public libraries in the US. The use of Internet in public libraries in the US has brought more needed information to all who need it. The use of Internet has led to dramatic increases in the circulation of all library information services and materials in ways that extend the use of those services well beyond the walls of the brick and mortar building.

Utilisation of information and communication technologies in Nigeria can improve the lot of librarians output, also the quality of research publication, that is, the quality of our journal articles can match the quality of journal articles published in most developed countries; the quality of lecture delivery; quality of teaching; quality of graduates in labour market among many others could also improve. The Mortenson Center for International Library Programs at the University of Illinois, Urbana Champaign indicated that students use the library mainly for study space; few faulty members use the libraries' resources regularly and most seemed unaware of new developments and resources within the library. The library staff were struggling to provide better access to electronic resources while coping with unreliable power, on and off access to the Internet, low bandwidth, and inadequate funding. Many view the libraries as weak and unable to support research and teaching.

The development of effective information delivery system is a key component of university teaching and learning and modern technology greatly enhances such system. Since 2001, many Nigerian institutions have worked with eIFL.net (Electronic Information for Libraries at www.eifl.net), an independent foundation that strives to lead, negotiate, support, and advocate for the widespread availability of electronic resources to library users. Through the eIFL project, academic libraries have been able to have full access to EBESCOHost bibliographic and full- text databases. EBESCO information service is a well-established aggregator of electronic journal content that offers full text access to thousands of journal titles in such diverse areas as science and technology, social sciences and humanities.

Academic libraries are part of the entire academic environment in any campus. Therefore, they must continue to improve on their ICT use. Ogunsola (2005) opines that academic libraries are integral part of an academic environment. Therefore, they must continue to make increasing use of the Internet to access materials, people and resources and display their own web pages. Supporting this Okon (2005) states that network advances have transformed modes of communication, provides electronic cataloguing, electronic Online Public access Catalogues(OPAC), electronic acquisition and serials control, electronic interlibrary loan and electronic circulation functions. As academic librarians continue to improve on the quality of their services,

it becomes truism that users' will be satisfied and frequent utilizing the information products made available in the libraries.

Garcha and Buttlar (1996) warn however that academic librarians ability to support the teaching and research programme of the academic community depends on their effective use of computers to access and share information sources. In other words, they must be versatile with they work with and must win of the confidence of the entire library users. Chisenga (2006) reiterates that ICTs present an opportunity to provide value-added information services and access to a wider variety of digital – based information resources to their clientele. Moreover, libraries are using modern ICTs to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, improving management information systems. Inorder to maximally utilize the ICTs, academic libraries in Nigeria need to look inwards in the quality of human resources available because it is the human beings that utilise the ICTs. The next topic treats the issue of human resource development and ICT utilization.

2.5. Human Resources and Utilisation of ICTs in Africa and Nigerian Academic Libraries

A 1997 United States national survey of Human Relations Development executives concluded that the most critical need in today's evolving American workplace is additional training for employees in the use of information and communication technologies (ICTs). Indeed, ICTs and end-user training in their effective utilization are singularly the two most critical success factors for many contemporary organisations. Most organisations assert that people are their most valuable asset. As such, managers expect appropriate investments in human capital, such as programmes that insure employees understand how best to use available resource (e.g., other people, technology, and information) which should yield high dividends for their companies. A crucial means for achieving such employee expertise is the provision of appropriate training. The value of training according to Crooks (1994) is a truism of human resources management.

Academic librarians need to undergo training programmes in order to possess the required skills to utilize the available information and communication technologies effectively. Library management needs to recognise the importance of training workers on the use of ICTs. Unless library administration recognises this need, and provides proper training, the amount of money put to purchasing of the ICTs will not yield any benefit as long as it is not maximally utilised and librarians need the training to acquire the needed skill. Lancaster and Sandore (1997) state that librarians must be flexible and versatile in the knowledge of ICTs.

Although training has been shown to result in high returns on investment, studies indicate that organisations like academic libraries must thoughtfully plan the training process in order to obtain such results. Studies by Danzinger, Park and Jennings (1999) concludes that the beneficial effects of training can be increased by applying the following learning principles as:

- Motivate the learner
- Provide feedback
- Reinforce the learned behaviour to increase the likelihood that it will be repeated
- Increase the learner's performance through practice.

A study carried out by Eve, and Brophy (2000) reveal that conferences and workshops inclusive of other training methods aided the librarians' skill in their use of ICT and performance of their jobs. Studies also indicate that skill acquisition process of librarians in academic and public libraries in the United Kingdom and attendance at seminars/workshops among others provided the opportunity for librarians to work effectively.

If academic librarians underwent training regularly and effectively and put to practice what they learnt in their work places, the people they serve (information users) would show satisfaction and the management would not hesitate allocating more funds towards ICT related_ projects. Today, the demand for ICT based library system and services with capable librarians grow higher than it was thirty years ago. This is because today, the library and library profession are going through a period of considerable change and this change requires librarians' flexibility and attitude to accept the changes brought by ICTs. The shift of libraries from physical collection

and towards providing access to information – increasingly networked information, which differs significantly from print-based information, makes it important for library administrators to identify training and re-training as a vital element in their retooling of services for the twenty-first century (Lancaster & Sandore, 1997). Jennings (1992) identifies a shift in values from the traditional physically based roles that demand new skills from library staff:

> Libraries need to move away from a production mode of service to a facilitator mode. The process of selection, cataloguing, storage, and lending of library-owned collections will continue, but decline in importance in relation to new services will enable clients to undertake the production process themselves with ease and efficiency in the electronic environment. The library's increasingly important new roles will also be to provide clients with advice about electronic information and to help them develop skills in accessing, using, and managing this information. There is no doubt that the staff profile of university libraries will change if the present production based service declines as print collections are replaced by electronic publishing, delivery and access (p. 83).

Holt (1995a) catalogues what he sees as the most pertinent staff training issues of the 1990s. Several of his points are related to the need for staff to become conversant with, and stay at the for front of new technologies as they are introduced into the mainstream of library services:

- Professional staff need to be trained to recognise that their employment opportunities will endure only so long as their skills are up-to-date.
- Cataloguing may give way to abstraction; reference may give way to answering E-mail queries.
- All these changes require extensive re-training.
- Training must make clear the real purpose of instituting a quality movement in a public library.
- Public librarians need to be trained in the skills of organisational effectiveness, including job empowerment.
- Public librarians need to be trained to work increasingly with non-librarians. Specialists in computing, networked communications, literacy, education, training
- As library dependence on networked computing increases, shifting job roles and changing work will make regular re-training a survival imperative for all public librarians.

- Public libraries will have to provide advanced and ongoing training in new technology…technology training will become more technology based.
- Increasingly, public libraries will train their constituents in the use of information technology.(pp. 559-560)

Library administrators should always plan on how best to prepare their workers for the provision of quality services in their libraries. They also need to assess the content of the training tools, the method by which the training should be presented and the need for training. Developing a plan to address the actual training needs of staff working in electronic environment or a combination of print/electronic environment requires careful study and planning. Identifying training needs can help the library administrators to know how long a staff should go for the training exercise and also determine the kind of training to be received.

However, it is one thing for library administrators to identify the training need of their workers and allow them to go for the needed training and acquire the skill, but it is another thing for the librarians to show satisfaction with the quality of training they receive at the training centre. Hickox (1994) surveyed 180 academic librarians in the AMIGOS consortium to determine how well current training programmes were preparing them to use the Internet. The findings concluded that academic librarians are generally dissatisfied with the quality of training received for network use. Quality of training was ranked very low by respondents. Glogoff (1989) discusses a programme at the University of Delaware Library which includes formal needs assessment and training, a statement of goals, training a core group to train others, evaluation, self-paced workbook learning, manuals and general orientation session. If one closely looks in to the training process of our librarians, most of the things that are practiced in University of Delaware are missing here in African university libraries. For instance, how effective and qualitative is the training processes that have been organised by the software companies in Nigerian academic libraries? The answer is not far-fetched. The vendors organise only a week long in-house training on how to use the software and that is all. The next time when their services are needed in a particular library, to get them is always a problem. The librarians who are not trained very well cannot also solve problems and the implication of this is that

information users will not be served properly with the kind of materials they may need, or work may be suspended until after the vendors come and ratify the problem. In Nigeria, we need the same practice like that of Delaware University library. We need statement of purpose, goals and objectives for ICTs in our academic libraries. When this happens, our success story will be a positive one, it will change from complaint to praise and from underperformance to performance and from under-utilization to maximum utilization.

Cowan and Usherwood (1992) carried out a survey on the impact of information and communication technology training in public libraries in Canada and England. The result revealed the underlisted needs for technology training both for staff and managers:

- learn how to operate equipment
- keep informed of ongoing technology development
- learn how to develop databases for organising and storing information
- anticipate user needs

It is important that librarians possess comprehensive knowledge to handle ICTs in academic libraries. One should not say my work is only associated with the e-mail services and what I need to know is all about the e-mail. No, it goes beyond that. There is no guarantee that one will stay only in a particular place of work for life. Library work is rotational, you work here today and tomorrow you will work there. Library administrators also need to undergo ICT training. This will improve the quality of service facility the library will have and the provision of timely information to the users. Most of the library administrators especially those belonging to the old school may not show much interest when the issue of ICT is mentioned but if they undergo training on the use of ICT and are able to re-skill themselves, there will be much improvement in the nature of work. Tenant (1995) argues that library staff who work with electronic resources need to know not only what the resources are but also how to successfully apply them in their daily work.

> Staff is a library's single most expensive resource and should be treated that way. Any treatment made in retooling staff skills to meet the challenges and opportunities of the electronic age will be repaid many times over in better service to clientele and a vital and engaged work force (p 46).

Writing from Nigeria, Adedeji (2002) points out that there is need for librarians to possess skills that will make them useful in this age of technology referring to the 21st Century. Vasanthi (2001) warns that librarians of the 21st century must be IT -literate. If all the needed ICTs are available and yet the librarians do not know how to work with them, of what value will spending the meager resources be? Library users expect the provision of quality service and management also expects improved output from the workers but if workers are not trained very well on how to use the available ICTs, it will be difficult to predict good performance.

One of the ways by which the library management protects librarians from being non-productive is by giving them appropriate training, organising workshops and seminars. Short and long term training also will help them have mastery of the systems they work with.

Prytherch (1998) highlights out four (4) leading points in staff training. These are:

- Identification of training needs
- Planning of appropriate responses
- Carrying out training
- Evaluation of the outcomes: transfer of learning to the workplace.

Prytherch (1998) sees the above points as key points for successful utilization of ICT. In other words, for librarians to have skills to work in ICT-based libraries, they must be skillful. The above points are also pointers for library administrators who may want to computerize their libraries. Before embarking on the computerization exercise, they must first consider the strength of their staff. Making the library an ICT base requires a lot of money, time and professional advice. To go ahead in purchasing the ICTs without considering the staff strength will be nothing but a waste. Some library administrators for instance want to impress their vice-chancellors by trying to computerize their libraries so that their tenure as university librarians may be long. They may quickly organise a week-long workshop by vendors who are only hungry for money to enrich their pockets. Soon after the training, one will not see the vendors anymore and the facility in place may start giving them a problem. Even if the week

long training is given, the management should know that it is not enough and more training should be organised for workers. .

Atinmo *et al.*, (2000) state emphatically on the need for library managers to do a feasibility study on automation exercise, staff training and so on. Kreizman (1999) supports the idea of feasibility study, staff training and appraisal procedures. In the words of Kreizman, (1999) appraisal means noting errors or shortcomings of the training, appraising performance reviews, asking staff if there is specific training they need and so on. Staff will need to be trained on an ongoing basis.

There is a link between librarians possessing ICT skills and their performance. A well-trained librarian who also possess ICT skills will perform far better than one that has not had training. Kreizman (1999) sees training as a key to performance and productivity. Bryson (1999) contends that personnel training and organisational performance are tied together. According to Bryson, training may take different forms like on-the-jobs training, attending conferences and seminars, management placement programmes or attending professional courses. Aina (2004) states that a well – trained and competent staff is an asset to any organisation including the library.

Adeyoyin (2005) carried out a study among professional librarians and para-professional librarians level of information and communication technology literacy in Nigerian academic libraries. A survey method was used to ascertain the level of ICT literacy among library staff in a range of Nigerian libraries. Analysis of data revealed that on a self-assessment basis, out of about 268 professional librarians, only 87 (apprx.32%) were ICT literate; 181(apprx.68%) librarians were ICT illiterate. Out of the 358 paraprofessionals, 28(apprx.8%) were ICT literate, while a vast majority, 330(apprx. 92%) were ICT illiterate. However, librarians' level of ICT illiteracy can be reduced through attending workshops, conferences and short-term and long-term ICT training.

Troll (2001) justifies the need for librarians to have IT training. He states that "new technologies are changing the services that libraries provide". In other words, librarians also need to have new skills to fit into the new work environment. The study carried out by Ryan and Watson (2003) support the suggestions made by Troll

(2001 when they said the development of information and communication technologies have changed the nature of work in organisations.

Research also reveals that investments in training of workers appear to be associated with higher level of productivity. Ryan and Watson (2003) studied the level of ICT utilisation in three Australian industries – printing, hair dressing and libraries. The development of ICT has not had a uniform impact on the nature of work in an occupation like hair dressing but in printing and libraries, the rate and pace of ICT take-up has been high and this has had a significant impact on the nature of work. Skills acquisition and skills maintenance are important features in the new economy today. Training workers on how to use ICTs makes the workers provide strong economic growth, increased levels of productivity growth and globalised market.

A study carried out by Flatten (1997) suggests five things to be changed if academic libraries are to make any meaningful impact in a technological age. These are: attitude, infrastructure, standards, staff skills and service practice.

The study found out that all librarians did not have the same attitude in a computing environment. Some expressed fear and others expressed confidence. The study also revealed that among those who expressed confidence are system persons. But system persons need skill training and re-skilling so that they can be very useful. There is no end when the issue of upgrading ICT skill of workers is concerned.

Working with a useful skill and learning new skills build confidence and forms positive attitudes. Tiefel (1995) states that training transforms life and develops transferable knowledge and capabilities. Roy (1995) opines that the virtual library of today needs librarians who can work and perform. From this assertion, it can be deduced that there is a link between librarians possessing the appropriate skill and job performance. Nwakanma (2003) declares that information professionals must be aware of the technological age and the changes the age has brought and the challenges the professionals face. According to him (Nwakanma), information professionals must be capable of using and demonstrating emerging ICTs. Most information professionals who may have the traditional skill need to have the ICT skill which augments the traditional skill (Biddiscombe, 2001; Sharp, 2001). Ashcroft (2004)

states that the emerging technologies are challenging the information professionals to acquire new skills so that they will be able to fit a new working environment.

The American Library Association (ALA) states that education and continuous education is one of the key factors for information professionals to acquire the necessary ICT skills (ALA, 2004).ALA emphasises on continuous professional development which will bring in them competences. In the UK, the Chartered Institute of Library and Information Professionals (CILIP, 2004) offers a lot of training opportunities for librarians so that they will be able to work within an ICT based library system. Here the question comes :What role/s is NLA playing to make its members more useful and marketable in the age of this great change – ICT?

The ICT use in libraries are not limited to a particular section of a library nor to a particular group of people. It spills over unto all sections of work and to all librarians who have close contact with the information they serve. Ashcroft and Watts (2004) state that library and information service is changing fast, development in IT flatters management structures, changes management trends and strategies. Therefore, one needs to have skills to be useful and adaptable to the working environment.

2.6. The Effect of ICT on Librarians' Job Performance in Academic Libraries in Nigeria and Beyond

Library performance is a process. Traditionally, libraries have judged their effectiveness on flows (outputs), number of loans, number of requests answered, and so on. Vickery (1995) in his paper titled: " Acquisitions in an electronic age: building the foundation for access" stated that the introduction of information technology has enhanced the process of acquisition in libraries, by providing access to electronic journals, books, microforms, CD-ROMs, and networked data. According to Cram and Shine (2004), librarians performance can be measured in terms of statistics: number of loans circulated to users; number of requests made electronically and answered accordingly; document deliveries made electronically; number of websites visited and so on. In the words of the authors, the quality and nature of services provided amounts to library effectiveness (performance). Moreover, Barclay (2000) submits that the number of loan users served electronically, number of websites

visited by library users through the help of librarians, cataloguing and classification exercise, on-line search and other activities performed.

From management point of view, degree of measure of various aspects of library performance is required in order to ensure accountability and to make decisions about resource allocation, as well as to point the way for continuous improvement of processes and services (Cram & Shine, 2004). Librarians by their very nature are managers and if they try to measure various aspects of library performance in order to ensure accountability, they are more justified. Measuring services in a quantifiable way will help those in charge of resource allocation to provide adequate financial assistance so that much can be achieved. Aman and Norliyana (2002) contend that libraries are information and knowledge service providers. This is to say that the services they give to community of scholars can be quantified and also measured. If services are measured and the degree of performance is found to be low, it is due to librarians' inability to function properly with the modern tools. Montanelli and Stenstorm (1999) state that, "Although technology is a powerful tool, it is people – librarians and staff –who build user-centred libraries." It is the quality of the people who work inside the library that makes the difference between an excellent library. In support to this, Sirkin (1993) states that: " The bottom line is that all of the major causes of customer dissatisfaction are strongly linked to human performance. Therefore an organisation's staff has the greatest impact on the satisfaction of is customers".

Students, lecturers and researchers depend on academic librarians' to get access to the information sources that are held on library database. However, this dependence fades away when the information users discover librarians' inability to assist them in locating the material in the library. This could be caused by lack of quality personnel. Kebede (1999) identifies shortage of staff both in quantity and quality, to be one of the main problems of libraries in developing countries. Tan and Foo outlined three problems in assessing service quality. The first one according to these scholars was the intangibility of service, which cannot be displayed, physically demonstrated or illustrated. The second one was that service performance depends very much on the level of library users' demand. The third problem was the high degree of people

involvement, both from librarians and users, in delivering a quality digital library service.

Gorman found the seven deadly sins of library service that can prevent a library from becoming user-centered to be apathy, brush-off, condescension, coldness, robotic, rulebook, and runaround library staff. He further explains each of the problems. Apathy happens when the library staff lacks the interest or enthusiasm or concern to serve customers. Brush-off happens when librarians refuse to listen to the customers. Coldness happens when the library staff is neither friendly nor enthusiastic in serving their customers. Condescension happens when the library staff feels superior and looks down on the users. Robotic service happens when the library staff is dependent on the library rules and less concerned with satisfying customer needs. Runaround happens when the library staff treat users badly by not giving them the help or information the user needs or by deceiving the user.

