

**APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES
TO CUSTOMER SERVICES IN SOME SELECTED UNIVERSITY LIBRARIES IN
THE NORTH EAST GEO-POLITICAL ZONE, NIGERIA**

BY

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JUNE, 2015

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BY

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**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
MASTERS IN LIBRARY AND INFORMATION SCIENCE**

**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE,
FACULTY OF EDUCATION, AHMADU BELLO UNIVERSITY, ZARIA**

JUNE, 2015

DECLARATION

I declare that the Thesis entitled “Application of Information and Communication Technologies to Customer Services in Some Selected University Libraries in the North East Geo-Political Zone, Nigeria” has been carried out by me in the Department of Library and Information Science, Faculty of Education, Ahmadu Bello University, Zaria. The information derived from the literature has been acknowledged in the text and a list of references provided. No part of this project was previously presented for another degree or diploma at this or any institution.

Balarabe Idi
Name of Student

.....
Signature

.....
Date

CERTIFICATION

This Thesis entitled “Application of Information and Communication Technologies to Customer Services in Some Selected University Libraries in the North East Geo-Political Zone, Nigeria” by Balarabe Idi meets the regulation governing the award of the degree of Masters in Library and Information Science of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

AlhamduLillah, I dedicat this work to ALLAH and pray may He bless the work to be useful to whoever lays his hand on the work.

ACKNOWLEDGEMENT

I wish to thank ALLAH for the opportunity given to me to complete the work. I am most grateful to my supervisors; Professor Zakari Mohammad and Professor TijjaniAbubakar for their moral and intellectual support given to me in the course of this research work. May ALLAH reward them abundantly for their contributions. Similarly, I wish to thank all the lecturers of the Department of Library and Information Science for their contribution too, especially Prof. Umar I., Prof. Ekoja I., Dr. Abdullah, Dr.Ezra G.,Dr. Abu Y., Dr. Baba A., Dr. Babangida, Dr. Lawan, Mal. Aliyu, Mal. Idris, Mal. Hayatu and Mrs Muhammad. Also, I want to thank my parent for the support and prayersfor me in the course of this research work. Lastly, I remain most grateful to all the people who contributed in one way or the other.Thank you very much.

ABSTRACT

This research is on the Application of Information and Communication Technologies to Customer Services in Some Selected University Libraries in the North East Geo-Political states. The study examines types of ICTs and ICT-based customer services available and provided in the University Libraries in the North East Geo-Political Zone, Nigeria. The research objectives include: to find out ICTs available and used in the University Libraries and also to find out ICT-based customer services available in University Libraries in the North East Zone, Nigeria. The research method adopted in the study was a survey. Questionnaire was used as the research instrument, and the subjects of the study were heads of library unit, academic staff and undergraduate students. The data collected were analysed descriptively and inferentially and the findings show that there are ICTs and ICT based customer services in University Libraries in the Zone, among which are computers, internet, photocopiers and printers; and internet, photocopying and printing services. There is no significant difference in the competency levels of library staff on the application of ICT based customer services in the selected university libraries in the North East Zone. The research concludes that there are ICTs and ICT based customer services in the University Libraries in the North East Zone but these face many challenges among which are inadequate funds, epileptic power supply, inadequate ICT facilities and poor network. It is recommended that university libraries be funded well and additional sources of income be created to supplement the main ones. It also recommends training and retraining of library staff in the area of ICT application.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Technological advances improve the life of almost everybody in human societies. The mode of work, business and communication changes with the application of new technologies. The Information and Communication Technology (ICT) makes the world to be a global village where a person in his bedroom will effectively have access to information from anywhere in the world. Akintunde (2006) stated that ICT emphasized the use of computer and other technologies such as telephone and the Internet to process, transport and transfer voice and data singularly or mixed in libraries. The new technologies have changed and modified how library staff work and how library users learn and access information in libraries. The backbone of this transformation and changes depends heavily upon the availability of ICT facilities. Oyedum (2007) opined that ICT facilities like computer, printer, television, radio, telephone, GSM, scanner, video recorder, Internet and e-mail services etc contribute immensely toward information communication development in university libraries.

Information and Communication Technology (ICT) is defined by Blurton (2002) as a set of technological tools and human resources used to communicate, create, store, manage and disseminate information. ICT in general comprises digital technologies such as computer and its accessories (Hard and Software); communication technologies which include television, radio, telephone; network technologies which include internet; and reprographic technologies which include camera, photocopier, printer and scanner. The resource here means the human resources to facilitate effective and efficient acquisition, processing, storage, organization and dissemination or transfer of information from one point to another.

The application of ICTs in University Library has improved the quality of library and its services given to the library users such as remote access. This is because in an ICT based environment, library users, through a good network can access what is in their library and other libraries. This led to a globalization of information or information sharing among libraries.

University Libraries

University libraries are libraries established, owned and funded by the Universities. The libraries are integral part of the institutions they serve. They are the backbone of any university programme. The main role of a university library is to select, acquire, organize and disseminate information to meet-up the needs of the entire university community. Aguolu (1989) further stated that university library serve as an information agency; an educational agency; agency for culture; and agency for research that is meeting up with the needs of the library user in the university. The support given by the library is strengthening the learning, teaching and research activities of the university.

The application of ICT in university library has improved the quality of library and its services given to their patrons. The main function of a university library is to select, acquire, organize and disseminate information needed by the university community to attain the major goal of the university. Nkanu (2010) stated that ICTs have offered Nigerian university libraries more efficient ways of acquiring, organizing, storing and disseminating information. Many of the Nigerian university libraries have applied ICT to some of their operations in order to meet the present needs of their students and staff. For instance, in Ahmadu Bello University library, apart from having digital library collections, it is presently involve in the retrospective conversion of its collection as a step toward ICT application to its services.

Customer Services in University Library

According to Turban (2002), customer services are the series of activities designed to enhance the level of customer satisfaction. Ode and Omokaro (2007) defined library customer services as the provision of information and services in which library tries to satisfy the needs of their users. Also Ohio Library (2013) defined customer services as an act committed to meeting the diverse and changing needs of students, staff, scholars and researchers by providing information and services. Customer service plays an important role in an organization especially library that serves as information centre where library users (customers) troop in to relieve their stresses in terms of information needs. Library customer services include lending services; registration services; inter-library services; referral services; reference and information services; selective dissemination of information; current awareness services and user education. Application of ICT to customer services help in providing effective services at less cost and without delay. The following customer services are provided using ICTs in university library: Internet access services, remote access services, online reservation services, photocopying services, printing services, e-query services, audio-visual services, registration.