Calvert (1994) analysed the effectiveness and perceptions of New Zealand public library. It was found that all librarians, local, political councillors and users who participated in the survey agreed that one indicator, namely, the helpfulness and courtesy of library staff, determines library effectiveness. Bakeri (2001) points out thirteen (13) key information technology competencies needed for information professionals in Malaysia. The basics are: word processing, electronic mail, Internet and Intranet, graphics, presentation and publishing, spreadsheet, project management, design, development, and administration of database, system maintenance, design and development of application in web, system analysis and programming. It is important for librarians to possess strong technical expertise.

Poll (2001) used the percentage of staff devoted to information technology (IT) services as one of the performance indicators for library electronic services. Poll calculated the number of full time staff members involved in planning, maintaining, providing and developing IT and web-based services. The calculation also included staff in reference and training.

Banun and Norhayati (1997) submit new criteria for librarians in Malaysian public libraries. According to them, librarians need to be webmasters and Internet

information managers who are capable of searching, scanning, analysing and compiling selected information according to the library users' needs and capable of creating a special web directory, hosting it, maintaining it and monitoring it in a way that benefits the library users.

Igwe (2005) in his paper titled "Harnessing Information Technology for 21st Century", states that the advent and use of electronic mail, Internet and PCs on every desk and its application to education have produced amazing results. However, he failed to state what those amazing results were and they affect academic libraries in the southwestern Nigeria. Hawkins (1998) contends that knowledge and information have become the most important currency for productivity, competitiveness, and increased wealth and prosperity. Berndtson (2002) opines that librarians use information technology in libraries to streamline services. In the words of the author, librarians perform duties like on-line cataloguing, automated lending control; purchasing and accessioning of materials; automated indexing services; converting documents from manual to digitalised formats, weeding outdated materials; searching the world wide web; sending e-mail messages; document delivery services and networking, etc.

Writing from South Africa, Ocholla (2003) opines that if academic librarians had to perform their duties effectively, they need to have computer efficiency, good knowledge in word processing, spreadsheet; database construction and management; on-line searching and retrieval; CD-ROM services; electronic current awareness service; automatic indexing and abstracting; text digitisation; library automation systems; telecommunications; selection of hardware and software, facsimile transmission; electronic document delivery and others. Kloppers (1996) contends that quality education of information professionals in an ICT-based environment would assist librarians' to do their jobs effectively. He mentions the categories of duties librarians perform as: electronic awareness services; using hypermedia/multimedia technologies to transmit vital information; on-line database searching; electronic document delivery from remote sites; cataloguing and classifying library materials for easy retrieval; making Internet search and others.

Moreover, selection of relevant materials; resource sharing among others through networking; foster and direct communication among scientists and researchers; virtual and on-site reference services; better document delivery systems and services; availability and provision of full-text materials on the Internet are what librarians are doing today. Creating cooperation and networking of information services today is improving the rate of job performances of librarians. Khalid (2000) summarises in the following words:

> Co-operation and networking in library and information systems provide a wider access to collection, improve public and technical services and enhance operations by sharing resources, reducing duplication and offering more cost effective services.

Today, most academic libraries in the developed countries have integrated electronic resources and provide access to technology based information to their users. This is true in all areas of library work including collection development. However, the challenges of integrating electronic resources and technologies into the process of collection development are many, and faceted. Beyond task-oriented considerations, such as the selection process itself, there are large-scale management issues to consider such as budget, policy, personnel, and technology. Some of the biggest problems, not surprisingly, stem from simultaneous decreases in funding and increases in operating costs. Collection budgets are at special risk because they are not directly connected to the number of staff positions or level of user services (Otero-Boisvert, 1993). Academic libraries note the impacts of electronic technologies on research, such as increasing demands for electronic searching capabilities, demands for access to machine-readable scholarly texts, and use of network discussion groups for scholarly communication (Shreeves, 1992).

Three areas of collection development that seem to be the most problematic are selection, acquisitions, and inter-institutional cooperation. Two themes pervade the discussions: the shift in library philosophy from ownership of locally stored resources to provision of access to electronically stored resources; and the need for rethinking collection development policy, both to support the new philosophy and to better deal with new types of resources on a day-to-day basis.

Selection: The use of information and communication technologies provided solutions to the problem of selection of library materials. Gregory (2000) submits that selecting information sources electronically has a significant positive impact on librarians' job performance. However, Gregory restates that it is the responsibility of librarians to carry out library need assessment as a tool to determine what materials to select electronically. Evans (1995) also points out the importance of need assessment in academic libraries. "The electronic environment," he says, "creates several dichotomies...print versus electronic; ownership versus access; user versus institutional need; free versus fee; gatekeeper versus user selection. It is not a matter of either/or, rather it is a matter of determining the proper local mix" (1995, p. 260). The next step in the selection of electronic materials is the formulation of collection policy and practice. Evans discusses formats and selection issues, and provides two valuable sample documents: a sample policy for electronic resources management, including 41 selection criteria related to library policy, vendors, technical concerns, costs, and local needs; and a checklist for CD-ROM products and subscriptions.

Acquisitions: Acquisitions staff experienced great changes with the advent of automated processing. From the beginning, automation eased the labour of this detail-intensive and repetitive work. Improvements continued with enhanced integrated library systems, and time-sharing services from bibliographic utilities or vendors (Evans, 1995; Zhou, 1994).

Inter-Institutional Cooperation: The tradition of cooperative collection development and resource sharing among libraries began decades ago as means to alleviate problems of lack of space and costly duplication, especially for seldom-used materials. Now, with electronic networks facilitating cooperation, the lines are blurring as to what constitutes ownership and resource sharing. Because of the vast storage capacity of electronic media, space is no longer the issue. Rather, the issue for libraries is the role they should play in access provision and document delivery when end-users have direct access to OPACs and myriad of other information resources available through network connections (Evans, 1995).

Crowe and Sanders (1992) see these technology-driven changes as actually increasing the need for cooperation and communication among institutions. In order to continue to provide effective physical access to documents, libraries must increase cooperation

to overcome potential funding and management problems, such as communication failures, and lack of standard access and authority for resource sharing. Today, due to knowledge explosion, libraries cannot purchase all print materials and stock them on the shelves. With the introduction of information sharing, what is even not physically available is made possible through network and information sharing protocol. According to Summerhill (1992), a single network can be shared by library personnel and end-users –in effect, a restructured inter-library lending model. He foresees innumerable opportunities for sharing information resources *via* electronic networks. Libraries will be called upon more than ever to make decisions about mounting databases on local systems, and providing access to remote resources and services.

Several other authors suggest comprehensive approaches to library collection development in an electronic age. Evans (1995) provides an excellent general overview of collection development policies and fiscal management for libraries as a whole. A highly informative success story is the comprehensive selection model developed at Mann Library over the past decade as a means to mainstream electronic resources into the library. Demas (1994) says the model involves breaking the task into manageable units, developing expertise in selecting resources regardless of format, and anticipating impacts throughout the institution. An important component is a standing committee, the Electronic Resources Council that reviews electronic publications and thus continues to define the role of collection development. Two innovative concepts in this model are those of "information genres," which covers both print and electronic formats, and "tiers of access," which refers to degrees of technological support for electronic access.

Crowe and Sanders (1992) describe OHIO Link, a consortium of seventeen (17) academic libraries, as a model for cooperative collection development. The success of such a project, they say, depends on an aggressive commitment by its organisers. Specifications for OHIO Link include ease of use by collection managers, regular provision of data for routine reports, and the capability to collect and analyse usage data across the system. Seven functions, such as the ability to analyse collections and to form cost projections, are specifically intended to aid collection management.

In Thailand, studies show the degree of ICT utilization and job performance in public and academic libraries. Siriwongworawat (2003) states that the use of computers

started in Thailand since 1980. Until 1987, all libraries used UNESCO developed software CDS/ISIS for their library operations and database creation. However, after 1987, academic libraries moved to introducing commercialized integrated library management systems. In 1992, they abandoned URICA and moved to a decentralized software acquisition system. Individual libraries started adopting a range of software packages like Alice, Innopac, Tinlib, Vtls and others. Study by the same author indicates that the use of these packages made the transfer of information by librarians quicker, and made work easier. It may appear that there is a link between adopting a new library system and librarians job performance with that system. Libraries change from one library system to another when special need for change arises and/or when the former system is more difficult to use or understand by librarians. Rosenberg (2005) studied Digital libraries in Africa and the findings revealed that most academic libraries she studied indicated changing from one library system to another for different reasons.

Spacey, Goulding and Murray (2004) studied librarians' attitude on Internet use and their job performance. The researchers used qualitative and quantitative approach to find out an attitude measurement model. Quantitative results suggest that attitudes towards use of Internet are strongly related to usefulness, intention and actual usage. Analysis of the qualitative result suggests that staff are generally positive in their evaluation of information and communication technologies that are introduced in academic libraries to provide quality information services, reduce manual services and curtail manual operations. Academic libraries that provide ICT facilities do so having in mind the greater impact ICT has on the job performance of librarians. The use of ICT made information creation in digital format possible; made online access and file transfer attainable. The use of ICT has provided the opportunity for librarians to network their services and to share information resources to community of scholars. The DANIDA Report of 2001/2002 states that academic libraries in Ghana are networked and this has made document delivery both possible and attainable. According to this report, when a particular material is needed by students and/or lecturers and if the copy is not available in that library, the librarian in charge will send to any of the other university libraries asking if the needed copy is available in their collection. As soon as the libraries are communicated, whichever library has the copy will photocopy some of the pages of the book or all the entire book and send it

to the requesting library *via* e-mail attachment. Since the introduction of this project, work has become easier in the library; information sharing has been without any difficulty and the community of scholars that are being served indicated their satisfaction. Lancaster and Sandore (1997) opine that the use of information technology has made the transmission of information faster by improving the librarians' jobs. Chuene (2002) points out how the use of information technology enhanced the performance of cataloguers in academic libraries in Botswana.

2.7 Factors Militating Against the Availability and Utilisation of ICTs in Nigerian Academic Libraries

There is an overwhelming awareness that there are great potentials in the availability and utilization of information and communication technologies. The use of ICT promotes development and improves services in any organisation. It brings changes in today's business environment. In academic environment, it speeds up information delivery, facilitates teaching, learning and research.

In spite of the above observation about the potentials, and benefits of using ICT, the level of awareness and use in Nigeria appears to be very minimal. Organisational, environmental and cultural factors stand against the good and perceived will of the use of ICTs. Omolayole (2002) points out three strong reasons that stand against the effective utilization of ICTs in Nigerian academic libraries. Each of the factors she has mentioned has a resultant effect on availability and utilization of ICT. The factors are: low level of computer culture: poor telecommunications infrastructure; and general lack of awareness.

Another constraint that affects the utilization of ICTs in Nigerian academic libraries is low level of computer culture. When librarians are not computer literate, utilizing the facility would be a problem. In other words, having a good background in computer skill makes the use of computers in work places very practicable. Lack of awareness on the other hand makes availability impossible. Library managers must be aware of the advantages of using ICTs in libraries and information sector. Training workers on the use of computers and other related technologies for services in any organisation

including academic libraries is very important. A well trained worker can perform effectively and efficiently in his/her work place than he/she who is not trained at all.

Kasongo (1994) points out manpower as one single most important ingredient in proper IT utilization. Youngman (1999) carried out a study on library staffing considerations in the age of technology in Kansas State University. The study found out that human resource is essential to the success of any technology-based service. It means that any library or organisation that ignores the human factor is likely to appreciate ignorance which may lead to under- utilization. Experienced librarians can be a significant resource in managing libraries with technology.

Chisenga (2004) surveyed the use of ICTs in public libraries in ten (10) Anglophone African countries. The study revealed that all libraries studied pointed out lack/inadequate ICT personnel and lack of fund. The most interesting aspect of the findings is that libraries in South Africa express lack of burglaries to protect computers from being stolen whereas findings from two Nigerian libraries reveal erratic power supply as one of the barriers for ICT utilization. Out of the ten countries studied, only Nigeria has a very unique problem (power supply).

Okiy (2005) points out poor and inadequate telecommunication facilities; poor level of computer literacy, even within the academic community; poor level of computer facilities; poor level of awareness of Internet facilities among policy makers, government officials and the ruling class in general; and minimum involvement of academic institutions in network building in Africa as challenges militating against the utilization of ICTs.

Low level of ICT skills; lack of functional ICT policy; economic barriers (funds); ICT infrastructure; resistance to change; low capacity of communication facility; absence of digital or electronic libraries except in South Africa; lack of policy for manpower development etc. are common barriers mentioned as factors undermining the utilization of ICTs.

Paris (1997) writing from University of the Western Cape in South Africa states that librarians' ability to work with ICTs and re-skilling themselves will significantly

increase their level of ICT utilization and improve performance. Training is seen as making the best use of the human resources in an organisation by providing them with the appropriate instruction to acquire the necessary skills for their jobs (Statt, 1991).

Gardner (1994) points out human resources, vendor and maintenance, culture, funding, education and training as key factors for ICT utilization in developing countries. According to him, unskilled and untrained human resources lead to the employment of expatriates and African governments cannot pay or sustain expatriates. Vendor's main concern is also making money without maintenance plan. Without adequate training, organisations may not be able to effectively utilise them.

Other factors that contribute to the under-utilization of ICTs is culture. System designers need to understand or undertake a systematic study of the organisation and country within which the system will be used (implemented). Supporting this Odedra (1992) opines that culture is a strong factor that dictates if technology be accepted or not accepted. The challenge goes to system planners and programme writers to consider the local way of thinking, cultural setting, level of education and awareness.

Culture may have different levels of analysis. Schneider and Barsoux (1997) analysed culture as functional, professional, organisational, industrial, regional and national. To this study however, professional and national cultures appear to be more suitable.

Professional culture has cultural peculiarities, the way they (people) take training, supervision and socialisation. National culture is about where someone is born, undergoes training etc. Tully (2003) states that the environment where one grows up can determine his or her ability to fully utilize modern technologies. German Youth Institute conducted an empirical research from 1998 to 2001.Quantitative survey of 4,500 young people between ages 15 and 26 was used. The findings reveal that young people are interested in the name 'technology' and make absolute use of the technology without any hindrance. The same study also reveals that these young people started using computers right from their childhood and this has a positive influence towards their level of performance.

As other scholars have stated above on the challenges faced by academic libraries in the process of making ICTs available and utilised, the report submitted by the Mortenson Center for International Library Programs at Illinois, Urbana-Champaign (2005) pointed out that lack of government funding; limited and expensive Internet bandwidth; unstable power sources; and insufficient staff development affected job performance of academic librarians.

2.8 Summary of literature review

This chapter explored extensively the question of how information and communication technologies impact on effective functioning of academic librarians in terms of service delivery and the achievements of the library's expected and set objectives.

From the literature, ICTs are perceived as referring to all those technologies, goods, applications and services that assist people in handling (receiving, transmitting, processing, sharing) information (Meyer 1997).These technologies include internet service, telecommunications equipment and various media and broadcasting, libraries and documentation centres, network-based information services, and other related communication activities.

According to Boohene (2002) eight unique characteristics of ICTs give them the potential to be a powerful facilitator of development: ICT is pervasive and crosscutting; enables the creation of networks; fosters information dissemination; etc.

Scholars like Morale-Gomez and Melesse (1998), Hann et al (1995), Ojo (1994) and many others underline the important roles ICTs play in Organisations of all kinds, and even in national and global activities.

A relationship between ICTs and information is also established and information is the crucial basis for ICT introduction, availability and utilization. In library profession, emerging new technologies enable the basic functions of libraries, namely

acquisition, organisation, storage, delivery and dissemination of relevant, timely and quality information Omotunde, 2002, Chuene, 2002).

The extent of ICT availability in academic libraries in Nigeria is also established by scholars like Kajogbola (2004), Oketunji, Daniel, Okojie and Abdulsalaam (2002), Okiy (2005) and many others. The chapter connects availability of ICTs with the use (Nok, 2007;Ani, Essien and Edem, 2005; Igbeka and Okpala, 2004; Fatoki, 2005; Sani and Tiamiyu 2005). The review was able to shows the link between the utilization of ICTs and Librarians job performance of the academic librarians in the southwestern Nigeria (Oduwole, 2005;;Chune, 2002 and Omotunde, 2002). The review has also provided useful information on the need to equip academic librarians whoa are the key actors in ICT utilization with the required training Programmes. Scholars like Adeyoyin (2005), Aina (2004) , Adedeji (2002), Troll, (2001), Sirkin (1993) emphasize the importance of staff in the use of ICTs and effective discharge of duty.

Moreover, this chapter (Review of Literature) points out challenges (factors) academic libraries in Nigeria face in the course of making ICTs available, utilised and eventually provide quality information services to the library clientele. Scholarly works by Nabuyanda (2007), Nok (2006), Ani, Essien, and Edem (2005), Okiy (2005) reveal fundamental challenges.

Given the need for quality service delivery and improvement of job performance of academic librarians , this study investigated the availability, Utilisation of ICTs and their effect on the job performance of academic librarians in southwestern Nigeria.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter is discussed under the following sub-headings; namely:

I. Research Design

II. Study Population

III. Sample size and Sampling Procedure

IV. Research Instruments

V. Data Collection Procedure

VI Validity and Reliability of the Instrument

VII. Method of Data Analysis

3.2 Research Design

The study made use of descriptive research design. Supporting descriptive study, Singleton, Straits and McAllister (1988) state that the objective of the descriptive study is exploratory which focuses on fact finding. Indeed this design assisted in unbiased fact finding about the availability, utilization and job performance of the academic librarians in the Southwestern Nigeria.

3.3 Population of the Study

The target population for this study comprised all academic librarians, sectional heads, systems persons and their deputies who are holders of Master's Degree in

librarianship and related fields. They are located within the six states in the South-West of Nigeria. As at the time of this study there were fifteen (15) universities: (Federal, State and Private), thirteen polytechnics and eleven colleges of education in the South-West of Nigeria. From the preliminary investigation conducted by the researcher, it was found that out of the 39 academic libraries in South-West Nigeria, only 25 libraries had one kind of ICT or the other that are used for core library operations. The particular institutions are shown in Tables 3.1, 3.2 and 3.3 below

Table3.1 : Distribution of Population (Academic Librarians) by University

Name of the University Library	**Total Number of Academic Librarians**
University of Ibadan (KDL & UCH Libraries)	23
Obafemi Awolowo University Library (Hezekiah Olawasanmi)	19
University of Lagos Library	15
Federal University of Technology Library, Akure	8
Nimbe Adedipe Library, University of Agriculture Abeokuta	8
Adekunle Ajasin University Library	4
Ladoke Akintola University of Technology Library	8
Olabisi Onabanjo University Library	24
Lagos State University Library	13
Babcock University Library	5
Bowen University Library	3
Covenant University Library	8
Pan African University Library	2
Total	**140**

Table 3.1 above shows the total number of academic librarians in their respective universities. The number of respondents in each university library is generated from either the desk of the University Librarian or the desk of the Deputy University librarian with the exception of two university libraries. The Hezekiah Oluwasanmi

Library of Obafemi Awolowo University and the Pan African University Library have their web sites published. For the two institutions, the researcher used their web sites to obtain the population size. The sites are: *www.library.oauife.edu.ng* (OAU-library staff directory); *www.pau.edu.ng* or *www.lbs.edu.ng.* (Pan African University Library).

The number of academic librarians in the polytechnic libraries is presented on Table 3.2 below.

Table 3.2: Librarians in the Polytechnic Libraries in the South-West of Nigeria

No.	Name of Polytechnic	Number of Academic Librarians
1	Federal Polytechnic, Ede	3
2	Federal Polytechnic Ilaro,Ogun State	5
3	Ibadan Polytechnic Library,	7
4	Lagos State Polytechnic Library, Ikorodu	2
5	Moshood Abiola Polytechnic Library, Abeokuta	2
6	Yaba College of Technology	13
	Total	**32**

Table 3.2 above shows the total number of academic librarians in the polytechnic libraries in the South-West of Nigeria. The figure is generated from each library staff directory as provided by the secretaries of the polytechnic librarians. The number of academic librarians in the colleges of education in South-West Nigeria is shown below under Table 3.3.

Table 3.3: Librarians in the Colleges of Education in Southwestern Nigeria

S/N	Name of College of Education	No.of Academic Librarians
1	Federal College of Education Library,Osiele, Abeokuta	7
2	Federal College of Education (Special) Library, Oyo	5

3	Osun State College of Education Library, Ila-Orangun	3
4	Osun State College of Education Library, Ilesha	3
5	Adeniran Ogunsanya College of Education Library, Ijanikin ,Lagos State	4
6	Federal College of Edu(Tech) Library, Yaba, Lagos	2
	Total	**24**

Table 3.3 above shows the total number of academic librarians working in the libraries of the colleges of education in the Southwestern of Nigeria. The number of academic librarians is generated from the staff directory of each college of education.

3.4 Sample and Sampling Procedure

A total enumeration technique was used to cover a population of one hundred and ninety-five (195) academic librarians working within the study area. The group constitutes all academic librarians with the minimum–academic qualification of Master's degree in Librarianship, Archival Studies, Information Science and other related degrees.

Questionnaire was distributed by hand to one hundred and ninety five (195) academic librarians but only one hundred and fifty three (153) academic librarians filled the questionnaire and returned making the retrieval (response) rate 78.6 %.

3.5 Research Instruments

The main instrument used for this study was questionnaire and interview check list as well as observation schedule complemented the questionnaire.

Questionnaire: A questionnaire tagged Availability, Utilisation and Job performance Questionnaire (AUJPQ) and this was complimented with structured interview tagged Availability, Utilization and Job performance interview (AUJPI) and observation schedule to collect data for the study. The items are divided into five (5) sections A, B, C, D and E.

Section A: This section contains demographic information of the respondents such as sex, age, years of experience, highest academic qualification, librarian's status, Number of years at present rank, section(unit) of work in the library, if computers are used at their work places, how they obtained the knowledge to operate computers etc.

Section B: This section contains information on library automation and other ICT facilities. It has 32 items such as automated library functions, integrated library system, and stand-alone library system, library software used, year of automation, reasons for automation, how the automation project was financed, access to CD-ROM databases and products, information on Internet connectivity, kinds of server used, the bandwidth connectivity of the library: Dial-Up to 50kb, 64kb, 128kb, 256kb, 516kb, 1MB, or others, if the bandwidth is for exclusive use or shared, if the library has an e-mail on the web, web site availability, accessibility, utilization and maintenance, ICT support and staff skill, ICT strategy and training policy, barriers to availability of ICTs and utilization of ICTs.

Section C: This section contains questions on availability of ICTs. It contains 22 items such as: scanners, digital video cameras, digital still cameras, digital projectors, facsimile, CD-ROM facilities, telephone (land line and/or mobile), intercoms, photocopiers, printers (all categories), computers (servers), workstations, computers used by librarians and connected to the Internet, computers used by the librarians and not connected to the Internet, Microsoft office application, WordPerfect office application, web browsers, e-mail clients, etc. A 5-point scale was used to measure the availability of ICTs. The response formats are:

Very readily available/functional =5
Readily available/functional = 4
Available/functional = 3
Available/not functional = 2
Not available at all =1

Section D: This section deals with information on ICT utilization in academic libraries. The section contains 22 items in total. These are: scanners, digital video cameras, digital still cameras, digital projectors, facsimile, CD-ROM facilities,

telephone (land line and/or mobile), intercoms, photocopiers, printers (all categories), computers (servers), workstations, computers used by librarians and connected to the Internet, computers used by librarians and not connected to the internet, Microsoft office application, WordPerfect office application etc. The scale used to measure this section is:

Very heavily utilised = 4
Heavily Utilised = 3
Utilised = 2
Not utilised = 1

Section E: This section contains information on the academic librarians' job performance. There are 23 items in this section and they are: registration of users, charging of information materials, stock taking/inventory, serials management, cataloguing and classification, weeding of materials, budgetary control, answering reference questions, scanning documents/images, searching for materials on the net, resource sharing, sending reference requests, preparing reports, word processing of documents, CD-ROM database search, acquisition of materials, facsimile services, use of digital projector, use of digital video camera, use of telephone, etc (see the appendix).The job performance rating scale has the response format:

Excellent =5
Very good =4
Good =3
Average =2
Poor = 1

Interview Checklist: Interview was used as part of data gathering method for this study. The researcher limited the interview checklist to the head librarian of each institution and the system librarian.

Items for the system librarians were divided into three sections and each section contains 16 questions on availability, utilization and job performance of the respondents (see Appendix F for the interview checklist).

Items for the head librarians are mainly fund, training of the librarians, training policies, and factors militating the availability, utilization of ICTs and job performance of the academic librarians (see Appendix G for the interview checklist).

Observation Schedule: Key sections of the library were used as places to observe what is available, how what is available is being utilised and finally the rate at which the librarians were performing. Sections used for the observation purposes were: cataloguing, collection development, serials management, circulation, reference, computer application unit, the Internet service section, and finally the photocopying section.

3.6 Validity and Reliability of the Research Instruments

Before the administration of the instruments, (questionnaire, interview and observation) the drafts of these instruments were given to experts in library automation to determine appropriateness of the items. They went through the items as contained in these instruments and made some useful suggestions for their improvements. Then, a pre-test exercise was carried out in the libraries at IITA Ibadan, British Council, Lagos, United Nations Information Centre, Lagos and the Nigerian Institute for International Affairs, Lagos to determine the reliability coefficient of these research instruments –fifteen copies of the questionnaire, eight copies for interview and four copies for observation. From the result, the reliability coefficient for questionnaire is 0.88 for Section B using Cronbach alpha method which is on information on library automation and other ICT facilities; 0.92 for Section C using Cronbach-alpha method which is on information on ICT availability; 0.96 for Section D using cronbatch-alpha method on information on ICT utilization; 0.97 for Section E using cronbatch-alpha method on information on job performance. The overall reliability coefficient of the questionnaire on the availability and utilization of ICTs and job performance of the respondents is 0.97 using the Cronbach-alpha method.

3.7 Data Collection Procedure

A total of two hundred and thirty one (231) copies questionnaire on availability and utilization of ICTs and job performance of the academic librarians were supposed to have been administered to all professional librarians in thirty nine (39) institutions (Federal Universities, State Universities, Private Universities, Federal Polytechnics, State Polytechnics, Private Polytechnics, Federal Colleges of Education and State Colleges of Education) across the South West geo-political zone by the researcher himself. But after the initial visit and discovery of the non-availability of ICTs, some institutions were omitted from participating in the filling of the questionnaire.

Table 3.4: Distribution of questionnaire by the Institution Libraries

S/N	Name of Library	No. of Questionnaire administered	No. returned	%
1	Kenneth Dike Lib & E.Latunde Odeku Medical Lib., UI	23	19	82
2	Hezekiah Oluwasanmi ., OAU	19	10	52
3	University of Lagos	15	13	86
4	Bowen University	3	2	66
5	Federal University of Technology Library, Akure	8	7	87
6	Olabisi Onabanjo University Library, Ago Iwoye.	24	19	79
7	Centre for Learning Resources , Covenant University	8	8	100
8	Adekunle Alalade , Babcock University	5	5	100
9	Ladoke Akintola University of Technology Library, Ogbomoso	8	7	87
10	Nimbe Adedipe , University of Agriculture, Abeokuta	8	4	50
11	Fatiu Adenola Akisode , Lagos State University	13	10	76
12	Pan African University Library	2	2	100
13	Adekunle Ajasin University , Owo	4	3	75

14	Ibadan Polytechnic	7	6	85.7
15	Federal Polytechnic , Ilaro	5	4	80
16	Mashood Abiola Polytechnic , Abeokuta	1	1	100
17	Lagos State Polytechnic , Ikorodu	2	2	100
18	Yaba College of Technology	13	10	76
19	Federal Polytechnic, Ede	3	2	66
20	Fed. College of Edu., Osiele	7	5	71
21	Fed.Coll.of.Edu(Special) Oyo	5	4	80
22	Osun State College of Edu, Ila	3	3	100
23	Osun State College of Edu., Ilesha	3	2	66.6
24	Adeniran Ogunsanya College of Edu., Ijanikin	4	3	75
25	Fed. College of Edu(Tech) ,Yaba	2	2	100
	Total	**195**	**153**	

Table 3.4 above shows a total of one hundred and ninety-five (195) copies of questionnaire were distributed to librarians working in libraries that are either fully or partially ICT based.

Distribution by sex of the Respondents

Here respondents were asked of their sex and close observation shows that there is a significant variation in the distribution by sex of the academic librarians as shown on Table 3.5 below.

Table 3.5: Distribution by sex of the Respondents

Sex	**Frequency**	**Percentage**
Male	119	77.8
Female	34	22.2
Total	**153**	**100.0**

Of the one hundred and fifty three (153) respondents, 119(77.2%) were male librarians while 34(22.2%) were female librarians. This means that there are more male academic librarians than the female ones in the studied academic libraries. The figure below provides graphic description of the respondents in the studied area.

Fig. 4 below is the histogram showing the gender distribution of the respondents (male and female). The diagram shows that 119(77.2 percent) of the respondents were male and only 34(22.2 percent) of them were female respondents.

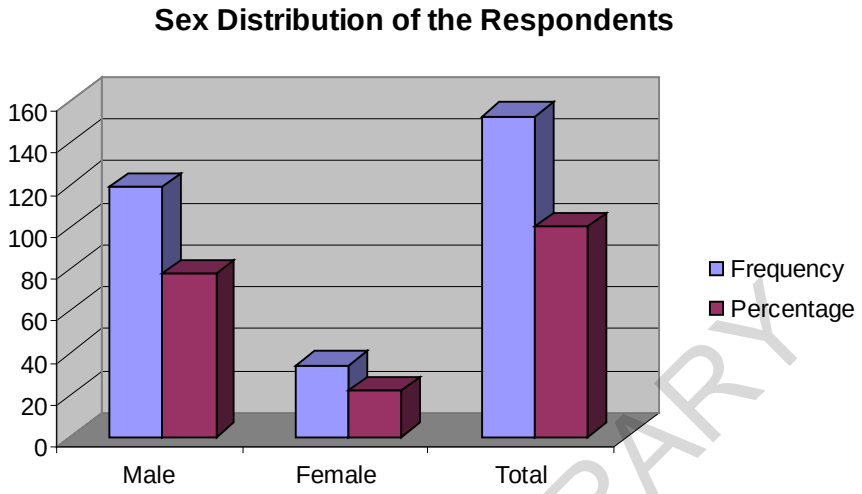

Fig.4 Histogram

Age Distribution of the Respondents

Respondents were asked to indicate their age group as at the time of this study. The finding is presented in Table 7 below.

Table 3.6: Age Distribution of the Respondents

Age	No. of respondents	Percent
20-24	17	11.1
25-29	3	2.0
30-34	34	22.2
35-39	24	15.7
40-44	30	19.6
45-49	15	9.8
50-54	18	11.8
55-59	4	2.6
60-63	5	3.3
64-69	3	2.0
Total	**153**	**100**

Table 3.6 above discloses the age distribution of the respondents in all academic libraries situated in six (6) states in the Southwestern. According to the table the largest numbers of the respondents fall between the age bracket of 30 and 34 constituting 22.2 percent of the overall respondents. This is followed by academic librarians between the age group of 40 and 44, constituting 19.6 percent. Those in the age bracket of 35-39 constituted 15.7 percent, while respondents in the age bracket of 50-54 constituted 11.8 percent. This is followed by those in the age bracket of 20-24, constituting 11.1 percent and those in the age bracket of 45-49 constituted 9.8 percent. Academic librarians in the age brackets of 60-63 and 55-59 constituted 3.3 percent and 2.6 percent respectively. Those in age brackets of 25-29 and 64-69 constituted 2 percent each.

3.8 Method of Data Analysis

The data collected were analyzed using descriptive statistics of Pearson correlation, frequency counts and percentages, as well as inferential statistics of multiple regression.

CHAPTER FOUR
RESULTS

4.1 Introduction

In this Chapter results are presented. The study considered all academic libraries in the zone comprising fifteen universities, (Federal, State and Private) thirteen polytechnics (Federal, State and Private) and ten Colleges of education (Federal and State) making a total of thirty-eight (38) institutions. However, some polytechnics and seven colleges of education did not have any form of ICT and were dropped from the study. In all, one hundred and ninety-five (195) copies of questionnaire were distributed. Only one hundred and fifty-three (153) academic librarians filled the items and returned making the response rate to be 76.5%. The results are presented in two (2) phases:

Phase 1: Descriptive form of analysis using frequencies and percentages were used for demographic information and to answer the research questions.

Phase 2: The stated hypotheses in Chapter One are analysed using simple regression analysis. The sequence of presentation follows the background information of the academic librarians, research questions and finally the hypotheses.

4.2 ANALYSIS OF RESEARCH QUESTIONS AND INTERVIEW

Library Profile

Research question 1: What are the types of library services that are automated in academic libraries in the Southwestern Nigeria?

The study sought to find out if the libraries under study were automated and the profile of automation. Table 4.1 below shows the number of libraries that were automated as at the time of this study.

Table 4.1: Automation Profile of Academic Libraries in the Southwestern Nigeria

Services Automated	No. of libraries	Percent
Acquisition and budgets	13	52
Cataloguing and classification	17	68
Circulation control	14	56
Serial administration	12	48
Inter-library loan	4	16
Others	1	4

Table 4.1 above shows the services that are automated in the study. Out of the twenty five (25) academic libraries, only twenty two (88 percent) libraries were found to have started automating their services. Seventeen (68 percent) of the academic libraries indicated that they have automated their cataloguing and classification activities. This is followed by fourteen (56 percent) libraries that have automated circulation control services. Thirteen (52 percent) libraries have automated acquisition and budget services while, twelve (48 percent) libraries automated their serials. Only four (16 percent) libraries automated inter-library loans.

Fig. 5 below indicates a diagrammatical explanation of automation profile of the academic libraries in Southwestern Nigeria. The diagram explains that seventeen academic libraries have automated their cataloguing and classification services. This means 68 percent of the academic libraries have automated their cataloguing and classification services while 8 academic libraries or 32 percent of the academic libraries are yet to automate their cataloguing and classification services. The implication of this is that the academic librarians in the eight libraries that did not have computers and library packages operate manually and this slows down their level of performance. Out of twenty-five academic libraries, fourteen of them indicated that they have automated their circulation services. This is opposed to eleven academic libraries that are yet to automate their circulation services. Thirteen academic libraries have automated their acquisition and budget services while, twelve of them are yet to automate their acquisition and budgets. Only four academic libraries stated that they have automated interlibrary loan services.

The implication of not automating library functions is that academic librarians will be struggling with the manual system of operation which is old, slow and tedious in nature and the performance of the academic librarians will also be limited.

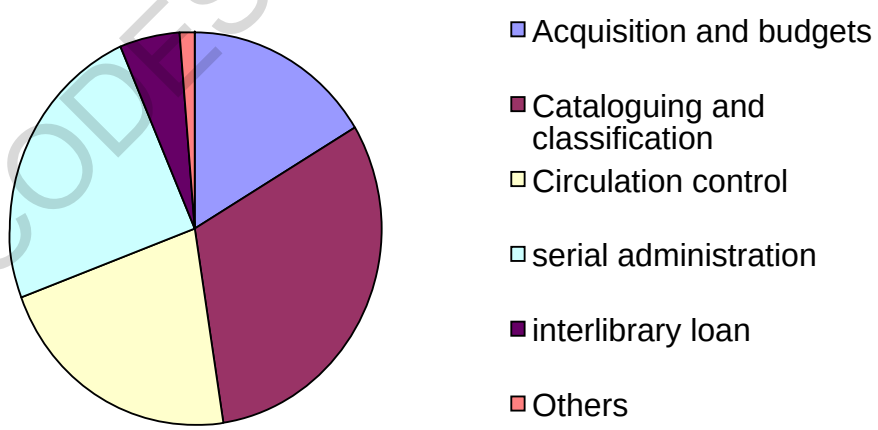

Fig.5. Automation profile of academic libraries

Apart from table 8 above, the study also sought to find out the nature of automation: integrated or stand-alone. Twenty-nine (29) systems' librarians participated in the exercise from 29 libraries and the findings revealed that 19(65.5%) of them responded that their libraries were integrated while 10(34.5%) of them responded that their systems are stand-alone. The study also sought if the academic libraries in the Southwestern of Nigeria provide CD-ROM and Internet services in the libraries. The study found out that seventeen (58.6%) of the libraries provide access to CD-ROM facilities whereas twelve (31.4%) libraries are yet to start providing the CD-ROM services. Five (17.2%) academic libraries responded that they use Internet services from their own Internet service provider (ISP) while six (20.7%) of the libraries responded that they provide Internet services through a shared service provider, and eighteen (62.1%) libraries stated that they do not have any form of Internet service provider.