Advances in technology enhance the image of library and librarian in such a way that the functions and services of university libraries have been massively promoted to the extent that some of the manual routines were either replaced or modified. The areas of university libraries where ICT is used include acquisition, cataloguing, circulation, reference and information, ICT and serial units of the libraries. Echezona (2010) stated that ICT has transformed the university libraries into a new information centre by facilitating electronic operations of various library functions especially customer service functions.

Many opportunities and advantages are derived such as remote access through the application of ICTs. However, many factors account for the ineffective utilization of ICT

facilities in libraries. Among the factors are: epileptic power supply, inadequate funds, and inadequate competent staff. Akintunde (2006) stated that factors affecting the deployment of ICTs in libraries are: appreciation of ICTs by the institution's librarians; the library management; the university management; library staff mindset; relationship between the library and the campus ICT units; funding; building; and training for librarianship. The introduction of ICT in libraries can reduce repetitive and time consuming services giving to users through manual operations and raise expectations among their users and institutions. It is against this background that the researcher intends to look the extent of Application of ICTs to Customer Services in University Libraries especially in the North East Geo-Political Zone, Nigeria.

1.2 Statement of the Problem

Universities being academic and research institutions should have well-equipped libraries that support the learning, teaching and research activities of their parent organization. Library is an integral part of University that contributes immensely toward the success of its institution's programmes for national development. University libraries are expected to select, acquire, organize and disseminate information to meet the broad and varying needs of the university community for information, research and aesthetic enjoyment. The application of ICT to customer services is expected to contribute heavily toward efficient and effective processing and dissemination of information. Madu and Adeniran (2000) stated that with the use of ICT especially computers to customer services, the jobs are performed faster, neater and with high level of accuracy. Also, Aina (2003) stated that application of ICT to customer services units has many advantages in that it reduces the number of repetitive routine tasks, it is more efficient than manual services, it enables library customers to have access to their library and even what is in other libraries and more importantly it speeds up the customer services.

The researcher observed that most University libraries in the North East Geo-Political states of Nigeria still carry out their customer services manually despite the advantages of using technologies.

The provision of customer services using manual method in the university libraries makes work tedious, repetitive, time consuming and serves very little number of users at a time. The researcher, therefore, sought to investigate and find out whether the university libraries under study applying ICT in customer services.

1.3 Research Questions

The research questions for this study are as follows:

1. What types of ICTs are available and being used by University libraries in the North East Geo-Political Zone, Nigeria?
2. What Types of ICT based customer services are available and provided by University libraries in the North East Geo-Political Zone, Nigeria?
3. To what is the impact of ICT on the provision of customer services in University Libraries in the North East Geo-Political Zone?
4. To what extent are users satisfied with the ICT based customer services provide by the University libraries in the North East Geo-Political Zone?
5. What are the ICT competences of the customer services staff in University libraries in the North East Geo-Political Zone?
6. What are the challenges to ICT based customer services in University Libraries in the North East Geo-Political Zone?

1.4 Hypotheses

The following hypotheses are tested:

1. There is no significant difference among the library staff of the selected institutions in their competence level on the use of ICT based customer services in the university libraries in the North East Geo-Political Zone of Nigeria.
2. There is no significant difference between the library staff and end users in their impression on the challenges militating against the effective use of ICT in the provision of customer service to the end users in the University libraries of North East Geopolitical Zone of Nigeria.

1.5 Objectives of the study

The following are the specific objectives of this research:

1. To find out the types of ICTs available and being used in University libraries in the North East Geo-Political Zone, Nigeria.
2. To find out the types of ICT based customer services available and provided by University libraries in the North East Geo-Political Zone, Nigeria.
3. To determine the impact of ICT on the provision of customer services in University libraries in the North East Geo-Political Zone, Nigeria.
4. To find out extent of users' satisfaction with the ICT based customer services provided in University libraries in the North East Geo-Political Zone, Nigeria.
5. To find out the ICT competences of the customer services staff in University libraries in North East Geo-Political Zone.
6. To identify the challenges to ICT based customer services in the University Libraries in North East Geo-Political Zone.

1.6 Significance of the Study

The study is significant because it would educate University Libraries under studied on the application and utilization of ICTs to customer services. In addition, scholars, librarians, information scientists and others would be duly informed about the situation of university libraries in terms of information and communication technologies in the North East Geo-Political Zone. Lastly, the findings and recommendations of this research would contribute to the existing knowledge especially in the field of library and information science.

1.7 Scope of the study

The research covered application of ICTs to Customer Services in University Libraries in the North East Geo-Political Zone, Nigeria. There are seven (7) university libraries (made up of state and private universities) in the zone. The universities are shown in table 1.1 below;

Table 1.1 Population of the Study

S/N	Universities	State	Status	Year of Establishment
1	Adamawa State University, Mubi	Adamawa	State	2002
2	American University of Nigeria, Yola	Adamawa	Private	2003
3	Bauchi State University, Gadau	Bauchi	State	2011
4	Bukar Abba State University, Damaturu	Yobe	State	2006
5	Gombe State University, Gombe	Gombe	State	2004
6	Jubilee University, Wukari	Taraba	Private	2005
7	Taraba State University, Jalingo	Taraba	State	2008

1.8 Limitations of the Study

In the process of conducting this study, some of shortcomings were encountered such as inadequate fund, proximity, and time within which to complete the study and insecurity that is presently affecting almost every activities in the North East Zone, Nigeria.

1.9 Operational Definition of Terms

The following terms have been defined operationally to ease their understanding and use in this study:

Application: act of putting something in the process of doing something.

Digital Age: period in which electronics (computers, GSM, fax machine etc) are used in sending and receiving information.

Information and Communication Technologies: these are technological tools used to communicate, acquire, organize, store and disseminate information.

Library Customer Services: are series of activities in which library tries to satisfy the needs of its user, e.g. lending, photocopying, registration etc.

North East Zone: It is one of the six Geo-Political Zones that consist of six states which include Adamawa, Borno, Bauchi, Gombe, Taraba and Yobe State.

University Libraries: these are libraries that are found and funded by universities to support programmes with relevant information.

Utilization: Use of something in the course of doing something.