Internet Connections in Academic Libraries in Southwestern Nigeria

Research Question 2: How are the academic libraries connected to the Internet in Southwestern Nigeria?

The study tried to find out about the Internet connection of the academic libraries in the Southwestern of Nigeria. Systems librarians participated in the study and the finding is presented in table 4.2 below.

Table 4.2 : Type of Internet Connection of the Responding Libraries

Type of connection	Connected	Not connected	Total

	No.	%	No.	%	No.	%
ISDN	1	4	24	96	25	100
WIRELESS	8	32	17	68	25	100
LAN/WAN	9	36	16	64	25	100

Table 4.2 above indicates how academic libraries were connected to the Internet. From the above table we can see that nine (36.0 percent) libraries were connected to the net using LAN/WAN. Eight (32 percent) libraries stated that they were connected to the net using WIRELESS connection and finally only one (4 percent) library indicated to be connected to the net *via* ISDN. The finding also indicated that 11(37.9 percent) libraries were without any type of connection.

Figure 3 below explains Internet connection of the academic libraries in the South-West of Nigeria. One academic library is indicated being connected to the Internet *via* ISDN, eight academic libraries are connected *via* wireless and nine academic libraries are connected via LAN/WAN.

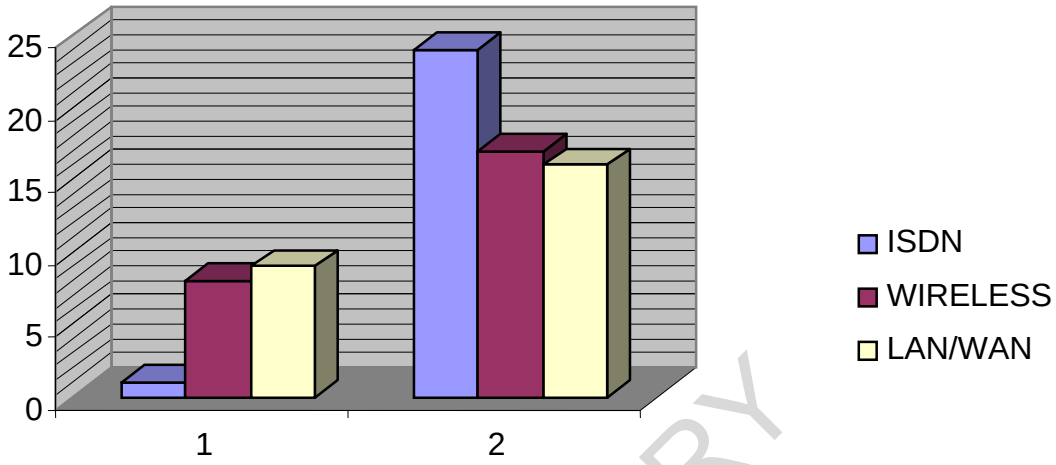

Fig. 6: A histogram showing number of libraries connected /unconnected to the Internet

Bandwidth Connectivity of the Academic Libraries in Southwestern Nigeria

Research Question 3: what is the bandwidth connectivity for academic libraries in Southwestern Nigeria?

In this section, the availability of Internet in academic libraries of the Southwestern is reported. The nature of connection also varied from library to library as revealed in Table 9 above. Table 10 below indicates the size of bandwidth connection for each academic library that has

Internet connection. From Table 10 below, we see that only ten (10) academic libraries have their own bandwidth connection while others share from the institution's own bandwidth.

Table 4.3: Bandwidth Connectivity of the Academic Libraries Studied

S/N	Size Of Bandwidth	Number of Libraries connected	percentage
1	Dial-up to 50kb	1	3.4
2	64kb	1	3.4
3	128kb	2	6.9
4	256kb	4	13.8
5	516kb	2	6.9

Table 4.3 above indicates the availability of bandwidth for Internet services and the size of bandwidth in academic libraries in the Southwestern of Nigeria. Four (13.8%) libraries responded that they had 256kb each while two (6.9%) libraries responded that they had 516kb and 128kbs respectively. One library has a dial-up to 50kb and another library another has 64kb respectively. The implication of this finding was that majority of the academic libraries nineteen (65.5%) did not have a separate bandwidth connection to provide Internet services to their clientele. This is not unconnected with the funding problems academic libraries face today. The study also sought to find out how the automation exercise of the academic libraries including the Internet services was financed. The response from interviewing twenty-five head librarians was that fund had been a big problem for libraries to sufficiently provide quality ICT based information services to the users. On the interview question that sought answer on who supported their ICT projects, all the twenty five library administrators described their individual library financial support as follows, twenty-three(93%) of them responded that they got financial aid from the Government while the two private

institutions namely Adekunle Alalade Library of Babcock University and Learning Resource Centre of the Covenant University indicated that the University administration provided finances for their ICT projects.

Types of Information Available on Library Website

Information was sought to find out if academic libraries in the Southwestern had their individual websites. The result of the finding is presented in table 11 below.

Table 4.4: Academic Libraries that have Websites and Type of Information Available on the Website

S/N	Available information on library website	No. of libraries that have web site with information	No. of libraries that have not created their own web site	Total No of libraries
1	Does library have its own website?	10 (34.5%)	15	25
2	Is website maintained directly?	5 (17.2%)	20	25
3	Is lib. opening time available on website?	9 (31%)	16	25
4	Is lib. OPAC accessible on website?	6(20.7%)	19	25
5	Links to electronic library databases and electronic journals are available on library website.	7(24.7%)	18	25
6	Documentation and support materials for using library is	6 (20.7%)	19	25

	provided in library website			

Table 4.4 above indicates the availability of library website and the kind of information provided on the website. Ten (thirty-four percent) libraries indicated that they had their own websites, while nineteen (sixty five percent) libraries indicated that they had no website. Nine (thirty one percent) libraries indicated that library opening hours was available on the website while twenty (sixty nine percent) libraries stated that they did not have. Seven (twenty four percent) libraries indicated that they give access to electronic databases and other materials to users while, twenty-two (seventy nine percent) libraries stated that they did not have such facility. Six (twenty-one percent) academic libraries stated that their OPACs were accessible via the website while, twenty-three (seventy-nine percent) academic libraries stated that their OPAC could not be accessed *via* the web. Six (twenty one percent) of academic libraries indicated that documentation and support materials were available on the web while, twenty three (seventy-nine percent) academic libraries responded that they did not have any of these. Only five (seventeen percent) libraries maintained their website by themselves while twenty-four (eighty-three percent) did not.

ICT Support and Staff Skill

This section dealt with ICT support for academic libraries and librarians ICT skill in Southwestern Nigeria. Twenty-five (25) system librarians responded to the items on ICT support and staff skill. The finding is presented in Table 12 below.

Table 4.5: ICT Support and Staff Skill

S/N	ICT Support	No. of Libraries	Percentage
1	Has-in-house library support	18	72
2	receives ICT support from parent organization's ICT staff	12	48
3	pays and receives for external ICT support	9	36
4	Non-ICT specialized librarians deal with network access problems	12	48

5	Hardware problem	9	36
6	software problems	8	32
7	printing problems	12	48
8	Training and support of staff	8	32

Table 4.5 above shows ICT support and staff skill in academic libraries in Southwestern Nigeria. The result revealed the following: 18(72 percent) libraries indicated that they had in-house ICT staff, while 7(28 percent) libraries responded they did not. Twelve (forty-eight percent) libraries stated they used ICT staff from parent organization while, 13(52 percent) libraries did not use ICT staff from parent organization. 9(36 percent) libraries sought for external ICT support while 16 (64 percent) libraries did not seek for external ICT support.

The table also showed the services offered by non-ICT support staff. Twelve (48 percent) libraries indicated that the non-ICT specialized library staff offered help on network access related problems. Nine (36 percent) libraries indicated that hardware problems were being solved by non-ICT specialized library staff, while 8 (32 percent) libraries stated that non-ICT specialized library staff provided solution to software related problems. Twelve (48 percent) libraries stated that non-ICT specialized library staff provided solution to printing related problems. This is expressed below in Fig.7.

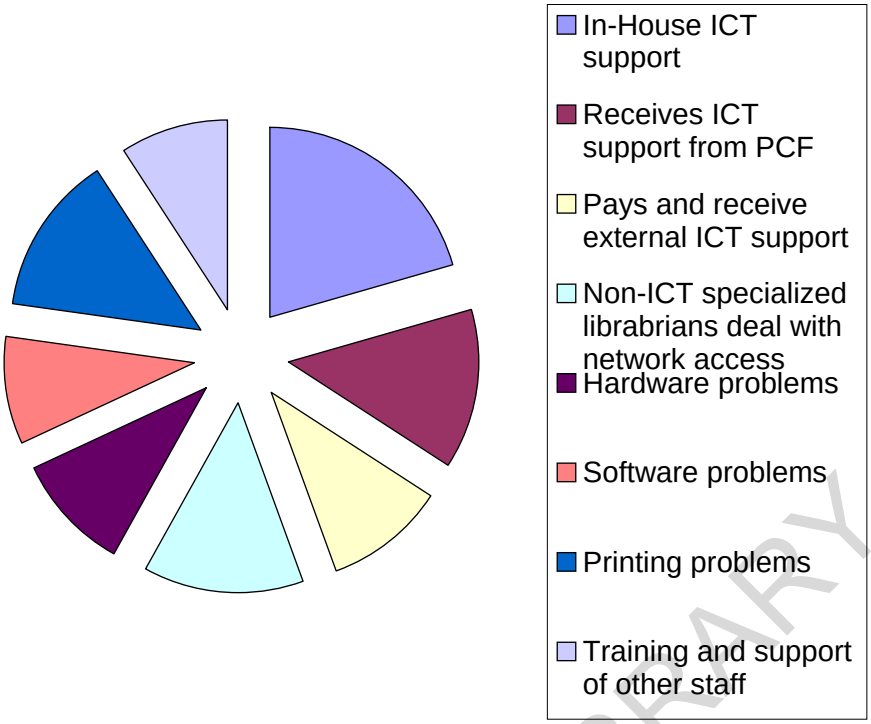

Fig.7 A pie chart showing ICT support and staff skill

Fig.7 above indicates how academic libraries receive information and communication technology support. As pointed out in Table 12 above, some academic libraries indicated that they had their own in-house ICT support. Others stated that they receive information and communication technology support from parent organization.

ICT Strategies and Training Policy in Academic Libraries in Southwestern Nigeria

Research Question 4: Do academic libraries in the Southwestern Nigeria have ICT strategies and training policy?

The relevance of ICT strategy in academic libraries cannot be overemphasized. It is the key for any ICT project to succeed. Without ICT strategy, library administrators cannot make headway in their attempts to make their libraries ICT based. All efforts of making libraries ICT based would be of no value if ICT strategy is not put in place.

Out of the twenty-five (25) academic libraries surveyed the finding reveals that only ten (10) making 40 percent of academic libraries indicated having information and communication technologies strategy while fifteen (15) or 60 percent of the academic libraries stated that they do not have ICT strategy.

Training the academic librarians to properly utilize information and communication technologies is very vital. Training can come in many forms but the most important and cost effective one is training on-the-job. Unless library management has sufficient fund to send their ICT staff to the most advanced countries, it is always advisable to have in-house training policy. Out of the twenty-five academic libraries, sixteen libraries indicated that they have ICT training policy.

Research Question 5: What are the types of ICT available in academic libraries in southwestern Nigeria?

Results reveal that a number of ICTs were available. This is shown in Table 4.6 below:

Table 4.6 above presents the availability of different types of ICTs and their quantities in each academic library in the Southwestern Nigeria. The study found out that there were 478 desktop computers across the academic libraries as at the time of this study. Going by institution, the Kenneth dike library of the university of Ibadan has the largest number of desktop computers 105 making 22percent of the overall desktop computers available in the libraries in the study. Next to the Kenneth Dike Library of the University of Ibadan is the University of Lagos Library with 54 desktop computers making 11 percent. Next is the Hezekiah Oluwasanmi Library of the Obafemi Awolowo University with the total number of 41 desktop computers making 9 percent. The library of Olabisi Onabanjo University has 34 desktop computers

making 7 percent of the overall computers found in this study. Next to OOU library is the Adekunle Alalade Library of Babcock University with 30 desktop computers making 6 percent of the overall in academic libraries in Southwestern Nigeria.

The library of the Federal University of Technology, Akure has 22 desktop computers making 4 percent. Lagos state university library has 18 desktop computers with 3 percent. The Ibadan polytechnic library has 17 desktop computers, while the university of Agriculture Abeokuta library has 16 desktop computers. The library of Yaba College of Technology has 15 desktop computers, while the polytechnic Ilaro Library has 12 desktop computers. Covenant and Pan African University Libraries have 10 desktop computers each representing 2 percent. Libraries in the colleges of education especially, Federal college of Education (special) Oyo has 8 (1.9 percent) while Federal college of Education Osiele, Abeokuta library has 7(1.5 percent) desktop computers.

As at the time of this study there were 123 printers in all the academic libraries studied in the South-West Nigeria. It is worth mentioning here that the Kenneth Dike Library (KDL) which took the lead in the number of available computers also takes lead in the available number of printers. KDL has 16(13 percent) printers and this is followed by the Library of Hezekiah Oluwasanmi of Obafemi Awolowo University with 10(8 percent) printers. The library of Olabisi Onabanjo has 9 (7 percent) printers. The Ibadan Polytechnic Library has 6 (4.8 percent) printers followed by the University of Lagos Library with 5(4 percent) printers. The library of Adekunle Alalade (BU) and the University of Agriculture, Abeokuta Library have 4 (3 percent) printers each. The finding also reveals that there were 22 laptops in the academic libraries studied,42 scanners,75 photocopiers, 70 UPS, 17 still cameras, 9 digital cameras, 7 video cameras, 11LCDs, 4 option Barcode scanners(only KDL has this particular hardware),4 TV sets, and 1 external CD-writer (only KDL had this particular hardware).

Most academic libraries have also purchased special library softwares. Except Hezekiah Oluwasanmi Library of OAU which has developed in-house library software called ANALYTEC E-LIB and Dr Lawrence Omole Library of Ilesha College of Education which has also developed in-house library software called

BLISS, the rest of the academic libraries have either X-LIB or GLAS or TINLIB or ALICE FOR WINDOWS.

The study also investigated the availability of the Internet services as well as the E-mail in most of the academic libraries. From the interview with the systems' librarians and chief cataloguers of some academic libraries, it was discovered that Internet was used to do online cataloguing. The Hezekiah Oluwasanmi library of OAU, Pan African University Library and few other Libraries indicated that they used the OCLC online subject heading to do the original cataloguing. E-Mail services are also available in fifteen libraries. The following ICTs were also found to be available and functional– CD-ROM, telephone facilities (mobile, land line and intercoms), facsimiles, digital cameras, digital video camera, laptops, and LCD projectors scanners, multimedia facilities, UPS, photocopiers, application software and operating software.

The Observation schedule reveled that the availability of 21 inch TV in 5 polytechnics and 5 Colleges of education respectively. However, only one university library, namely the Onabanjo Olabisi university library provided 21inch TV set in their multimedia room.

Research Question 6: What is the Degree of Utilization of ICTs in Academic Libraries in Southwestern Nigeria?

One hundred and fifty three (153) copies of questionnaire were retrieved from the surveyed sample of academic librarians in Southwestern Nigeria. A four point scale was used to measure the level of ICT utilization by the respondents. The result is presented in form of mean score and standard deviation as presented in Table 4.7 below.

Table 4.7: The Mean Standard Deviation Scores of ICT use by the Respondents in Academic Libraries in Southwestern Nigeria

S/N	Description of ICTs to be utilized	Degree of utilization measured by mean and standard deviation	
		Mean	SD

1.	Scanners	1.91	0.330
2.	Digital camera	1.22	0.177
3.	LCD	1.15	0.163
4.	Digital video camera	1.13	0.162
5.	Fax	1.08	0.208
6.	CD-ROM	2.17	0.490
7.	Telephone	2.59	0.457
8.	Intercoms	2.56	0.491
9.	Photocopiers	2.94	0.319
10.	Computers workstation	2.66	0.447
11.	Computers connected to the Internet	1.88	0.457
13.	Windows XP	1.93	0.768
14.	Windows 2000	2.01	0.672
15.	Windows NT	.67	0.235
16.	Novel NetWare	.27	0.526
17.	MS-DOS	.69	0.131
18.	UNIX	.32	0.655
19	Word -perfect	1.38	0.646
20.	Quattro	47	0.948
21.	Presentation	.64	0.223
22.	Microsoft-word	2.36	0.753
23.	Excel	1.42	0.601
24	Access	1.15	0.499
25	Power point	1.41	0.604
26.	Web browser-Internet explorer	2.02	0.745
27.	Web browser-Netscape	.40	0.830
28.	Web browser-Opera	.32	0.775

Table 4.7 above shows the utilization of information and communication technologies (ICTs) by the respondents. The results reveal that the academic librarians constantly utilize the available and functional ICTs. The result reflects the utilization of the individual facility by the respondents (academic librarians). The mean and standard deviation score of utilization of the photocopiers is (X=2.94, SD=0.447), this is followed by utilizing computers for the purpose of word processing of documents(X=2.76, SD=0.508). Computer work stations are also heavily utilised with (X=2.66, SD=0.447).Telephone facility is utilised accordingly with (X=2.59, SD=0.457) and it is followed by the use of intercoms (X=2.56, SD=0.491). This is

followed by the utilization of ICTs for general administrative purposes (X=2.53, SD=0.531) and utilizing ICTs for the purpose of cataloguing and classification (X=2.49, SD=0.492), this is also followed by utilizing ICTs to prepare weekly, monthly and annual reports with the mean of (X=2.44, SD=0.551). Microsoft word was utilised with the mean of (X=2.36.SD=0.753). This is followed with the utilization of E-mail facility to sending and receiving messages with the mean of (X=2.18, SD 0.0.595). CD-ROM facility utilization is next to the utilization of E-mail facility with the mean of (X=2.17, SD=0.490). Utilisation of the Internet to search for materials is (X= 2.12, SD=0.536). Among web browsers, Internet explorer is utilised with the mean of (X=2.02, SD =0.745). Windows 2000 is utilised with the mean of (X=2.01, SD= 0.672). Scanners are utilised with the mean of (X=1.91, SD= 0.330). This is followed by the utilization of computers connected to the Internet with the mean of (X =1.88, SD= 0.457).