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The purpose of this chapter is to review the literature related to this study. This review mainly centered on the application of information and communication technologies to customer services in university libraries in the North East Geo-Political Zone of Nigeria. The following themes are discussed:

2.2 Concept of Information and Communication Technologies

2.3 Library and Information Services in University Libraries

2.4 ICT Applications in University Libraries.

2.5 ICT Facilities for Customer Services

2.6 ICT Applications to Customer Services in University Libraries.

2.7 ICT Competence of Customer Services Staff

2.8 Challenges to ICT Based Customer Services Delivery

2.9 Summary of the Review.

2.2 Concept of Information and Communication Technologies

Information and Communication Technologies (ICTs) is defined by UNESCO (2000) as the scientific, technological and engineering disciplines and management techniques used in information handling and processing. Again, Blurton (2000) defined it as a set of technological tools and human resources used to communicate, create, store, manage and disseminate information. ICT in general comprises digital technologies such as computer and its accessories (Hard and Software); communication technologies which include television, radio, telephone; network technologies which include internet; and reprographic technologies which include camera, photocopier, printer and scanner. The resource here means the human resources to facilitate effective and efficient acquisition, processing, storage, organization and

dissemination or transfer of information from point one to another point. Feather and Sturges (2003) viewed ICT as the application of modern electronic technology for the creation and storage of meaningful and useful tracts or data and to its transmission to users by various electronic means. The International Encyclopedia of Library and Information Science (2003) defined ICT as the application of modern electronic and computing technology to the creation and storage of facts, data or information and to its transmission to users by communication media.

The application of ICT in University Libraries has improved the quality of library and its services given to the library users. In an ICT based environment library users through a good network can access what is in their library and other libraries. This led to a globalization of information or information sharing among libraries.

2.3 Library and Information Services in Universities

The termed 'Information and Communication Technology' led to the emergence of new terms in the field of library and information science profession. The terms include e-library, e-book, e-resources, virtual library and the rest. As a result of this, Mutula and Ajedoku (2008) defined virtual library as information services or collection of electronic resources where collections are entirely in virtual or electronic formats and information is accessed over the network. Virtual libraries contribute immensely especially in an academic environment like university.

Libraries in the 21st century are taking a different dimension due to technological advancement. Mohammed (2003) ascertained that advancement in ICTs and ICT application in library especially in the digitized network and networking from the threshold of the 21st century has made information access, retrieval and dissemination much easier and available irrespective of location, time, package and user. Therefore, the barrier to information will only be lack of access to relevant ICTs and ICT-based information system and services. This

led Spiers (2006) to state that in the 21st century networked structures are taking over the command and control of structures of the last century and consequently we need to work with others not only in our institution, but with those who share common goals in order to enable knowledge and information flow across the spaces and borders. Again, Rana (2008) stated that in academic libraries ICTs presents an opportunity to provide value-added information services and access to a wide variety of digital based information resources.

The termed “service” is defined as an ethical commitment to do the best you can to help someone who need your assistance. Oxford Advanced Learners Dictionary (2000) defined service as “a system that provides something that public needs, which is organized by the government or public company”. Therefore, the librarian’s role is to assist using their knowledge and experience. Almost all activities of librarians are affected by ICT which Nkanu (2010) stated that ICTs have offered Nigerian academic libraries more efficient ways of acquiring, organizing, storing and disseminating information. It also helps librarian to serve their patrons equally with the current trend of digitization. Idrees and Rehman (2010) maintained that ICT has become an integral part of modern libraries which databases are replacing the huge amounts of inventories. In olden days libraries were filled up with shelves, racks and catalogue cabinet to the extent that space was among the problems of library. But now space is not a problem in modern library. Halison (2011) stated that ICTs enhances service provision to library clientele. Librarians use ICT to perform functions like cataloguing and classification, serial management, collection management, budgeting, circulation management, referencing, indexing and abstracting in order to improve information services to library users. These are the main roles and services performed by librarians. Also Oyadonghan and Eke (2011) articulated that the emergence and use of information technology has improved efficiency in the performance of routine tasks in the library, like acquisitions, cataloguing and user services. The flow of work is speeded up and

library users are served without delay. Acquisition and cataloguing of some essential relevant materials are now processed online, while the on-line public access catalogue (OPAC) is in vogue in the milieu of most automated libraries (academic).

Preservation and conservation of library materials especially the physically printed materials such as books and manuscripts are now declining due to the presence of ICT facilities. Zulu and Kalusopa (2008) articulated that information resources in electronic era, ranging from simple text based files such as word processing files to highly sophisticated web-based resources such as databases, websites, emails are preserved in a wide range of storage media such as disks, flash drive, CD-ROM and others. The digital preservation is the most reliable compared to the manual one, even in terms of cost and management. Womboh (2008) opined that most of the antisocial attitudes and malpractices from library staff and students, like delinquency and mutilation of pages will be abolished with the installation of ICT in libraries.

2.4 ICTs Applications in University Libraries

The following are some of the areas where ICTs are applied in library:

Acquisition Unit

This is an important unit in any library whether academic, public or any kind of library. All materials of library must come through the acquisition unit. Acquiring library materials may come in one or more sources such as purchase, gift/donation, exchange, deposit and some time through bequeath. In most cases, many libraries, their collections are through purchased. Ode and Omokaro (2007) stated that the acquisition unit of many university libraries looks like a business centers, vendors and publishers troop in to sell their products.

The Application of ICT in acquisition unit simplifies and makes many things easy, accurate and achievable in time. Boss and Marcus (1981) stated that online acquisition system would include the following advantages:

- Ability to search, via a variety of access points the library's own bibliographic file to determine the status (eg. on order but not yet received) of any particular items;
- The ability for an authorized operator to order additional copies of a title for which previously order has been made.
- The ability to search file of bookseller details, in a predetermined order of preference, to determine which bookseller would be able to supply a given item immediately or to supply a given item at a lowest price;
- Access a status notes on all items (title) for all major booksellers to see whether a given title is out of print, not yet published, or whatever;
- The ability for an authorized operator to place an order online directly to the bookseller and adjust the library's financial files appropriate;
- An ordered item, if available, to be dispatched by the bookseller within 24hours and the bookseller's inventory status to be adjusted;
- The ability for retrieving potentially useful titles, from an external database, which could be used for selection purpose in the library;
- The ability for maintaining a comprehensive file giving the library complete information of all on order or on process and to alert the library staff which expected items do not arrived and;
- It gives the ability to deal with all financial transactions and adjust the files accordingly.

ICT does almost all aspects of acquisition of library materials, Tiwari (2008) maintained that the major responsibilities of acquisition librarians are book selection,

bibliographic searching, and preparation of order, ordering, and receipt of new arrivals (books, journals etc), checking and claiming, payment to suppliers, keeping acquisition statistics and are applicable to ICTs.

Cataloguing Unit

The library materials (books, journals etc) acquired need to be properly organized in such a way a library user will easily identify and access them within a shortest possible time. Nwalo (2003) articulated that the items contain on the catalogue include name of author, title, editor of the book/journal; edition, date and place of publication of the book/journal; ISBN/ISSN; pagination, illustration, size; class number; call number; and location of the book/journal in the library. The essence of the above items is to give clear description of a document to a library user for easy identification and accessibility.