Respondents to the interview question –what is the degree of ICT utilization? Responded as follows:

Cataloguing:

Twenty-two (88 percent) libraries indicated that they catalogued over 60 materials per day per person with the use of specialized library packages (XLIB, TINLIB, ALICE FOR WINDOWS, GLAS and CDS/ISIS). Two (eight percent) libraries indicated that they used on-line cataloguing system. Other academic libraries that have access to Internet facilities also indicated that they go to Library of Congress home page, check the subject heading to determine the class mark of a book or books. This method according to the chief cataloguers of the institutions studied is easier, convenient and fast.

Serials Management:

Twelve (forty-eight percent) of the system librarians interviewed indicated that they utilized ICTs for serial management purposes. This means, 13(52 percent) libraries are yet to automate their serial collection

Acquisition and Ordering:

Twelve libraries showed that they utilized ICTs for acquisition and ordering purposes

Selection of Materials

Twelve (48 percent) of the respondents reported that they use both manual system and electronic to select materials for their libraries.

Digitization of documents:

Out of 25 systems librarians interviewed, only 5(20 percent) librarians indicated that they digitize documents and put on PDF. These were the Pan African Library, the Hezekiah Oluwasanmi Library of Obafemi Awolowo University, the Kenneth Dike Library of University of Ibadan, the Olabisi Onabanjo University and the Centre for Learning Resources of Covenant University.

Document delivery:

Two (eight percent) of the respondents stated that namely Adekunle Alalade library of Babcock university and the Pan African university libraries stated that they utilize e-mail service facility.

The observation schedule on the degree of ICT utilization revealed that academic librarians were found busy using ICTs in almost all libraries surveyed. In the technical section of each library observed, computers were used very heavily to input data. In the same section, where Internet connection was available, librarians were occupied checking the Library of Congress Subject Heading on-line to determine the subject heading of the books they were to classify. Where Internet access was not available, librarians were seen putting the bibliographic information into the computers in cataloguing and classification section.

Serials management librarians were also found processing documents through the use of computers. Some academic librarians were busy using Internet facility, sending e-mail messages, browsing for useful materials. Libraries like Kenneth-Dike of University of Ibadan, and many others were found to have converted from the existing software to newly acquired software. In Kenneth-Dike Library, they were found to have converted from **TINLIB** to **Alice for windows**. In FUTA, they were found to have converted from **TINLIB to Glas**. In most of the academic libraries especially

polytechnics and colleges of education, they had converted from paper format to **X-Lib** software.

All the surveyed libraries had more than one photocopying machine and were seen being very heavily utilised. The researcher observed that some colleges of education libraries and polytechnic libraries provided show rooms with functioning facilities like 21 inch TV, multimedia , and audiovisual show rooms.

Pan African University, Babcock University, and Covenant University, academic librarians and library users utilised Internet services free of charge. In Adekunle Alalade Library of Babcock University, Internet points were provided with few computers connected to the Internet, which students and other users also used for checking their mails and also for looking-up for materials free of charge. There is also a room with five computers for those who may decide to pay eighty naira per minutes to browse the Internet. At Kenneth-Dike Library of the University of Ibadan, four connected computers were available. Students were observed browsing for a token of fifty naira per hour. In Pan African University Library, every student had access to the Internet and all academic librarians were observed using the Internet on the two occasions the library was visited by the researcher. At the Latunde Odeku Library of UCH (University Teaching Hospital), the reference section of the library provided Internet access to all users but at a token fee.

It was observed that most academic libraries did not have a standby generator which will be used to carry out duties when electricity is off. However, few academic libraries did have a standby generator. Among them are: Pan African University Library, Adekunle Alalade Library of Babcock University, Centre for Learning Resources of Covenant University, Mashood Abiola Polytechnic Library, and a few others.

Most academic librarians were not occupied and the cause was also connected to absence of electricity and libraries' inability to acquire a standby functional generator. This actually militated against the rate at which job was performed in the libraries. If electricity is not regular, librarians cannot significantly perform their duties.

Moreover, some ICT facilities were not used even when there was regular light. Close observation revealed that some academic librarians did not have any skill at all to handle computers and the systems were left unused.

4.12 Research Question 7: What are the organizational, human and cultural factors that affect the availability and utilization of ICTs in academic libraries in Southwestern Nigeria?

Only systems' librarians, (thirteen from universities, six from polytechnics and six from colleges of education) filled the questionnaire on the factors affecting availability and utilization of ICTs in academic libraries in Southwestern Nigeria. Twenty-five (25) copies of the questionnaire were distributed to systems librarians who worked directly with the ICT facilities. The finding is presented in Table 15 below.

Table 4.8 : The Cultural, Human and Organizational Factors Affecting the Availability and Utilisation of ICTs in Academic Libraries in Southwestern Nigeria

S/N	Factor	Effect of the Factor	*Y	%	*N	%
1	**Cultural**	→ academic librarians reluctance to use ICT	16	76	5	24
		→ difficulty in training the academic librarians	17	80	4	20
2	**Human**	→ lack of ICT qualified staff	18	85	3	15
		→ skill level of academic librarians	18	85	3	15
3	**Organizational**	→ inadequate existing ICT resources	17	80	4	20
		→ lack of commitment by institutional mgt	19	90	2	10
		→ lack of updated ICT strategy	19	90	2	10
		→ lack of adequate budget	17	80	4	20
		→ erratic power supply	17	80	4	20

*** Y =Yes**

N= No

Table 4.8 above shows factors that affected the availability and utilization of ICTs in academic libraries in Southwestern Nigeria. Moreover, the table points out the key factors and their effects on availability, utilization and job performance. Twenty-one (21) system librarians took part in filling out the questionnaire. Three key factors namely cultural, human and organizational were identified. The effect of each factor is shown in table 15. Lack of institutional commitment and lack of updated ICT strategy ranked top as factors affecting ICT availability and utilization of ICT. In other words, 19(95 respondents) reported that lack of institutional commitment and lack of updated ICT strategy are factors militated against the availability and utilization of ICTs. Eighteen (eighty-five percent) stated human factor, that is lack of ICT qualified staff militated against the use of ICTs towards job performance. Seventeen (eighty percent) indicated organizational factors like lack of adequate budget and erratic power supply. Lack of budget as an organizational factor, causes inadequate availability of ICTs while, erratic power supply being organizational factor, results in underutilization of ICTs. Sixteen (76 percent) of the respondents identified academic librarians reluctance to use ICTs as a cultural factor towards effective job performance.

4.13 Research Question 8: How has ICT use contributed to job performance in academic libraries?

One hundred and fifty three (153) copies of questionnaire were distributed to academic librarians in Southwestern Nigeria to find out how the use of ICTs had contributed to the job performance of the librarians. The result is presented below in Table 16.

Table 4.9: The Mean Standard Deviation Scores of Job Performance of the Respondents in Academic Libraries in Southwestern Nigeria

S/N	Duty	Mean	SD
1	photocopying library materials needed by lecturers/students	2.94	0.319
2	word processing of document	2.76	0.508
3	general administrative duties	2.53	0.531
4	cataloguing and classification of library materials	2.49	0.492
5	preparing/writing reports	2.44	0.551
6	sending/receiving e-mail messages	2.18	0.595
7	searching for information on the net	2.12	0.536
8	CD-ROM search	1.96	0.581
9	Scanning documents/image	1.77	0.566
10	serials management	1.75	0.470
11	sending and receiving of fax messages	1.69	0.531
12	acquisition and selection of materials electronically	1.49	0.467
13	answering reference question electronically	1.48	0.367
14	registration of library users online	1.42	0.463
15	stock taking/inventory of library materials	1.27	0.314
16	charging in and charging out of the library materials	1.24	0.308
17	resource sharing/document delivery	1.12	0.235
18	preservation and reservation of the library materials	1.10	0.215
19	weeding of library materials	1.03	0.120
20	budgetary control	1.00	0.170
21	teleconferencing and videoconferencing	0.70	0.717

Table 4.9 above shows the mean and standard deviation scores of the job performance of the respondents in the Southwestern ern part of Nigeria. The findings reveal that the performance of the respondents in photocopying of the needed materials ranked top with the mean and standard deviation scores of (X=2.94, SD=0.319). This is followed by the performance rate of word processing of the documents by the respondents with the mean and standard deviation of (X= 2.76, SD=0.508). General administrative duties of the respondents is (X=2.53, SD=0.531). The performance of the respondents in cataloguing and classification exercise indicated the mean and standard deviation scores of (X=2.49, SD= 0.492). Next is writing reports (monthly, annual etc.,) with the mean and standard deviation scores of (X=2.44, SD=0.551). The performance rate of the respondents in sending and receiving e-mail messages rated the mean and standard deviation scores of (X=2.18, SD= 0.595). The performance of the respondents in searching the net for materials indicated the mean and standard deviation scores of (X=2.12, SD= 0.536). The performance of the respondents in CD-ROM search indicated the mean and standard deviation scores of (X=1.96, SD=0.581). Scanning documents and images to put information in PDF format and others indicated the mean and standard deviation score of (X=1.77, SD= 0.566). The performance of the respondents in serial management is (X=1.75, SD=0.470). Transmitting vital information *via* fax machine indicated the mean and standard deviation score of respondents (X=1.69, SD= 0.531). The job performance of the respondents in selecting and acquiring relevant materials for libraries indicate the mean and standard deviation score (X=1.49, SD=0.467). Respondents' performance in answering reference questions (X=1.48, SD=0.367). Registration of users indicated (X=1.42, SD=0.463) while stock taking/inventory of library materials is (X=1.27, SD=0.314). The performance of the respondents in charging in and charging out of the library materials indicate (X=1.24, SD=0.308). Job performance of the respondents in the area of resource sharing and document delivery indicates the mean and standard deviation score of (X=1.12, SD=0.235) and that of preservation and reservation of library materials is (X=1.10, SD=0.215). Weeding of library materials indicate the performance of the respondents to be (X=1.03, SD=0.120) and that of budgetary control is (X=1.00, SD=0.170). Finally, the finding shows that the respondents rate of performance in teleconferencing and videoconferencing is very low with the mean and standard deviation score of (X=0.70, SD=0.717).

Table 4.10: The Effect of use of ICT on Job Performance of the Respondents

S/N	Use of ICT	Yes	%	No.	%	Total	
1.	improved job performance	115	75.2%	38	24.8%	153	100%
2.	Quick and improved services to the users	110	72%	43	28%	153	100%
3.	has more efficiency on job performance	112	73%	41	23%	153	100%
4.	made the job error free and less tedious	120	78%	32	22%	153	100%
5.	has improved research capacity	90	58.8%	63	41.2%	153	100%
6.	has improved my work output	111	72.5%	42	27.5	153	100%
7.	has enhanced job performance by facilitating library operations	87	56.9%	66	43.1%	153	100%
8.	improved collection of information services and sustained information growth	83	54.2%	70	45.8%	153	100%
9.	has made cataloguing of books faster and easier by making more books catalogued	95	62.1%	58	37.7%	153	100%
10.	reduced the stress experienced through the manual operations as well as increased the volume of work done within a limited time frame	100	65.4%	53	34.6%	153	100%
11.	made document delivery and retrieval easier and faster	87	56.9%	66	43.1%	153	100%
12.	promoted librarians' efficiency, and made information available to both distant and close users	94	61.4%	59	38.6%	153	100%
13.	removed the fatigue of manual labour and it made work faster and interesting	84	54.9%	69	45.1%	153	100%
14.	has improved response to reference queries	80	52.3%	73	46.7%	153	100%

Table 4.10 above shows ICT contribution to the job performances of individual academic librarians. One hundred and twenty (seventy-eight percent) responded that the use of ICT has made their work error free and less tedious, while 32(22 percent) stated that the use of ICT was not error free and tedious. One hundred and fifteen (seventy-five percent) respondents stated that the use of ICT had improved their job performances in their work places, while 38(24.8 percent) respondents stated that the use of ICT did not improve their performance. One hundred and twelve (seventy three percent) stated that the use of ICT had provided more efficiency in their job performance. This was followed by 111(72.5 percent) respondents who stated that the use of ICT had improved their work output. One hundred (sixty-five percent) respondents stated that the use of ICT reduced the stress caused by manual operations and at the same time increased the amount of work done in the library. 95(62.1 percent) of the respondents stated that the use of ICT has made cataloguing of the books faster and easier. 94(61.4percent) respondents stated that the use of ICT had promoted librarians' efficiency and made information available to both distant and closer users. 90(58.8 percent) of the respondents stated that the use of ICT had improved research capacity. 87(56.9 percent) respondents stated that ICT has improved their job performance by facilitating library operation. Another 87(56.9 percent) of the respondents stated that the use of ICT made document delivery and retrieval of information easier and faster. 84(54.9 percent) of the respondents stated that the use of ICT has removed fatigue of manual labour at the same time made the work more interesting. Next to the last is the effect of ICT on collection management. Eighty-three (fifty-four percent) academic librarians stated that ICT use has improved collection of information services and sustained information growth. Finally, 80(52.3 percent) respondents stated that use of the ICT has improved response to reference queries.

The data generated from the interview exercise complemented the research question on how the use of ICT improved academic librarians' job performance. System librarians totaling 25 were interview on variety of areas. Table 18 presents how the use of ICT improved job performance in cataloguing section.

Section	Library	duration	amount catalogued
Cataloguing	KDL	2001-2005	40,000 entries
√	UNILAG	2001-2005	30,000 entries
√	OAU	----------	----------
√	BU	2003-2005	15,000
√	UNAAB	2003-2005	30,000
√	Covenant	----------	-----
√	FUTA	2002-2005	10,000
√	LASU	2001-2005	40,000
√	OOU	2003-2005	2107
√	YABA Poly	2003-2005	14,000
√	Federal poly, Ede	2003-2005	3544

Other system librarians couldn't provide detailed statistics on the effect of ICT on their job performance. In other areas like selecting materials on –line, except the Pan African University system librarian who said they select all materials on-line except for locally published books. All the respondents stated that the use of ICT made their work easier, faster and enjoyable.

Hypotheses Testing

Hypothesis 1: There is no significant relationship between availability of information and communication technology and effective job performance in academic libraries in Southwestern Nigeria

The dependent variable is job performance while the independent variable is availability of information and communication technology. The statistical analysis used to analyse hypothesis one was the simple regression and the result is presented in Table 4.14 below.

Table4.11 :Test of Significant Relationship between ICTs Availability and Job Performance of the Respondents in Southwestern Nigeria

Variable	N	X	SD	r	Sign	Remark
ICT availability	153	20.41	4.16			
				0.435	0.000	sig.
Job performance						
	153	39.46	3.21			

p<0.05 level of significance

Table4.12 above presents a summary of data analysis on test of significant relationship between availability and job performance of the respondents in the academic libraries in Southwestern Nigeria. The mean score of availability of ICTs and its standard deviation score to the respondents is (X =20.41, SD=4.16) while that of their job performance is (X=39.46, SD=3.21). The test of hypothesis reveals that there is a significant relationship between availability of ICTs to the respondents and their job performance (r=0.435, p<0.05). Therefore, the null hypothesis is rejected.

Hypotheses 2:

There is no significant relationship between the utilisation of ICT and job performance in academic libraries

The dependent variable is job performance while the independent variable is utilisation of information and communication technology. The statistical method used to analyse this hypothesis is the simple correlation and the finding is presented in Table21 below.

Table 4.12: Test of Significant Relationship between ICT Utilisation and Job Performance of the Respondents

Variable	n	X	SD	r	sig.	remark
ICT utilisation	153	74.10	3.61	0.542	0.000	sig.
Job performance	153	39.46	3.21			

$p<0.05$ level of significance

Table 4.13 showed a summary of data analysis on test of significant relationship between ICT utilization and job performance of the academic libraries in Southwestern Nigeria. The mean score of utilisation and its standard deviation score to the respondents (X=74.10, SD=3.61) and that of their job performance is (X=39.46, SD=3.21). The test of hypothesis two reveals that there is a significant relationship between utilisation of ICTs and job performance of the respondents (r= 0.542, $p<0.05$). Therefore, the null hypothesis is rejected.

Hypotheses 3:

There is no significant relationship between availability and utilization of ICTs and job performance in academic libraries

Table 4.13 : Test of Significant Relationship between Availability of ICTs and Utilization of ICTs and Job Performance of the Respondents in Academic Libraries in Southwestern Nigeria

Source of variation	DF	SS	MS	F-Ratio	Sig
Due to regression(ß)	2	55165.28	27582.64	40.98	0.000
Due to residual	150	100974.77	673.165		
Total	**152**	**156140.05**			

p<0.05 level of significance

R^2=0.353

Adjusted R^2 = 0.345

R= 0.594

SEE= 0.2595

Table 4.14 above shows the summary of test of significant relationship between availability of ICT, utilization of ICTs and job performance of the respondents in the academic libraries in southwestern Nigeria.

The study reveals that availability of ICT (ß =0.204; DF=2; 150; T=3.717, P<0.05) and utilisation of ICT (β=0.390; DF=2; 150; T=6.163;P<0.05, improve the job performance of the academic librarians in Southwestern Nigeria (F= 40.98; Df =2;150 ;P<0.05). In addition, availability of ICT and utilization of ICT accounted for 34.5 percent of the total variance in improving job performance of the academic librarians in South-West Nigeria. The test of Hypothesis three reveals that there is a significant multiple relationships between availability of ICT and utilization of ICT by the academic librarians in Southwestern Nigeria. (R = 0.594, P<0.05).

Hypotheses 4:

Availability and utilization of the ICTs do not equally contribute to effective job performance in the south west academic libraries

Table 4.14 : Test of Significant Contributions of Availability of ICTs and Utilization of ICTs on Job Performance in Academic Libraries in Southwestern Nigeria

Variable	B	SE(B)	Beta contribution	T-ratio	Sig.	Remark
Constant	6.422	4.852		1.323	0.188	Not sig.
AICT	0.204	0.055	0.265	3.717	0.000	sig.
UICT	0.390	0.053	0.439	6.163	0.000	sig.

AICT = Availability and Utilization of Information and Communication Technology

UICT = Utilization of Information and Communication Technology

$P < 0.05$ statistically significant

Table 4.15 shows the relative contribution of availability of ICT and utilisation of ICT to job performance of the respondents. The test of Hypothesis four reveals that availability of ICT and utilisation of ICTs do not equally contribute to the job performance of the academic librarians in Southwestern Nigeria. Availability of ICT contributed 0.265, that is, 26.5 percent while utilization of ICT contributed 0.439 which is 43.9 percent to improve job performance of the academic librarians in Southwestern Nigeria.

CHAPTER FIVE

DISCUSSION, SUMMARY AND CONCLUSION

5.1 Discussion

The items for verification set out in the objectives and research questions of this study were adequately addressed in the course of the fieldwork. The findings are discussed below.

5.1. Research Question 1:

What are the types of library services that are automated in academic libraries in Southwestern Nigeria?

Section B of the questionnaire (see appendix B) was used to answer research question 1. In all 29 systems librarians filled the questionnaire. The study revealed that seventeen (sixty-eight percent) libraries automated their cataloguing and classification services; Fourteen (fifty-six percent) libraries automated their circulation control; services; Thirteen (fifty-two percent) libraries automated their acquisitions services. This was followed by 12(48 percent) libraries that automated their serial administration and finally, 4(16 percent) automated their interlibrary loan.

The finding revels that most academic libraries (22 out 39 libraries) in Southwestern Nigeria have not been automated. This shows inadequacy in the ICT facility being made available for the librarians to function. Information and communication technology was introduced to eliminate routine tasks and increase the speed in work places like cataloguing and classification, acquisitions and serials management. Garcha and Buttlar (1996) suggested that access and sharing of information resources are dependent on the automation of library operations and use of computers. Siddique (1996) reported the automation of library modules in six university libraries in Saudi Arabia. As at the time of Sadiqui's report, all the six university libraries in the Arabian kingdom had automated the technical, OPAC, acquisition and serials modules. Well for academic libraries to provide quality information services to their customers and retrieve information from remote computer academic libraries in Southwestern Nigeria need to be automated.

This finding is supported by Chuene (2000); Chisenga (2004); (Sani &Tiamiyu (2005). Chuene (2000) carried out a study between automated library services and manual library services. The finding revealed that automated acquisition system reduced the manual labour from twenty-seven to fourteen. The author also found out the automated library system to be the best in terms of providing fast, error free service and at the same time increased efficiency. Sani and Tiamiyu (2005) reported on evaluation of automated services in Nigerian Universities. The study included 25 universities (Federal, State & Private) and the finding revealed that 55 percent of Federal University libraries; 19 percent of State University libraries and 12 percent of Private University libraries indicated the availability of different types of automated services. Siddiqui (1997) studied Information Technology use in academic libraries in Saudi Arabia. The report of the finding revealed that out of the six universities, four university libraries had automated all their services. Chisenga (2004) reported ICT use in ten Anglophone African public libraries. Out of the twenty-five public libraries he studied, thirteen (13) libraries automated their cataloguing and classification services; five (5) libraries automated their acquisition services; six (6) libraries automated circulation services; four (4) libraries automated serial services; four (4) libraries automated interlibrary loan services and ten (10) libraries automated their OPACs. Okiy (2004) reiterated that the computer based cataloguing system is the best system that offers librarians a conducive environment to function properly.

Research question 2:

How are the academic libraries connected to the Internet in Southwestern Nigeria?

Section B (see appendix B) of the questionnaire was used to answer research question 2. Out of the 25 academic libraries studied, 1(4 percent) academic library was connected to the Internet via ISDN; 8(32 percent) academic libraries were connected to the internet via Wireless and finally, 9(36 percent) academic libraries were connected via LAN/WAN. The implication of this is that out of twenty-five academic libraries surveyed in the Southwestern Nigeria, eighteen libraries were connected to the Internet while, seven libraries were not connected at all. The interview question

further reveled that even those that were connected to the Internet share from the main university server. The world over, academic libraries use Internet facility to provide quality information services to the people they are established to serve. This finding is supported by Choy (2005) who reported that academic libraries provide remote access to users and utilize Internet facility for E-journal and E-book subscription. Curtis and Yue (2002) reiterated that the use of Internet had made more information sources available to users. For academic libraries to get directly connected to the Internet, it is proper for the administration to make funds available.

Research Question 3

What is the bandwidth connectivity for academic libraries in Southwestern Nigeria?

Questionnaire in section B (see the appendix B) was used to answer research question 3. The result of the finding indicated that 1(3,4 percent) academic library had Dialup connection; 1(3.4 percent) 64kb;2(6.9 percent) 128kb; 4(13.8 percent) 256kb and finally 2(6.9 percent) had the bandwidth connection of 516kb. The implication of this finding was that more than half of the studied libraries did not account for any bandwidth connection. Moreover, from the interview interaction with the systems librarians it was revealed that no single academic library had it's own bandwidth but have access through the university bandwidth. Owning a dedicated bandwidth would enhance effective job performance of the academic librarians giving them the liberty to use any time they want. It would also grant them direct access to other databases, where document delivery may be made easier. Supporting this finding are Carey and Justh (2004) who stated that the use Internet- based library system in the USA between the years 2000 and 2004, had managed to circulate 194.0 million circulation transaction; 9.5 million interlibrary loan to other libraries and received 7.7 million loans.

Research Question 4

Do academic libraries in the Southwestern Nigeria have ICT strategy and training policy?

Section B of the questionnaire (See appendix B) was used to answer research question 4.Systems librarians of the 25 academic libraries of the southwestern Nigeria participated. The response indicated that only10 (40 percent) of the libraries indicated having ICT strategy. In other words, the bulk number of the responding libraries 15(60 percent) did not have ICT strategy. As far as training policy was concerned out of 25 academic libraries surveyed, 16 (64 percent) responded that they had ICT training policy while 9(34 percent) academic libraries did not have training policy.

ICT strategy means an official written plan containing objective and guidelines for acquisition and usage of ICT by the library. ICT is a project that gulfs a huge amount of money and with out having a guided plan and well defined objective/s making ICTs available is as good as building a house with out a foundation.

Research Question 5

What are the types of ICTs available in selected academic libraries in southwestern Nigeria?

Section B of the questionnaire (see Appendix B) and interview guide for systems librarians on availability of ICTs (see Appendix G) were used to answer research question 1. In all, 29 systems librarians filled the questionnaire and 35 systems librarians participated in the interview. The interview focused on the available ICTs, their quantities, level of functionality of the individual item. It was found that information and communication technologies availability/ functionality in all academic libraries in Southwestern Nigeria varied from one academic library to another.

The study found that there were 478 desktop computers; 101 printers; 84 photocopiers; 48 scanners; 28 mobile telephone facilities; 26 land line telephone facilities; and 16 laptops available as at the time of the study. The study also found the availability and functionality of multimedia services in five (5) academic libraries;

CD-ROM database facilities in nine (9) academic libraries; facsimile services in eight (8) academic libraries and two (2) Televisions sets of 21-inch in two academic libraries. A critical look at Table 4.8 revealed that in the UNILAG library, out of 54 computers, 10 were found to be non functional. In Kenneth Dike Library of the University of Ibadan, out of 105 computers, 15 computers were found to be non-functional. The library of OOU indicated that out of 34 computers, 2 were found to be non-functional, while in LAUTECH Library, out of 9 available computers, 3 were non-functional.

This finding is supported by the scholarly work of Oketunji, Daniel, Okojie and Abdulsalam (2002); Chisenga (2004); Kajogbola (2004); Fatoki (2005) and Rosenberg (2005) in which Chisenga made a report on the availability of different types of the computers and other related peripheries. Rosenberg (2005) did a study on the digital information communication technologies in 20 African university libraries and found out that academic libraries varied in the ICTs they had. For instance, library automation system currently in use differed from library to library. Adlib was used by academic libraries in Eritrea and Tanzania; Alice for window was used by three (3) academic libraries in Nigeria; Xlib by two (2) academic libraries in Nigeria; CDS/ISIS by eight (8) libraries in Ghana, Kenya, Nigeria, Uganda and Zimbabwe etc. Oketunji, Daniel, Okojie and Abdulsalaam carried out a study on the availability of ICTs, level of staff computer literacy; availability and level of technical support. The study found out that there were 206 computers available. Out of these, 77 computers or 37.4% were work stations while 129 computers or 62.6% are stand-alones.

The investigation in the area of operating systems revealed that the 25 academic libraries sampled in the Southwestern Nigeria, had the tabulations: DOS=2 libraries; W95= 2libraries; W98=15 libraries. The following peripherals were also reported in the study: Fax machines=11 libraries; Telephone Lines= 24 libraries; photocopiers= 39; scanners=11; and printers=10. The study by Chisenga considered ICT availability and use in ten (10) African Anglophone countries. The study reported that most libraries studied showed very minimal availability of computer systems but public libraries in South Africa had sufficient computers. Fatoki discussed the importance of having GSM technology in academic libraries. According to her, GSM availability

had greatly enhanced communication between libraries and this would help in the fast transmission of materials needed by other libraries.

This study is supported by McNab and Winship (1996); Chisenga (2004); Rosenberg (2005); and the report of Carnegie Corporation of New York, the Ford Foundation, the John D., and Catherine T., Mac Arthur Foundation, and the Rockefeller Foundation in 2006. McNab and Winship discussed the importance of utilising Internet facilities in academic libraries as a source to bring a vast amount of information to all the people libraries serve, while the report showed bandwidth availability and utilization in some universities in Africa. Among were the University of Dar es Salaam (Tanzania) with bandwidth availability & utilization: kbps up/kbps down of 256/512, Makerere University (Uganda) 1,280/2,500, Eduardo Mondlane University (Mozambique) 384/1,000; University of Ghana 512/1,024; Bayero University 64/128; Obafemi Awolowo University 128/256; University of Ibadan 56/200 and finally University of Jos 64/128. This goes with the assertion of Rosenberg (2005) when she reported that out of 23 university libraries she studied, 23 % libraries indicated to improve on bandwidth connectivity in order to improve their services.

Research Question 6

What is the degree of utilization of information and communication technologies in southwestern Nigeria?

On the degree of ICT utilization and whether ICT utilization had any relationship with librarians' job performance, the finding revealed that different ICTs were utilised for the purpose of providing information services to the users. Table 4.9 indicated how different items were utilised by the respondents. The inference from this finding is that utilization was only possible because of availability and job performance was possible due to utilization of information and communication technologies (ICTs). In other words, when ICTs are available, they will likely be utilised and when this happens, librarians' job performance would improve. In the case of research question 2, the study indicated that photocopying facilities were more utilised than other ICT facilities. Computer work stations were next in the rank of utilization with the mean and standard deviation of X=2.66, SD= 0.447. The study showed the degree of utilization of telephone with the mean and standard deviation score of X=2.59, SD=

0.457. Intercom facility was utilised by X=2.56, SD=0.491 scores. Among the application software, Microsoft word was utilised more heavily than any other application software with the mean and standard score of X=2.36, SD=0.753.The degree of available ICT utilization can be taken in terms of provision of smooth and quick information services. It also may mean that some facilities were more popular than others or more acceptable or may have been easy to use and that accounts for the disparity. Photocopiers were available in all libraries. As far as application software was concerned, all the libraries studied indicated installing MS-Word. From research question 1, the finding reported that there were 478 desktop computers; 16 laptops. Each of these had installed the MS-word and that is why the degree of Microsoft word was higher than the other application software. Window 2000 was utilised with the mean and standard score of X= 2.01, SD=0.672. Window XP was utilised with the mean and standard scores of X=1.93, SD =0.768. Other application software were utilised based on the need and skill of individual academic library. This finding is in line with the finding of Chisenga (2004) who stated that the extent of ICTs use by librarians is due to the availability (physical presence) of ICTs. Siddique (1997) also reiterated that the use of ICT is closely related to its availability.

Interview question 2 sought information on the degree of ICT utilization by the academic librarians. The response from the systems librarians and from the library administrators indicated that all available information and communication technologies were utilised significantly. The degree of utilization of ICTs especially the use of computers in cataloguing section was greatly encouraging. Most academic libraries with the exception of Federal University libraries and very few Private University libraries, were found utilizing the X-Lib library package. Using different library package is not new with the academic libraries in the south-west. Rosenberg (2005) in her study of Digital Libraries in Africa found out that different library packages were being introduced by individual libraries. Most of the academic libraries included in her study from Nigeria indicated using X-Lib package. Chisenga (2004) studied information and communication technology use in ten Anglophone public libraries in Africa. The study found out that special library packages were used in almost all the public libraries studied.

Internet facility is one of the ICT branches and few academic librarian had access and provision of document delivery services through the use of Internet facility-e-mail.

The library of Pan African University, Adekunle Alalade Library, Hezekiah Oluwasanmi Library of Obafemi Awolowo University among others utilised e-mail facility to provide document delivery services. However, Internet utilization has transformed the work of librarians significantly. As far as utilizing other ICT facilities were concerned, few libraries utilised the e-mail facility for the purpose of document delivery. Pan African University Library, Adekunle Alalade Library of Babcock University, Hezekiah Olusanmi Library of the OAU, indicated that they utilize the E-mail services for the purpose of document delivery.

Research Question7

What are the organizational, human and cultural factors that affect the availability and utilization of information and communication technologies in the academic libraries of study?

Research question 7 sought information on organizational, human and cultural factors that had affected availability and utilization of ICTs in academic libraries in Southwestern Nigeria. Systems librarians and head of institutional librarians from 29 academic libraries participated in this section. Two different items namely questionnaire and interview were used to elicit information on the subjects mentioned above. Only twenty one systems' librarians took part in filling out the questionnaire while, head librarians participated in the interview. The finding revealed that reluctance to use ICTs; difficulty in training librarians to use ICTs affected the utilization of ICTs. Those who responded on skill level of the librarians towards the utilization of ICTs, are 68 percent indicating that lack of ICT staff caused barrier to utilization. 66 percent of the respondents indicated erratic power supply as hindrance towards ICT utilization. The study showed the following as hindrances towards ICT availability. They are: fund; lack of management commitment towards ICT and inadequacy of existing ICT facility in academic libraries. If management shows commitment, much can be achieved and the use of ICT would improve librarians' job performance. That is actually the main reason why ICTs were introduced in libraries. This finding is not different to the finding of Hann (1995) who stated that organizational, cultural and human factors are key factors that can affect the use of ICTs. Another scholar who supported this finding is Chisenga (2004) when he carried out ICT use in ten (10) Anglophone African public libraries. This finding reported that cultural, organizational, lack of fund, lack of qualified ICT personnel, erratic

power supply led to the non-availability and under-utilization of ICT facilities. Other studies like Oketunji, Daniel, Okojie and Abdulsalaam (2002), support the finding. In the words of Oketunji, Daniel, Okojie and Abdulsalaam, the following hindrances were discovered when they carried out a study on forty years of Information and Communication Technology (ICT) of Library Services in Nigeria. The study covered 50 libraries in Nigeria. The finding indicated the following problems as hindrance towards ICT utilization: occasional breakdown; NEPA; obsolete equipment; lack of maintenance; lack of technical support; lack of adequate training. The study by Okiy (2005) showed that lack of fund, and lack of management support led to non-availability of ICTs in Nigerian university libraries.

Research question 7 was complimented by a structured interview guide. Twenty-five **(**25) library administrators participated in this section. Almost all of them reported that they faced challenges in the cause of making ICT available, utilised and even with their workers as well. Only Three (twelve percent) of the respondents stated that they had less challenges. These are library administrators in private academic libraries. Twenty-two (eighty-eight percent) respondents expressed enormous challenges. Some of the challenges are: irregular power supply, lack of adequate fund and academic librarians' attitude towards the use of information and communication technologies (ICTs) at work places.

Twenty-two (eighty-eight percent) of the respondents stated that irregular power supply militated the utilization of information and communication technologies. They also expressed frustration due to lack of a stand by generator. All respondents (100 percent) stated the librarians' attitude towards the use of ICT as not encouraging. Twenty-two(eighty-eight percent) of the academic library administrators said that lack of adequate fund allocation is a cause for

The challenges they face. Lack of fund was seen as a militating factor towards the availability of ICTs in academic libraries. However, this was not the case with the remaining 3(12 percent) respondents who stated that fund was not their major challenge. This finding is supported by the findings of the following scholars: Obajemu (2006),okiy (2005), Sani and Tiamiyu (2005), and Jegede (2001).

Obajemu asserted that librarians' attitude to the use of information and communication technologies can affect the way ICTs are utilised. Attitude is a state at which librarians either accept or reject the ICTs. While accepting the ICTs may improve the librarians' job performance, not accepting may result in poor performance. It is in the light of this Obajemu stressed the need for positive attitude. Okiy pointed out that poor and inadequate telecommunication facilities; poor level of computer literacy militated the use of information and communication technology in Nigeria. Jegede advised that professional librarians in Nigeria need to acquire necessary skills that will enable them to be competent in an ICT environment, while Sani and Tiamiyu pointed out that irregular power supply; librarians attitude towards the use of ICT and poor funding among others stood as militating factors towards ICT availability and utilization in Nigerian academic libraries.

Research Question 8

How has the use of ICT contributed to effective job performance in academic libraries?

Research question 48 sought information on how ICT use had contributed to librarians' job performance. One hundred and fifty three (153) academic librarians participated in the exercise and the result indicated that each academic librarian performed its duties effectively.

The use of photocopying machine has contributed to the job performance of librarians with the mean and standard deviation scores of (X =2.94, SD=0.319). This may mean that more and more people may have been served through the use of photocopiers. Word processing of document of the librarians is shown with the mean and standard deviation scores of (X=2.76, SD=0.508). Several tasks were performed by the academic librarians and to a greater extent; each task performed indicated the degree of job performance.