Information and Communication Technology is been applied in the process of cataloguing and make it much easier and relevance to access the library holdings. Oketunji (2001) maintained that automating cataloguing section can facilitate the following: establishment and maintenance of catalogue database, names authority files, subject files and local authority files; online public access catalogue (OPAC) and inventory control, establishment of shelf list control record, added copy control and inventory statistics.

The advancement of ICT opportune libraries to embark upon the use of Online Public Access Catalogue (OPAC) Ajibero (2001) described OPAC as a detailed holding of a particular or group of libraries or a database and to which users have direct access. OPAC allows the library user at the terminal to search the database in order to see if the library holdings contain a particular work, to know its location and to find out the present status of the book. The most interesting thing is that the user will remotely confirm whether the document is available in the library or not without wasting his time coming to the library.

Circulation Unit

It is one of the most important sections in the library that deals with public contact much, because of its much contact with library users some time it is called Public Services Section. According to Ode and Omokaro (2007) Circulation unit can be defined as one of the customer services units in which library try to satisfy the needs of their users. Ohio Library (2013) defined circulation unit as a portion in a library committed to meeting the diverse and changing needs of students, staff, scholars and researchers by providing information and services. The information and services can be direct or indirect services which include lending services; registration services; taking statistical records; inter-library services; referral services; photocopying services; selective dissemination of information; current awareness services and user education.

The main role of the section is to provide services like registration of users; lending services; keeping statistical records such as number of books borrowed and return in a day or month; number of books added or withdrawn from the circulation; in a nutshell all the statistic records of the section are being recorded.

In a computerized customer services system, the above mentioned services of the section can be applied and will be widely efficient compared to the manual operations. Madu and Adeniran (2000) stated that recording fines and keeping statistics of customer services unit with the use of computer, the jobs are performed faster, neater and with high level of accuracy. The boredom resulted from repetition of routine work is also eliminated.

Closed Circuit Television (CCTV) is one of the ICTs that contribute a lot toward controlling the activities of users in a customer service unit in university libraries. It focuses the activities of patron and any unlawful act detected the attention of the user will be called.

Serials Unit

It is part of a library that deals with receiving and processing publications issued in consecutive parts at regular or irregular intervals and intended to continue indefinitely. Tiwari (2008) stated that the serial librarian has the responsibility of selection, acquisition of serials, their control, organization, conservation, display and dissemination to users. Many of the responsibilities can be applicable through the use of ICTs.

These days, many journals are available on the internet a computer-base serial system could easily subscribe or renew their subscription through the use of internet. Also some journals are in offline databases like AGORA database that is found in a storage device, a library user can only access the journal through the use of ICT facilities. Advancement of information technology resulted to a management of financial transaction between the library and the vendors or publishers from a remote location.

Trivedi (2010) maintained that the application of ICT in serial section of library will permit information storage and retrieval of the serial holdings, including abstracts of specific articles. It makes the responsibility of serial librarian much effective and accurate Oketunji (2001) maintained that using ICT facilities in serial section of library will enhance the management functions, which cover areas like management of work performance and user service.

Library activities in general have in one way or the other improved through the application of ICT compared to the traditional practices. Akintunde In: Faboyede (2006) maintained that libraries use ICT in several ways which include library management and administration, processing of library materials, developing on-line resources, access on-line resources, developing off-line resources, accessing off-line resources, provision of regular services to library users, inters library cooperation and video conferencing. This shows ICT touches every aspect of library services.

2.5 ICT Facilities for Customer Services in University Libraries

The term facilities are buildings, services or equipments that are used to provide a particular purpose. Encarta (2009) defined facilities as something designed or created to provide a service or fulfill a need. Therefore, ICT facilities are designed to serve a particular purpose in information system like library.

Technology Advances made some techniques obsolete especially in library and information science profession. Technologies are modern facilities that libraries have to procure and install in order to serve their patrons in this digital age. Alabi (2000) stated that ICT facilities in libraries comprise of all electronic equipments which include computer, telephone, telex, fax, scanner, e-mail and communication satellite. While Chisenga (2006) viewed ICT facilities as telecommunication technologies (telephony, cable, satellite, television and radio, computer-mediated conferencing, video conferencing) as well as digital technologies (computer) Information networks (internet, world wide web, intranet and extranet) and software application. Emojorho (2011) further added that ICT embrace items of equipment such as computer, scanner, internet, multimedia, software programmes, networks that allows access, retrieve, store, organize, manipulate and present information in electronic means. The facilities simplify library services and make materials accessible easily by the university library users even at home.

Internet is one of the most relevant ICT facilities that play an important role in academic environment. Oni (2004) held the view that internet offers a wide range of services which can enhance library operations. These operations include electronic mail, electronic commerce, file transfer, remote logging, teleconferencing, videoconferencing and bibliographic services. Emojorho and Nwalo (2009) maintained that the advent of internet facility has brought awareness of the importance of global communication. People, organizations, and businesses are better informed and more connected to each other than ever

before. Information that took several processes and procedures to obtain is now readily available and accessible irrespective of location and time, especially by the university library clientele. Patil (2011) added that internet has revolutionized the world of information. It is one of the technological innovations that have greatly influenced the development of communication strategies and practices in both library and business communities in the world. A potentially vast population of individuals and groups of library users can easily be reached than ever before, across geographical borders. Anyira (2011) conducted a research and revealed that most of the university students, staff and researchers use internet for the purpose of sending and receiving mail, browsing information to write assignment, gather information to supplement course materials and literature review, to publish article, to acquire current and update knowledge, and to register and enroll for examinations. In short internet as ICT facility can do so many things if the user is competent of using it.

Internet gives opportunity to library customers to access what is on the net such as e-resources, library registration, online reservation of book, e-query to the librarian and in general library customers can have remote access through the use of internet.

There are prominent and common ICT facilities that library use them most often are as follows:

Computer: an electronic device that accepts, processes, stores and outputs data at high speed according to programmed instructions. The stored data by libraries can be easily accessed by library customers especially OPAC and the e-resources down loaded by library for the use of their users through the use of computer.

Internet: a network that links computer all over the world by satellite and telephone, connecting library customers with service networks such as e-mail and the World Wide Web. University community uses internet as a source of their information to access what is in their

library and other libraries, this enable library customers to have access to anywhere and at anytime.

Printer: a device that produces computer-generated text or graphics on paper, transparencies or similar media. It enables university library customers to possess a personal copy of e-resource stored by their library and other libraries even for future use.