Table 12 also indicated the different tasks performed by the academic librarians. Well, all academic libraries do not have the same kind and equal amount of information and communication technology facilities. This might have been caused by lack of funds, lack of qualified ICT personnel and/or lack of organizational or management

commitment to train library staff on the use of ICTs. However, in spite of these variables the findings indicated that tasks were performed in a quantifiable format. Table 13 presented the effect of ICT use on librarians' job performance. With the tasks librarians performed, the finding relates with what other scholars have found out in their previous studies. Lancaster and Sandore (1997) for instance reiterated that the use of Information Technology would enhance librarians' job performance. Chuene (2000) carried out a study in Botswana academic libraries and reported that the use of automated library services reduced manual job from 27 activities to 14. Singh (1998) conducted a research study on the use of Internet by the librarians in Malaysia. The main findings of the study indicated that 90% of the respondents used the Internet for work related purposes. Most of the respondents were recent users. Voorbij (1999) examined the use of the Internet amongst students and academics in the Netherlands. A questionnaire was distributed among 1,000 members of the academic community and three focus-group interviews were also held with faculty members. The study revealed that the Web was being used primarily to search general, factual, ephemeral or very specific information. The study also revealed that students and academics faced many problems while searching the Web. Williams (1999) reported the use of information technology and the Internet in his project entitled "Information Technology in Michigan: Adult and Teen Survey Report." The results indicated that majority of the respondents (72%) used the Internet at least once a week and 45% at least once a day. Moreover, Laite (2000) surveyed 406 graduate and undergraduate students from Shippensburg University. The survey showed that 57.6% of the undergraduate students used the Internet 1-2 times per week and another 37.1% used it 1-2 times daily. More than 50% of the graduate students used Internet 1-2 times per week and 37.7% used it 1-2 times daily. The survey showed that the most used Internet service was e-mail. A hundred percent of the graduates and undergraduate students used e-mail service. Nicholas *et al* (2003) conducted a study in the UK to examine the use of the web for health information and advice. More than 1,300 people were surveyed. The study showed that 66% of the respondents accessed the Internet from home, 28% from work place and the remainder (6%) used a combination of both work place and home. Hanauer *et al* (2004) surveyed a diverse community college to assess the use of the Internet by the students for health-related information. The survey showed that although all the students surveyed had free Internet access through their community college, yet, only 97% of the students reported having access to the

Internet. The survey showed that 83% Internet users had access to the Internet at their home and 51% of the respondents accessed Internet at the college or library. Eighty-one percent of the students reported accessing the Internet mostly for college work and 80% for e-mail/chat. Men and women searched for health information in almost equal numbers. A recent study by Asemi (2005) showed that all the respondents were using the Internet frequently because all faculties were provided connection to the Internet. It was revealed that the researchers of the university were getting quality information through the Internet. Fifty-five percent of the respondents searched for scientific information through the Internet because the university library had provided access to various databases and online journals for all the students and staff. The study by Kumar and Kaur (2005) support this finding when they found out that the use of Internet in Punjab, College of Engineering Library was provided to support academic work. The study discovered that the use of Internet has an overwhelming effect in helping the librarians to provide materials for the users over the conventional document.

The degree of ICT utilization indicated the overwhelming effect on librarians' job performance as indicated in Table 12. Seventy-five (75) percent of the respondents indicated that the use of ICT has improved their job performance. To 78 percent of respondents, ICT has made their job error free. This finding is supported by Lancaster and Sandore (1997) when they carried out the effect of technology on librarians' performance and found out that majority of the librarians studied indicated that the use of IT resulted in error free jobs . Troll (2001) also indicated that the use of information technology improves the activities of the librarians. Seventy-three (73) percent of the academic librarians stated that the use of ICT has provided more efficiency. Seventy-two (72) percent of the librarians pointed out that their output has had a significant improvement since they started using ICTs. This finding is supported by Bennet and Philip (2004). They carried out a study on the use of ICT and firm performance. They sampled how firms use ICTs and their performance experience and the study discovered a relationship between the use of ICTs and job performance of the firms. Jegede (2001) studied skill acquisition of librarians and work performance and found out that there existed a relationship between ICT skill, use and performance. Ryan and Watson (2003) carried out a study in Australia. The study considered ICT use in three organisations: hair dressing, library and printing houses.

The study discovered that ICT was heavily used than the other two and also performance improved drastically. The authors concluded that ICT was lubricant towards job performance of the librarians.

Hypothesis 1

There is no significant relationship between availability of ICT and job performance of librarians in academic libraries of study

Hypothesis 1 is rejected. The finding indicated that availability of ICT accounted for (X= 20.41, SD=4.16) and the effect of availability of ICT on the respondents job performance is also shown as (X=39.46, SD= 3.21).This means that the introduction of ICTs in academic libraries was a careful plan by the library managers as well as other stakeholders to make ICTs available in the libraries and improve the job performances of the librarians. The test of hypothesis revealed that there is a significant relationship between availability of ICT to the respondents and their job performance ($r=0.435$, $P<0.05$). This means that any increase in ICT availability will cause job performance to increase.

The findings of Omotunde (2002); Oketunji, Daniel, Okojie and Abdulsalaam (2002); Ryan and Watson (2003) and Rosenberg (2005) do all support Hypothesis 1. Hann postulated that the availability and utilisation of information technology leads to competitiveness while Omotunde (2002) carried out a study on availability, accessibility and utilisation of ICTs on workers effectiveness in some special libraries in Nigeria. Omotunde's finding directly supports Hypothesis 1 in that there was a direct relationship between ICT availability and job performance of the librarians.

Hypothesis 2

There is no significant relationship between the utilization of ICTs and job performance of librarians in academic libraries of study.

The same way hypothesis one was rejected, hypothesis two is also rejected. This means, the alternative is accepted. The finding revealed that there was strong positive

relationship between the utilization of ICT and job performance of the respondents. Two key variables were identified in hypothesis two – utilization of information and communication technologies (independent variable) and job performance (dependent variable) of the academic librarians. Table 4.15 indicated the mean score of utilization of ICT and its standard deviation score to the respondents (X=74.10, SD=3.61) and that of their job performance was (X=39.46, SD=3.21). According to the finding there was a significant relationship between utilization of information and communication technologies and job performance of the respondents (r=0.542,p 0.01). This may mean that the more the academic librarians are in contact with ICT, the higher the ICTs are utilised and the higher the ICTs are utilised, the higher the job performance of the academic librarians shall be.

This finding is supported by Cochrane (1992); Adedeji (2002); Hagg (2002); Williams and Sawyer (2003) and Malhotra (2004). Cochrane reiterated that libraries use information technology to automate technical services, to provide efficient reference and information services, to network operations such as cataloguing, authority control, interlibrary loan, and International bibliographic project for increased productivity. Adedeji viewed that the use of information technology causes accuracy of information provision, speedy retrieval of information and increased ability to manipulate data. Williams and Sawyer viewed that the utilization of information and communication technologies improve the job performance of workers in any organization. Hagg stated that the use of information technology is a very vital exercise which aids facilitation of services, improves the creation and generation of information while Malhotra pointed out that the technique to use ICT is a key factor for improved job performance.

Hypothesis 3

There is no significant relationship between availability and utilization of ICTs and job performance in academic libraries

The study revealed that availability of ICT (ß=0.204; DF=2; 150; T=3.717, P<0) and utilization of ICT (ß=0.390; DF=2; 150; T=6.163; P<0.05) improved the job performance of the academic librarians in Southwestern Nigeria (F=40.98; DF=2; 150; P<0.05). Moreover, availability of ICT and utilization of ICT accounted for 34.5

percent of the total variance in improving job performance of the academic librarians in South-West Nigeria. The test of Hypothesis three revealed that there was significant multiple relationships between availability of ICT and utilization of ICT by the academic librarians in South-West Nigeria (R=0.594, <0.05). In other words, the combined effects of the two variables (availability and utilization of ICTs) increased the job performance of the academic librarians in Southwestern Nigeria. This means ICTs were available and they were equally utilised by the respondents (academic librarians) to improve the job performance of the respondents.

This finding was supported by Ryan and Watson (2003); Bennet, Cobbold and Philip (2003); Adeogun (2003); Alasa and Kalechukwu (1999) and Nilles (1997). Bennet, Cobbold and Philip carried out a study on ICT availability and use in sixteen (16) OECD countries and the finding revealed that there was a relative relationship between availability and utilization of information and communication technologies to improve the job performance of the workers. Adeogun pointed out that the availability of full Internet access and its use, facilitated librarians to send and receive e-mail messages. Kalechukwu (1999) reiterated that the combined effects of availability and utilization of ICTs provided university libraries quick and convenient information exchange; access to experienced and expert individuals in many fields; enhancement of teamwork across geographical distance; transfer of data between machines; facilities for electronic search. Nilles (1997) reiterated that the availability and utilization of information and communication technologies would enhance job performance and productivity of workers.

Hypothesis 4

Availability and Utilisation of ICTs do not equally contribute effective Job performance of librarians in the academic libraries of study

The study in hypothesis three revealed the combined effects of availability and utilization of ICTs on job performance of the academic librarians. However, hypothesis four indicated the individual effect of availability and utilization of ICTs on academic librarians' job performance in Southwestern Nigeria. The finding showed that each of the variables (availability and utilization) was in its own a very

strong factor that determined the job performance of the respondents in academic libraries in Southwestern Nigeria. The numerical comparison however showed weaker effect of availability on job performance than utilization of ICTs.

The above interpretation calls for attention in two main areas of the administration of academic libraries in South-West Nigeria. One is that availability of ICTs will make increase in job performance possible, but the other and most important is that utilization will make increase in job performance attainable. This therefore, calls for skill acquisition training so that every available piece of ICT in every academic library in the South-West will be utilised. The finding of this hypothesis is supported by studies of Tahir and Mitomo (2005); Kamar (2006). Tahir and Mitomo studied the ICT usage of Malaysian workers. The study adapted questionnaire and focus group to cover a population ten zones of the country and the finding revealed that availability and utilization of information and communication technology would improve the job performance of the workers. The authors also insisted that the presence of ICT must be fully utilised by the workers. Kamar studied factors hindering effective management of government information in Kenya. It was discovered that the availability and utilization of ICTs individually and collectively provided the distribution of government information practicable and the lack of ICT to access and utilize government information impossible.

5.2 Summary of Major Findings

This study investigated Availability and Utilisation of Information and communication technology and Job performance of Academic Librarians in the Southwestern Nigeria. The study identified some variables that involved in availability and utilization of ICTs and job performance of the academic librarians which includes the types of available ICTs in each academic library, the quantity of ICT , the degree utilization and the effect of utilization on librarians job performance

The study was to find out how academic librarians who bear primary responsibility as managers and policy makers directly involved in the day to day execution of library functions provide a unique approach that locates the buck where it starts and stops. These particular groups of persons have generally more specialized knowledge

of specific ICTs and heir uses, and of libraries in which they work- all of which translates to improved quality of information available to this research.

The general objective of this research was to investigate the level of availability and Utilisation of ICTs in academic libraries southwestern Nigeria, and the relationship of this to job performance in the selected academic libraries.

The study was an ex-post facto type and adopted the descriptive research design. Only institutions that have made ICTs available to their personnel were selected for the study. The study population consisted of 195 academic librarians in 25 higher institutions in Southwestern Nigeria. The total enumeration technique was adopted. The major instrument used for this study was the "Availability, Utilization and Job Performance Questionnaire (AUJPQ).This was complemented with structured interview tagged Availability, Utilization and Job Performance Interview (AUJPI)" and an observation schedule to collect data for the study. The questionnaire was validated with the reliability coefficients for ICTs availability scale was α=0.92; while ICTs utilization α=0.96 and Job performance scale were α=0.97 respectively using the Cronbach alpha method. The test- re-test reliability coefficient for interview checklist was 0.75 and 0.72 for observation schedule. Data were collected from 153 academic librarians which translate to a response rate of 78.5%. Data collected were analyzed using Pearson Product Moment correlation and Multiple Regression analysis.

The findings of this study show that:

- There were 448 desktop computers in 25 academic libraries; 15 laptops in 13 academic libraries with the exception of KDL, OOU, and UNAAB libraries which had two laptops each, while the rest had only one laptop. The distribution of available PCs in individual academic library is indicated below:

Name of Library	**Number of PCs available**
Kenneth-Dike Library, UI	105
UNILAG Library	54
Hezekiah Oluwasanmi lib (OAU)	41
FUTA Library	22
LAUTECH Library	9
Olabisi Onabanjo Library	34
Fatiu Adenola Akisode Library	18
Akungba library	4
Bowen Univ. Library	2
Babcock Univ. Library	30
UNAAB Library	16
Covenant Univ. Library	10
Pan African Univ. Library	10
Ibadan Poly Library	17
Poly Ilaro Library	12
Yaba Tech. Library	15
Fed. Poly Ede Lib	4
Lagos State Poly Library	6
Moshood Abiola Library	7
Osun State College of Edu. Library	4
Osun State College of Edu. Lib Ila Orangun	2
Fed College of Edu. (Spec) Oyo Lib.	8
Fed. College of Edu, Osiele Library	7
Adeniran Ogunsanya Library	7
Fed.Govt College of Edu (Technical) Library	4

- There were 123 printers, 42 scanners, 75 photocopiers, 17 still cameras, 9 digital cameras, 7 video cameras, 11 projectors (LCDs), 4 option barcodes scanners (only KDL has this particular hardware), 4 TV sets, 1 external CD-

Writer (only KDL has this facility). There were only eight facsimile services available of which only seven were functional; 24 academic libraries have landline telephone services functioning; all of them indicated having mobile telephone services and 4 libraries indicated having multimedia services .

- Internet services were provided to both students and lecturers by less than 50 percent of the academic libraries; very few academic libraries had bandwidth connection; and less than 20 percent of the libraries had 256kbs connection and less than 20 percent of libraries had LAN.
- A good number of libraries provided CD-ROM facilities and services for the users. More than 60 percent of libraries provided AGORA. Out of 25 academic libraries, 24 libraries have automated one or more services; 20 libraries automated their cataloguing and classification services; 19 libraries automated serial administration;17 libraries automated circulation services; 13 automated acquisition services, and finally 4 libraries automated interlibrary loan.
- Few academic libraries had OPAC services, while the rest of them are still struggling with manual card catalogs. The implication of this is that accessing the main library from a remote computer within the same university is not possible.
- Few libraries have networked their services, while majority of them are stand-alone. This is found to be a bad practice because, if systems are not integrated, retrieving needed information would be time wasting and that also slows down the rate of performance.
- It was also discovered that except the Pan African University Library which provided document delivery services from Harvard University and other libraries in UK, no other single academic library provides documented statistics showing the number of web sites they assisted users to visit; number of documents they circulated electronically; or how many document deliveries they provided either to students or lecturers.
- The study brought to light that there is no sufficient fund allocation either from school management board or from the Federal Government towards the ICT acquisition in the libraries studied and this makes availability of ICTs inadequate.

- The study indicated that due to lack of adequate funding, some librarians could not send their workers (library administrators) on ICT training which is the key to utilization of ICT and job performance.
- Availability of ICTs in academic libraries in this study is found to be fundamental to the utilization of the ICTs by the librarians to perform their duties and provide quality , timely and improved information services to the people they serve.
- Different types of ICTs that were available were utilised by the academic librarians but all of the ICTs were not utilised at the same rate.
- There is a strong relationship between the availability of ICTs and the Utilization of ICTs ($r=0.542$, $P<0.05$). Availability makes utilization possible but it is not every facility that is available that is utilized.
- Availability of ICT on its own is a strong predictor of librarians' job performance in academic libraries ($ß=0.204$; $t=3.317$, $P<0.05$).
- There is a strong relationship between availability ($r=0.435$, $P<0.05$); and utilization of ICTs ($r=0.542$, $P<0.05$); in academic libraries and the combination of the two are very strong factors in improving job performance ($r=0.594$, $P<0.05$) of the respondents in the academic libraries.
- Academic librarians' participation in ICT training in a form of attending workshops, conferences and skill acquisition is a strong predictor to fully utilize the ICTs and perform their duties effectively.

5.3 Conclusion

The introduction of information and communication technologies in academic libraries ultimately provides improved delivery of quality information services to all categories of users. However, this is only possible when academic librarians' possess skills to manage the available ICTs in order to be able to perform their duties.

The study made efforts to find out the availability and utilization of information and communication technologies in academic libraries in Southwestern Nigeria and how the availability and use of ICTs has contributed to the librarians' job performance. The study established the fact that availability of information and communication technology (ICT) made utilization possible and realistic but the degree of utilization

can be improved through frequency of use, and frequency of use definitely will improve the job performance of the academic librarians. It can be concluded that making information and communication technologies available in academic libraries make utilization possible and realistic but utilization makes job performance attainable.

When the available ICTs are utilised maximally, there is no question that lecturers, students and researchers inclusive will not be satisfied with the services they receive from the library and there is no question about the quality of their work. Availability of information and communication technology is seen in this study as a good predictor of utilization and job performance.

There is need to provide series of training and re-training (Raseroka, 1999). Out of the 25 academic libraries that constituted this study, Kenneth Dike Library of the University of Ibadan showed more ICT availability than any other library. Most academic libraries studied, especially all state universities, polytechnics and colleges of education indicated the availability and use of X-Lib for their operations while Kenneth-Dike Library of the University of Ibadan; and Centre for Learning Resources of Covenant University library use Alice for Windows. Federal University Technology, Akure Library, University of Lagos Library and Nimbe Adedipe Library of University of Agriculture, Abeokuta use Glas software. The Pan African University Library uses CDS/ISIS while Hezekiah Oluwasanmi Library of Obafemi Awolowo University developed its own software called analytic E-Library. The study also showed that few libraries made Internet services available for the purposes of providing on-line information and provision of access to some authorised web sites. However, majority of the libraries could not account for Internet services and this calls for the revisit of policies towards making adequate funds available in libraries.

The availability of information and communication technology made utilisation of all available ICT facilities possible and attainable. Even though, the effect of availability of information and communication technology on job performance varied in numerical count yet the effect was significant no matter how small it was.

5.4 Implications of the Study

The implications of this study indicates that information and communication technologies if available and functional coupled with the ICT skills required to utilize them, will improve the job performance of academic librarians. More so, the available information and communication technologies if utilised maximally, would increase the job performance of academic librarians.

Adequate budgeting for maintenance of these available information and communication technologies will facilitate the actualization and improve the quality of services rendered to users.

5.5 Recommendations

The following recommendations are derived from the findings of the study:

- Required information and communication technologies should be acquired and utilised to improve the job performance of academic librarians.
- The academic library management in Nigeria should select appropriate software packages and if possible their own software in carrying out their business operations.
- The curriculum in the library schools should emphasise computer programming so as to develop the skill for the production of the appropriate library software.
- Academic libraries in Nigeria should network their information systems for resource sharing.
- Academic libraries in Nigeria should endeavour to provide Internet services to their users.
- Management of libraries must ensure that adequate training in the use of information and communication technologies (ICTs) be given to academic librarians.

5.6 Contribution of this Study to Knowledge

From the extensive literature review, it has not been established empirically that ICTs availability and utilization affect job performance of academic librarians.

This study has however shown that ICT availability and its utilization significantly improve effective job performance of the staff in academic libraries in Southwestern Nigeria. The availability of information and communication technology contributed 26.5 percent towards the job performance of the academic librarians while utilisation of information and communication technology contributed 43.9 percent in improving the job performance of the academic librarians in Southwestern Nigeria. The combined effect of availability and utilization of ICTs on job performance is 34.5 percent.

5.7 Suggestion for Further Study

The following areas of studies are suggested for future research as this study did not cover all aspects of ICT availability and use and job performance of academic librarians.

1. Further study can be carried out in other zones that were not part of this study.
2. It is suggested that more academic libraries sample should be used for more generalization on the availability and utilisation of ICTs and job performance of the librarians.
3. There is also need to sample non-academic librarians who were not part of this study to participate in the use of ICTs and job performance process.

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APPENDIX A

Department of Library, Archival and Information Studies,
University of Ibadan,
Ibadan, Nigeria

Dear respondent,

I am conducting a research on Availability and Utilisation of ICTs and Job Performance in Academic Libraries in Nigeria. Kindly answer all questions.

The questionnaire has 5 sections. You are expected to provide answers by ticking ( ), and supply answers by writing where applicable. I rely on your accurate and objective answers to get a reliable outcome. All the information you provide will remain confidential and will only be used for research purposes.

Kindly return the completed questionnaires to the field assistants.

Thank you and God bless

Yacob Haliso

Section A: Demographic Information of the Respondents

1. Your name _____ (optional)

2. Your sex (please tick one). Male ( ) Female ( )

3. Your Age (please tick one) 20 – 24 ( ) 25 –29 ( )
30 – 34 ( ) 35 –39, ( ) 40 – 44 ( )
60- 64 ( ) 65 –69 ( ) 70 and above ( )

4. What is your highest academic qualification?
M.Sc ( ) MA ( ) MED ( ) MINF ( ) MLS ( )
MBA ( ) Ph.D. ( ) ALA ( )
CILIP ( ) others (specify)
_____

Section B: Questionnaire on Library Automation and other ICTs Availability in Academic libraries in South-West Nigeria. To be filled by System/Deputy System Librarians

1 Which of the library functions (activities) are automated? Select that which applies to your library

Acquisitions and budgets ( )
Cataloguing ( )
Circulation control ( )
Serial Administration ( )
Library Catalogue (OPAC) ( )
Management information ( )
Interlibrary loan ( )
Other (specify)_____

2 Which of the underlisted is applicable to your library system, regarding automation?

i. All libraries that form the system are automated ( )

ii. Only the main / central library is automated ( )

iii. Only the main / central library and a few other libraries that form the system are automated ( )

3. If your answer is ii and or iii for question No. 2 above, give details and reasons why only the main library / a few others are automated.

_____

_____

_____

_____

4. Give the name of the system (s) being used: (i.e. Tinlib, Xlib CDS/ ISIS etc)

5. Which year did the library start using an automated system for its function?

6. Does the library offer access to CD – ROM based databases and information products?

i. Yes ( )

ii. No ( )

7. If yes for question No. 9 above, give details of the databases or series offered

_____

_____

INTERNET CONNECTIVITY

If your library has access to the Internet facilities (e-mail/www) then you should complete the following questionnaire

8. Does the library use?

i. Its own internet server ( )

ii. Shared internet server ( )

iii. An internet service provider (ISP)'s hosted internet server ( )

9. How is the library connected to the Internet?

i. Dial – up ( )

ii. ISDN ( )

iii. Leased line ( )

iv. Wireless ( )

v. LAN/WAN ( )

vi. Vast ( )

Others (specify) _____

_____

10. What is the bandwidth connectivity for the library? (✓) where applicable

10.1. Dial – up to 50 k ( )

10 .2. 64 kb ( )

10.3. 128 kb ( )

10.4 .256 kb ( )

10..5 516 kb ( )

10 .6 1MB ( )

Higher (specify): _____

_____

LIBRARY WEB SITE

11. Does the library have its own web site?

11.1 Yes ( )

11.2 No ( )

11.3 If yes, indicate the web site _____ and if not why is it that you do not have a web site?_____

_____

12. Is the web site maintained directly by library staff ?

12.1 Yes ( )

12.2 No ( )

12.3 If no, who maintains it? _____

13. Which of the following pieces of information/services is /are available to the library web site? (Please tick (✓) all that apply)

13.1 Library opening times ( )

13.2 Access the library OPAC ( )

13.3 Links to electronic library resources (data bases and electronic journals, etc) ( )

13.4 Documentation and support materials for using library resources. ( )

13.5 Self help and study materials for library skill development ( )

13.6 Events and announcements ( )

13.7 None of the above ( )

13.8 Others (provide details) _____

_____

_____

ICT Support and Staff Skills

14. Regarding ICT support, which of the following is applicable to your library? (Please tick (✓) where applicable)

14.1 Library has in – house ICT support staff. ( )

14.2. Library receives ICT support from parent organisation's ICT staff ( )

14.3. Library receives and pays for external ICT support ( )

Provide details for your response (if your answer is 21.1, how many members of staff are there and what is their role) _____

_____

_____

If your answer is 14.2, which external institutions or individuals provide ICT support and how much does it cost per annum

_____

15. How does the library handle technical support for its ICTs?

15. 1 Network access problem ( )

15.2 Hardware problems ( )

15.3 Software problems ( )

15.4 Printing problems ( )

15.5 Training and support of other staff ( )

15.6. Others (provide details)_____

_____

ICT Strategy and Training Policy

16. Does your library have an ICT strategy? (ICT strategy means an official, written plan containing objective and guidelines for acquisition usage of ICT by the library)

16.1 Yes ( )

16.2 No ( )

17. Which of these are included in the ICT strategy? (please tick all that apply)

17.1 ICT infrastructure ( )

17.2 ICT security policy ( )

26.3 Library user services via the Internet ( )

17.4 Library user ICT facilities acceptable use policy ( )

17.5 Library web publishing policy ( )

17. 6 None of the above ( )

17.7 Others

(specify)_____

_____

_____

18. Does your institution have an ICT training policy for staff who are not ICT specialised?

18.1 Yes ( )

18.2 No ( )

If No state how training is conducted (how often, the duration of the training etc.)

19. Do you think acquisition of ICT skill will improve librarian's job performance?

19.1 Yes ( )

19.2 No ( )

Barriers to Usage of ICTs

20. What impact do the underlisted barriers have on the library's ICT in general? (Tick one box per line)

21.

Barriers to ICT in general	Don't know	Large	Some	None
29.1 Inadequacies of existing ICT resources				
29.2 Lack of budget for ICT				
29.3 Skill level of academic librarians				
29.4 Lack of ICT qualification staff in the library				
29.5 Reluctance among staff to use ICTs				
29.6 Library lacks up dated ICT strategy				
29.7 Lack of commitment by institutional management				
29.8 Difficulties in training library staff in appropriate ICT skills				
29.9 Erratic power supply and lack of stand by generator				

Section C: Questionnaire on Availability of ICTS- To be filled by system librarians
and their deputies.

Kindly read the underlisted ICTs and tick ( ) the column that best describes the availability of ICTs in your university library. The operational measurement for this section of questionnaire is ranged as stated below:

1 = Not available
2 = Available but not functional
3 = Available and functional
4 = Readily available and functional
5 = Very readily available

Hardware Facility	1	2	3	4	5
Computer servers					
Work Stations (Personal Computer)					
Computers used by librarians and connected to the Internet					
Computers used by library staff not connected to the internet					
Laptops					

Printers Ink jet printers					
Laser printer					
Dot matrix					
Facsimile					
CD –ROM's					
Copiers					
E – Mail					
Telephones (land line) Mobile phones Intercoms					
Online search Scanner Digital video camera Digital still camera Digital (LCD) projector Internet services					

Software (Operating systems and Applications)

Which operating system(s) are available on the computer servers in the library? (Select all that apply)

• Windows XP • Windows 2000 • Windows NT • Windows 95/98 • Novell NetWare • Unix • Ms – Dos Which operation systems are available on the workstations in the library?					

• Windows XP • Windows 2000 • Windows NT • Windows 95/98 • Novell NetWare • Unix • Ms – Dos Which operating systems are available on the laptops in the library? • Windows XP • Windows NT • Windows 95/98 • Novell NetWare • Unix • Windows 2000 • Ms – Dos					
Application (Client) Software computer servers					
Microsoft office Application • *Word*					
• *Excel*					
• *Access*					
• *Power point*					
Word Perfect office applications • *Word Perfect*					
• *Quattro*					
• *Presentations*					
Lotus Smart suite • Lotus word pro					
• Lotus 1 – 2 –3					
• Lotus Freelance Graphics					

• Lotus Approach					
• Lotus Smart Center					
• Lotus Organizer					
Web Browsers • Internet Explorer					
• Netscape					
• Opera					
E – Mail Clients • Outlook					
• Eudora					
• Pegasus Mail					
PDF Document Viewers • Adobe Acrobat Reader					

Section D; Questionnaire on ICT Utilisation

Kindly read the underlisted ICTs and tick (√) the column that best describes the level of utilisation. The operational measurement for this section of questionnaire is indicated as follows:

1. = Not Utilised
2. = Utilised
3. = Heavily Utilised
4. = Very Heavily Utilised

Hardware Facility	1	2	3	4
Computer Servers				
Work stations (personal computers)				
Computers used by librarians and connected to the Internet				
Computers used by library staff and not connected to the Internet				
Laptops				
Printers • Inkjet printers				
• Laser Printers				

• Dot Matrix				
• Facsimile				
• CD – ROM				
• Copier				
• E – Mail				
• Intercoms				
• Online search				

Which operating software are utilised in your library's computer server? (Select all that

Apply)

1. = Not utilised
2. = Utilised
3. = Heavily utilised
4. = Very heavily utilised

Software (operating) Facility	1	2	3	4
• Windows XP				
• Windows 2000				
• Windows NT				
• Windows 95/98				
• Novel NetWare				
• Unix				
• Ms – Dos				

Which of the operating systems are utilised in your library's work stations?

• Windows XP				
• Windows 2000				
• Windows NT				
• Windows 95/98				
• Novel NetWare				
• Unix				
• Ms – Dos				

Which of the operating systems are utilized on the laptops in your library?

• Windows XP				
• Windows 2000				
• Windows NT				
• Windows 95/98				
• Novel NetWare				
• Unix				
• Ms – Dos				

Application (client) software

Computer servers

WordPerfect office application: Which of the following application software are utilised in your library's server?

• Word Perfect				
• Quattro				
• Presentation				

Lotus Smart Suite

• Lotus word pro				
• Lotus 1 – 2 – 3				
• Lotus Freelance graphics				
• Lotus approach				
• Lotus Smart center				
• Lotus Organizer				

Web browsers

• Internet Explorer				
• Nets cape				
• Opera				

E- Mail Clients

• Outlook				
• Eudora				
• Pegasus Mail				

PDF Document viewers				
• Adobe Acrobat Reader				

Application (client) software

Library work station

Microsoft office Applications:				
• Word				
• Excel				
• Access				
• PowerPoint				

WordPerfect office application: Which of the following application software are utilised in your library's server ?

• WordPerfect				
• Quattro				
• Presentation				

Lotus Smart Suite

• Lotus word pro				
• Lotus 1 – 2 – 3				
• Lotus Freelance graphics				
• Lotus approach				
• Lotus Smart center				
• Lotus Organizer				

Web browsers

• Internet Explorer				
• Nets cape				
• Opera				

E- Mail Clients

• Out look				
• Eudora				
• Pegasus Mail				

PDF Document viewers				
• Adobe Acrobat Reader				

Application (client) software

Laptop

Microsoft office Applications:				
• Word				
• Excel				
• Access				
• Power point				

Word Perfect office application: Which of the following application software are utilised in your library's server ?

• Word Perfect				
• Quattro				
• Presentation				

Lotus Smart Suite

• Lotus word pro				
• Lotus 1 – 2 – 3				
• Lotus Freelance graphics				
• Lotus approach				
• Lotus Smart center				
• Lotus Organizer				

Web browsers

• Internet Explorer				
• Nets cape				
• Opera				

E- Mail Clients

• Outlook				
• Eudora				
• Pegasus Mail				

PDF Document viewers				
• Adobe Acrobat Reader				

Section E: Questionnaire on ICT Use and Job Performance

Using the scales 1-5, rate how the librarians working under you performed their duties using information and communication facilities.

1. = Poor
2. = Average
3. = Good
4. = Very good
5. = Excellent

	1	2	3	4	5
1. Registration of users					
2. Charging in and charging out of information materials					
3. Stock taking/ inventory of materials					
4. Serials management					
5. Cataloguing and classification					
6. Weeding of outdated materials					
7. Budgetary control					
8. Answering users' queries					
9. Searching for electronic information on the net					
10. Resource sharing / Document delivery					
11. Sending reference requests electronically					
12. Preparing reports (daily, weekly monthly,					

biannually, annually)					
13. Word processing of document					
14. CD – ROM search 15. Scanning of documents 16. Selection of and acquisition of library materials 17. Resource sharing and document delivery 18. Teleconferencing and video conferencing using multimedia facility 19. Photocopying library materials needed by students/lecturers 20. Sending and receiving e-mail messages 21. General administrative duties					

Section F: Questionnaire on ICT Use and Job Performance:

Use the scales 1-5 below to determine your ICT use and job performance.

1= Poor

2= Average

3= Good

4= Very good

5= Excellent

	1	2	3	4	5
1. Registration of users					
2. Charging in and charging out of information materials					
3. Stock taking/ inventory of materials					
4. Serial management					
5. Cataloguing and classification					
6. Weeding of outdated materials					
7. Budgetary control					
8. Answering users' queries					
9. Searching for electronic information on the net					

10. Resource sharing / Document delivery					
11. Sending reference requests electronically					
12. Preparing reports (daily, weekly monthly, biannually, annually)					
13. Word processing of document					
14. CD – ROM search 15. Scanning of documents 16.Selection of and acquisition of library materials 17. Resource sharing and document delivery 18. Teleconferencing and video conferencing using multimedia facility 19. Photocopying library materials needed by students/lecturers 20. Sending and receiving e-mail messages 21. General administrative duties					

Please provide any additional relevant comment/information relating to the use of ICTs in your university library system.

_____

_____

_____

_____

Thank you for taking the time to fill this questionnaire.

Appendix B

5.9 A: Interview on Availability of ICTs

1. Name of your University Library?
2. How long have you worked as systems librarian?
3. What qualified you to be systems librarian?
4. Do you have a deputy systems person who assists you?
5. Is your library ICT based?
6. If so, what is the quantity of computers?
7. How many of the computers are Pentium II, Pentium lll, and Pentium iv?
8. Are all the computers networked or stand-alone?
9. Does your library have printers?
10. How many are laser jet printers? How many are Dot matrix and how many are Ink jet printers?
11. Are all the printers networked or stand still?
12. Do you have scanners in the library? If so, what is the quantity and for what specific purposes do you use them?
13. Does the library have UPS in case of power outage? If so, what is the quantity of the UPS?
14. Do you have digital video camera in the library?
15. What about digital still camera? Digital projector?
16. Do you have telephone facility in your library?
17. If you do, is it land line phone or mobile phone you have and what do you use the telephone facility for?
18. Does your library have an Internet facility?
19. If you do, what specific function does Internet perform?
20. Is CD-ROM facility available in your Library?
21. Does the library have photocopying facilities?

Interview Guide for Systems Librarian/ Librarians

(B) Interview on Utilisation of ICTs

1. How utilised are the ICT facilities in your library especially in the following area of library operation:
   - i Cataloguing
   - ii Serials management
   - iii Book selection
   - iv Journal selection
   - v. Digitizing documents, scanning documents and images
   - vi. Weekly, monthly and annually report
   - vii. Weeding outdated materials electronically
   - viii. Budgetary control electronically
   - ix Document delivery
   - x. Sending e-mail messages and receiving replies
   - xi Searching for materials on the net
   - xii Selecting materials on-line
   - xiii Charging out and receiving materials on-line
   - xiv Registering users on-line

2. Is the CD-ROM facility heavily utilised in your library?
3. Who are the principal users of the CD-ROM?
4. How frequently are the CD-ROMs being demanded?
5. What are the databases that are available on the CD-ROMs?
6. How frequently are the telephone facilities been utilised for official duties?
7. What about the photocopiers? Are they heavily utilised?
8. How utilised are the digital video camera, digital still camera and video projectors in your library?
9. How utilised are the printers and what do you use them for?
10. For what specific duties do you use scanners and how utilised are they performing the functions?
11. How utilised is the internet in your library?
12. For what specific duties do you use the Internet?
13. Are the librarians working with the ICTs capable enough to handle the technologies?

14. Do they have enough technical skills to carry out their duties?
15. What is the rate of performance in the following areas:
    Cataloguing
    Material selection
    Serials management
    Document delivery
    Charging out and in of materials
16. Do you have statistics based data to support if the performance rate is higher than doing things manually?
17. What are some of the hindrances towards ICT availability and utilisation?
18. Any relevant comment on this subject?

Section B: Interview Guide for Library Administrators/ Directors

1. What is the name of your institutions library?
2. For how long have you been the head of the institutions library?
3. Is your library ICT based?
4. Do you have a fixed budget for ICT
5. Who fixes the budget for your library?
6. Are you part of the decision making body when they decide on how much money should be allocated to your library?
7. Is the fund sufficient?
8. If the fund is not sufficient, what other means have you been using to sustain the project?
9. Do you have Internet connection in your library?
10. Who pays for the Internet connection and services in your library?
11. Does the library contribute to the cost?
12. If your answer is yes, how much money does the library contribute annually? Please indicate the amount in US dollars.
13. Are the librarians capable of using the ICTs at the respective sections of their work?
14. Do you make computer skill mandatory for employment?
15. Do you have skill development policy for librarians?
16. How long have you been translating the policy?

17. Do you send staff on long and short time training programmes from time to time?
18. In general assessment, what is the degree of ICT competence of your staff in the library?
19. How is the job performance of the librarians who make use of the ICTs?
20. What are some of the difficulties that had hindered the availability and utilisation of the ICTs in the library?
21. Any additional comment you want to add?

Appendix C: Observation Schedule

1. To check on the availability of ICTs in all sections of each library studied
2. To observe the use of ICTs in all sections of each library visited
3. To observe if librarians are using the available ICTs to perform their duties
4. To check if librarians have not been using ICTs at any given time