Photocopier: a machine that uses a photographic process to produce an almost instant copy of something printed written or drawn. Photocopy opportune library customer to have a copy of those library materials that cannot be borrowed for home use.

Radio: the use of electromagnetic waves to transmit and receive information, as in sound broadcasts or two-way communication, without the need for connecting wires;

Television: an electronic device for receiving and reproducing images and sounds of a combined audio and video signal. University library customer troops in to their library to get latest happenings especially during network services of the NTA, for instant Kashim Ibrahim Library (KIL), ABU Zaria used to be crowded at 09:00pm because of the NTA news.

Global System for Mobile (GSM): it is one of the most common ICT facility that two or more people communicate either verbally or through messages. Library customer used their GSM phone to access what is in their libraries in terms of information.

Scanner: an electronic device that uses for conversion of either text or image in to digital form (soft copy). The application of scanner to customer services is very important because it enable customers to scan their picture during registration with the library even from the remote location.

Camera: a device that converts images into electrical signals for television transmission, video recording, or digital storage. At a point of registration library customer can have his/her picture to be fix or placed on his/her registration form, to enable the user to have opportunity borrow or use the library resources.

ICT facilities that are used in academic libraries are many Aswalap (2005) articulated that ICT facilities can be categorized into:

Information Technologies: These are computers, which have become indispensable in modern societies to process data and to save time. The use of computer is so pervasive to modern development in commerce, education, and Government among the others.

Telecommunication Technologies: these includes telephones-mobile and broadcasting of radio and television often through satellite etc.

Network Technologies: these includes internet, which extends to mobile phone technology, satellite communications, and other forms of communication that are still in their infancy.

The research added that reprographic technology is also one of the ICT facilities that contribute immensely in information processing and dissemination. It includes photocopier, printer, camera etc.

2.6 ICT Applications to Customer Services in University Libraries

Library plays an important role in an academic institution to the extent that library customers are always trooping in to solve their academic issues. The main purpose of library is to provide information and services that will help their customer to achieve what they are there for. Omokaro () stated that the customer services include: current awareness, lending services, referral services, reference and information services, and user education. He further opined that any library whether academic, special or public must render the above services to their customer.

Current Awareness Services

It is the responsibility of library to let its users know what is happening in terms of resources available, rules and regulation, and how to use the resource. Current awareness service can easily be done through the use of ICT to reach many library customers at a time

within a shortest possible time. This can be done through the use of library website or its institution's portal. For instance the history and the organizational chart of a library will be spelt out vividly.

Lending Services

Lending services is one of the services that gives opportunity users to use library resources at home or in the hostel. Application of ICT to customer services is very importance Chauhan (2009) stated ICT application in customer services let users reserve books, journals or any other material that is entitled for them. The books that are on loan by another patron will be reserved by a user while at home or remote location using the request option on the online catalogue.

Referral Services

Referral Services Library customers enjoy referral service gives to them by directing them where to get what they are looking for inside or outside the institution. The services offer opportunity to the users to get even what they did not ask for. Application of ICT to referral services contribute immensely toward satisfying the users need, instead of trekking or travelling to have access, a website used to be given to access what is needed in or outside the library.

User Education

User Education it is the responsibility of any library to educate its user on how to use the library resources effectively. Libraries use lecture, orientation, exhibition and handbook to inform their customers on how the library is organized and how the library resources will be utilized. Application of ICT to user education simplified or modified how to educate library customers even if the customer is at home. This can be done through the Library website or institution's portal, the website or portal provide some of the basic information

that is needed to be known by a new library customer such as organization of the library, how to register, how to borrow and the rules and regulations.

Reference and Information Services

Reference and Information Service is one of the professional services rendered to library customers. Questions presented before the reference desk officer need to be answered by the officer in order to satisfy the library customer. Some questions need technical expert and may even take time while some answers will be given instantly. Application of ICT to reference and information services simplified and modified how answers will be given within a shortest possible time. Internet is one of the ICTs that plays a vital role in reference and information services. Library customer can tender his/her question through the use of internet browsers (like goggle) and answer will be given to their user instantly. It may give information that is not even asked for. Tsubira (2001) stated that electronic mail; file transfer protocol (FTP), electronic commerce, USNET news and world wide web (www) are services obtained over the internet.

Inter-Library Services

It is the responsibility of a library to search and get what it does not have from other libraries around for its library customers to use. This leads to a sharing of resources among libraries because no matter how library is equipped in terms of resources users' needs are not going to be satisfied hundred per cent (100%), this necessitate libraries to share their resources. Application of ICT to inter-library services simplified the sharing of resources among the libraries. Internet facilitates the sharing of resources in such a situation whereby a library customer will have access to what is in their library and other libraries while in their library or at home.

ICT has brought changes in almost every sector of the society especially in information centers. Library is one of the information centers that ICT has revolutionized its

performance and operations to the extent that modern libraries such as electronic, virtual, or digital libraries are supplementing or even replacing the traditional libraries. ICT has introduced and improved the quality of library services. Vinitha et al (2006) articulated that customer services rendered through the use of ICT include printing of books, photocopying of articles, online/offline reservation, and user services such as membership registration, query; database searches; inter-library services; reference support for subject searches; a liaison librarian; access to library catalogue, database, internet; current awareness service; flexible method of submitting request via telephone, facsimile, email, www, post; and electronic reference desk. The following customer services of university library are provided through the use of ICTs.

Remote Access Services

Rapid advancement of technologies gives opportunity to library users to access what is in their library and other libraries while sitting in his bedroom provided the remote system is connected to the internet. Mohammed (2003) articulated that barrier to information will thus be lack of access to the relevant ICTs and ICT-based information system and services. Therefore, with remote access services, library customers enjoy services like reservation of books, inter library services and even e-query to library while at different locations.

Electronic Mail (E-Mail) Services

E-Mail is the simplest way of sending and receiving information from one direction to another worldwide. This mode of communication is very important especially to the library users, a patron can send his reference question or request to their library at any time from any location. Oketunji (1997) stated that e-mail is an important tool in the library, inter-library loan service can be provided with it.

Photocopying Services

Multiplication of copies of a document through the use of photocopier in libraries plays a great role that favours both the library and the library users. This is as a result of the fact that some books are highly needed by many students and staff to use, but due to few copies of the book available in the library, some users used to photocopy a portion or the entire document and possess their personal copy. In the other way round, the life span of the document may be prolonged. Chauhan (2009) stated that technology of reprography made impact on the document delivery system, especially in university library.

Internet Access Services

Most of the University libraries provide internet access to their users free of charge. Chauhan (2009) articulated that library user interacts with internet to access anything anywhere in the world to search for information of his interest. The service gives opportunity to patrons to access latest information that will enhance their carrier.

Audio Visual Services

Many university libraries possess audio visual unit where information is stored in a storage devices like diskettes, DVDs, hard disks, flash drives, memories etc. The device contains important information that can only be accessed through the use of ICT facilities like computer or DVD/cassette player. The service is being catered for all categories of users (able and physically challenged users).

E-Query Services

This is one of the library services given to a library user through a network. Oyedum (2005) stated that a registered university library user can send a query directly to their library in person, by e-mail or telephone. The received query will be processed and answered and sent to the enquirer in time.

Online Reservation Service

The application of ICT in customer services unit let users reserve books, journals or any other material that is entitled to them. The books that are on loan by another patron will be reserved by a user while at home or remote location using the request option on the online catalogue.

2.7 ICT Competence of Customer Services Staff

No matter how a library is equipped with modern facilities, services will not achieve much without competent staff handling the operations. Qualified staff makes aim achievable wherever they are. Technological competence of staff is highly needed especially in the current trend of information and communication technology. APLEN (2008) defined technological competence for library professional as a combination of skills, knowledge and behaviors related to library technology and important for organizational success, personal performance and career building. Technological competence is mandatory for any library staff especially in this present digital era.

Competence is a gift of nature whoever possesses it possesses a huge capital especially technological competence. Chan (2005) articulated that those with technological competence enjoy learning and applying new technologies, they are usually analytical, familiar with concepts of computer use, able to transfer knowledge, pursues and demonstrates expertise in technology and can apply it as it required, use internet and library system applications to solve routine problems without assistance and learn to use new technology quickly. Those with these qualities are asset to their library and the organization in general.

For a librarian in a university to discharge his role of selection, acquisition, organization and dissemination of information effectively in this age he/she need a special skill and knowledge. Omekwu (2004) maintained that librarians of the digital age are required to have the basic computer knowledge and their capabilities (MS Office);

competence with search engines (Yahoo, Google); competence with internet facilities; competence with e-mail; competency with internet navigator tools; competency with web browsers (internet explorer, opera); and competency with databases software (ILS, Greenstone, DSpace). Again, Fadehan and Ali (2010) opined that the skills required for the management of digital information are vast, in-exhaustive and range from the generalized basic computer appreciation to the more advanced and library services related ones. In general a librarian in an academic environment like university need to be conversant with computer technologies, communication technologies, network technologies and reprographic technologies.

The changing roles and operations of librarians are moving rapidly through the application of ICT in libraries. Gbaje (2007) lamented that the implications of transporting library services to online environment for the Nigerian academic libraries in the digital age are enormous particularly with the dynamic nature of digital technology which is constantly creating the need for new skills, work environment and work method. The efficiency of service provision can only be achieved through regular staff development. Oky (2010) articulated that training and retooling of librarians in the necessary ICT skill is necessary for the benefits of globalization of library services to be impacted on academic libraries and their users in Nigerian universities.

2.8 Challenges to ICT Based Customer Services Delivery in University Libraries

Information and Communication Technology gave birth to the digital age where most of routines are digitized especially in the area of information communication. Every aspect of human endeavor has changed as a result of ICTs. The advantages of ICT are numerous and drivable by many individuals and sectors.

Despite the advantages derived from ICT, many sectors faced many challenges in the course of application of ICT in service delivery in Nigeria, especially in non-profit

organization like university libraries. The challenges militating against the proper customer service delivery through the use of ICTs in university libraries are:

Inadequate Fund

A research conducted by Okiy (2003) identified inadequate fund as the major obstacle to the acquisition and application of ICT facilities in university libraries in Nigeria. Library being a non-profit organization, wherever it exist release of adequate fund by its parent organization is very difficult, this result to a poor installation of ICT facilities in Nigerian libraries. Faboyinde (2006) observed that the poor state of Nigerian economy has made the cost of installation of ICT facilities prohibitive to some libraries.

Epileptic Power Supply

It is obvious in Nigeria that many companies were knocked down due to poor power supply. Likewise libraries are also suffering because most of the ICT facilities cannot work effectively without static power supply. Mohammad (2009) maintained that academic libraries in Nigeria are plagued by epileptic power supply among others in their effort to connect their libraries to the internet. This leads to a serious problem in the digital age. Jagboro (2007) stated that the major challenge that hinders the application of ICTs in university libraries is power supply. Computerization and digitization become unreliable in an environment of epileptic power supply. Standby generator serves as the alternative source of epileptic power supply for libraries that wishes to install and enjoy ICT facilities.

Unconducive Environment

ICT facilities requires conducive environment to function effectively. Hassan and Hauwa (2010) stated that harsh environmental condition accelerates equipment degradation. ICT facilities which are electronics generate heat when in use and they cannot endure harsh weather. Additional expenses have to be made to extend the life span of the equipment through the use of air conditioners.

Incompetent Staff

Human resource that can manage the ICT facilities confidently is very important for the success of the digital age. Kaku (2005) conducted a research and identified lack of skills for both library staff and readers as factors affecting the adoption of electronics. Adomi (2010) noted that inadequate manpower in libraries to perform ICT-based tasks is one of the problems facing academic libraries. University libraries and information science industry are lacking qualified and competent hands to handle the ICT facilities in them. This then posed a great problem in the adoption of information and communication technologies in university libraries.

Limited or Inadequate Bandwidth

Internet connectivity cannot be possible without network and bandwidth is essential part of network. Jensen (2002) noted that obtaining international bandwidth is still a major problem in most of the African countries, including Nigeria, due to high international tariff and lack of circuit capability. According to Echezona (2010) internet connectivity is very expensive in Africa considering their economic condition. This necessitated the formation of bandwidth consortium to reduce unit cost per megabyte, increase internet speed and encourage ICT infrastructural development. Really, the bandwidth in many African countries is very slow compared to other continents. Okiki (2011) opined that limited bandwidth means slower performance for sound, video and intensive graphics, causing long waits for download that can affect the ease of learning process. Students, staff and researchers in universities use information that contain picture, audio, video and graphics which are heavy when downloading.

2.9 Summary of the Review

The review of related literature has shown that ICT has revolutionized library services to the extent that traditional libraries are being supplemented and in some cases replaced with

electronic libraries. The literature has revealed and outlined some of the ICTs that contribute towards customer service delivery in university libraries. Library and information services have improved qualitatively and quantitatively through the use of ICTs in university libraries.

The literature reviewed some of the ICT-based customer services and highlighted the challenges of customer service delivery through the use of ICTs in university libraries to the extent that if measures are not taken to address them, the successes recorded will become a failure. Universities should give much concern to the application of ICTs in their libraries as this will enable them discharge their responsibilities efficiently, because library is a determinant of quality education in every institution.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter discusses the method adopted in conducting the study. It also discussed the population of the study, the sample and sampling technique used, the data gathering instrument and procedures adopted for data collection and analysis.

3.2 Research Method Adopted

The research method adopted for this research is survey research design. This is the most appropriate research method considered because the population of the study is widely spread across the North East Zone. Osuala (2001) stated that survey research design is suitable for both small and large population study. The research design enabled the researcher to obtain and gather reliable data on the application of ICTs to Customer Services in the University Libraries in North East Geo-Political Zone, Nigeria.

3.3 Population of the Study

The population of the study covered seven (7) university libraries made up of state and private universities in the North East Zone. However, the subjects of the study were the heads of Circulation, Serial Management, Reference and Information, ICT, Resource Development and Resource Processing Units of University Libraries, academic staff and undergraduate students of the universities in the North East Zone, Nigeria. The seven (7) Universities in the zone are: Bauchi State University, Gadau, Bauchi State; Bukar Abba State University, Damaturu, Yobe State; Gombe State University, Gombe State; Adamawa State University, Mubi, Adamawa State; Taraba State University, Jalingo, Taraba State; American University of Nigeria, Yola, Adamawa State; and Jubilee University, Wukari, Taraba State. The breakdown of the heads of unit, academic staff and undergraduate students of the Universities in the zone are shown in Table 3.1.

Table 3.1 Population of the Study

S/N	University	State	Status	Heads of Library Unit	Academic Staff	Undergraduate Students
1	GSU	Gombe	State	6	315	3,461
2	ASU	Adamawa	State	6	303	5,788
3	AUN	Adamawa	Private	6	71	967
4	BASU (D)	Yobe	State	6	186	3,521
5	TASU	Taraba	State	6	135	2,033
6	JUW	Taraba	Private	6	78	1,325
7	BASU (G)	Bauchi	State	6	151	2,357
TOTAL				42	1239	19452

Source: University Authorities as at 2012.

3.4 Sampling Procedure and Sampling Size

Stratified random sampling technique was used to select the required sample size. Fink (1998) opined that sample is the subset of a population. The researcher divided the population into strata or groups such as states. One university was selected from each stratum (state) except Borno State that has neither State nor Private Universities. This gives the total of five (5) universities that represent the Universities under study. Nwanna (2005) stated that there must be good representation from each stratum to enable the researcher to generalize his findings. The selected universities were: American University of Nigeria Yola, Adamawa State; Bauchi State University Gadau, Bauchi State; Bukar Abba State University Damaturu, Yobe State; Gombe State University Gombe, Gombe State; and Jubilee University Wukari. The total population of the undergraduate students and academic staff of the selected universities is **11638** and **801** respectively. Five (5%) and Ten (10%) percents of the entire population of the undergraduate students and academic staff were used as the sample size of the study which are **582** and **80** respectively. Six (6) unit heads from each library of the

selected universities served as the sample for the unit heads, giving a total of **30**. The entire total sample size for the study is **692**. The choice of 5% and 10% of the population was based on the recommendation of Nwanna (2005) and Ali (2006) who explained that only a small size of a large population that a researcher can manage well should be sampled. Table 3.2 below showed the sample size distribution.

Table 3.2 Sample Size Distribution of Respondents

S/N	University	State	Status	Type of Respondents								Total No. of Respondents	
				Head of Library Unit		Academic Staff			Undergraduate Students				
				F	%	F	%	Resp.	F	%	Resp.	F	%
1	BASU(G)	Bauchi	State	6	100	151	19	15	2357	20	118	139	20
2	BASU(D)	Yobe	State	6	100	186	23	18	3521	30	176	200	29
3	GSU	Gombe	State	6	100	315	39	31	3468	30	176	213	31
4	AUN	Adamawa	Private	6	100	71	9	7	967	8	47	60	9
5	JUW	Taraba	Private	6	100	78	10	8	1325	11	65	79	11
Total				30	100	801	100%	80	11638	100%	582	691	100

3.5 Instrument for Data Collection

Observation and questionnaire were used to collect the data for this research. Omotosho (1994) stated that questionnaire is the form containing prepared questions to which the respondents are expected to provide answers. Questionnaire is chosen because, according to Osuala (2001), it permits wide coverage for a minimum expense both in money, time and effort. It also affords not only wider geographical coverage but reaches people who may be difficult to contact. Onyango (2002) also observed that questionnaire is a very important and popular instrument for research in the field of Library and Information Science. It seeks the opinion of people on a series of issues pertaining to research problems.

The questionnaire contained seven (7) parts, that is, A-F with items covering the types of ICTs available in University Libraries; types of ICT-based customer services

available and provided in University libraries; impact of ICT facilities on the provision of customer services; extent of users' satisfaction with the ICT based customer services; Competences of the Customer Services Staff in University Libraries; and Challenges to ICT-based customer services delivery in University libraries in the North East Geo-Political Zone, Nigeria.

3.6 Validity and Reliability of the Instrument

Validation of instrument is very important in every research. The instrument has to measure what is expected to measure accurately without accidentally including other factors. In order to ascertain the validity of the instrument used, the questionnaire was subjected to scrutiny by some research experts, senior colleagues, and supervisors for validation.

The reliability of instrument was considered in conducting the research. Buker (1998) defined reliability as the degree to which a procedure for measuring produces similar outputs when repeated. Thanasegara (2009) described reliability as the degree to which measures are free from error and therefore produces consistent result. This means the reliability of the instrument has same results when ever repeated.

The reliability of the instrument was established by conducting a pilot study within seven (7) days at Bayero University, Kano where six heads of library unit in the Library and twenty undergraduate students were distributed the questionnaire. The items in the questionnaire were subjected to test of reliability using the Split-Half method. The reliability coefficient of the questionnaire was found to be 0.86.

3.7 Procedure for Data Collection

The researcher personally administered the questionnaire and employed research assistant to ensure distribution and retrieval of the questionnaire in time. Best and Khan (1989) stated that questionnaire administered personally by a researcher to a group of individuals have a number of advantages as the person administering the instrument has an

opportunity to establish good relationship and explain some items that may not be cleared in the questionnaire.

3.8 Procedure for Data Analysis

The data for this study collected through the use of questionnaire were analyzed using frequency tables and simple percentages. One Way ANOVA was used in testing hypothesis 1, while hypothesis 2 was tested with the two sample t-test procedure because of the two independent groups involved. All the hypotheses were tested at the 0.05 level of significance.

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CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter presents the statistical analyses and interpretations of the data collected from the respondents involved in the study. The chapter is organized in the following sub-headings:

- 4.2 Response Rate of the Questionnaire
- 4.3 Demographic Characteristics of the Respondents
- 4.4 Responses to Research Questions
- 4.5 Test of hypotheses and Discussion of Findings

The analysis of the data is structured along the three groups of respondents (Heads of library units, Academic Staff and Undergraduate students) from the library of the institutions studied.

4.2. Response Rate of the Questionnaire

The response rates of the respondents from the Libraries of the institutions studied are presented in Table 4.1.1. A total of 30 copies of questionnaire were administered to the library personnel while 80 and 582 copies were distributed to the academic staff and students respectively in the different institutions. The universities selected were: American University of Nigeria, Yola, Bauchi State University, Gadau, Bukar Abba State University, Damaturu, Yobe State, Gombe State University, and Jubilee University Wukari, Taraba State.

Table 4.1 below is a breakdown of the total copies of questionnaire distributed to the respective institutions and the number of copies that were successfully filled and returned for the study and their corresponding percentages.

Table 4.1: Distribution of Questionnaire and Responses by Respective Institutions in the Geopolitical Zone

Institution	State	Status	Head of Library Unit			Academic Staff			Students		
			No. Issued Out	No.Returned	%	No. Issued Out	No Returned	%	No. Issued Out	No Returned	%
BASU(G)	Bauchi	State	6	6	100	15	15	100	118	111	94.1
BASU(D)	Yobe	State	6	6	100	18	17	94.4	176	167	94.9
GSU	Gombe	State	6	6	100	31	30	96.8	176	168	95.5
AUN	Adamawa	Private	6	6	100	7	7	100	47	42	89.4
JUW	Taraba	Private	6	6	100	8	8	100	65	61	93.8
Total			30	30	100	80	77	96.3	582	549	94.3

The questionnaire was administered out successfully as follows: (30) copies of questionnaire were administered to library staff where the percentage returned was 100%; 80 copies of the questionnaire were administered to academic staff and the percentage returned is 96.3% or 77; while 582 copies of questionnaire were administered to undergraduate students where 549 or 94.3% were successfully filled and returned.

4.2 Demographic Characteristics of the Respondents

The demographic variables of the respondents selected along their expressed opinion on the application of Information and Communication Technologies (ICT) to customer services in university libraries were: gender in the case of the library staff and the end users; on the part of the staff, professional educational qualification and years of experience on the job were solicited. Also, computer literacy and competency with the use of ICTs were solicited. These variables were considered of general association with individual expression on the investigated variables. Table 4.2 shows the distribution of the respondents by gender.

Table 4.2: Classification of the Respondents by Gender

S/N	University	State	Status	Gender of Respondents															
				HOLU				Academic Staff				Undergraduate Student				Total			
				M	%	F	%	M	%	F	%	M	%	F	%	M	%	F	%
1	BASU(G)	Bauchi	State	5	83.3	1	16.7	13	76.5	4	23.5	74	66.7	37	33.3	92	68.7	42	31.3
2	BASU(D)	Yobe	State	5	83.3	1	16.7	12	80	3	20	124	74.3	43	23.7	141	75	47	25
3	GSU	Gombe	State	6	100	0	0	24	80	6	20	150	89.3	18	10.7	180	88.2	24	11.8
4	AUN	Adamawa	Private	5	83.3	1	16.7	5	71	2	28	28	66.7	14	35.3	38	69.1	17	30.9
5	JUW	Taraba	Private	5	83.3	1	16.7	5	62.5	3	37.5	46	75.4	15	24.6	56	74.7	19	25.3
Total				26	87	4	13	59	77	18	23	422	77	127	23	507	77	149	23

KEY: **HOLU:** Head Of Library Unit **AS:** Academic Staff **UGS:** Undergraduate Students

The distribution in the Table reveals that 26 or 87% of the library staff were male while 4 or 13% were female. Also the Table shows that 59 or 77% of the academic staff were male while 18 or 23% were female. Among the students, 422 or 77% were male while 127 or 23% were female. The total number of male in the research is 507 or 77% while 149 or 23% is female. This means that though the distribution is not equal but could be considered proportionate to the true representation in the institutions and would thus help in balancing any gender consideration in this investigation.

The professional qualification of the library personnel in Library and Information Science is considered to be essentially associated with the application of Information and Communication Technologies (ICT) to customer services in University Libraries. In Table 4.3, the respondents are classified by their highest academic qualifications.

Table 4.3: Classification of the Respondents (Library Staff) by their Highest Professional Qualifications

S/N	University	State	Status	Classification of Library Staff by their Qualification										Total	
				DLIS		HND (LIS)		BLIS		MLIS		Ph.D			
				F	%	F	%	F	%	F	%	F	%	F	%
1	BASU(G)	Bauchi	State	2	33.3	3	50	1	16.7	0	00	0	0	6	100
2	BASU(D)	Yobe	State	0	00	0	00	3	50	3	50	0	0	6	100
3	GSU	Gombe	State	0	00	0	00	2	33.3	4	66.7	0	0	6	100
4	AUN	Adamawa	Private	0	00	0	00	5	83.3	1	16.7	0	0	6	100
5	JUW	Taraba	Private	2	33.3	1	16.7	3	50	0	00	0	0	6	100
Total				4	13.3	4	13.3	14	46.7	8	26.7	0	0	30	100

KEY: DLS: Diploma in Library and Information Science HNDLIS: Higher National Diploma in Library and Information Science
 BLIS: Bachelor of Library and Information Science MLIS: Masters in Library and Information Science

From the distribution of the respondents by the respective qualifications, none of the respondents has Ph.D. Those with Diploma in Library and Information Science are 4 or 13.3%

and those with Higher National Diploma in Library and Information Science are 4 or 13.3% while those with Bachelor of Library and Information Science are 14 or 46.7%. Only 8 or 26.7% of the staff respondents have Master in Library and Information Science.

The years of experiences on the job are expected to play a major role in their expressed perception of the investigated variables as they relate to the application of Information and Communication Technologies (ICTs) to customer services in University Libraries. Table 4.4 presented the frequencies and percentages along the staff's years of experience on the job.

Table 4.4: Classification of Library Staff by their Years of Experience

S/N	University	State	Status	Classification of Library Staff by their years of Experience												Total	
				Less a Year		1-5 Years		6-10 Years		11-15 Years		16-20 Years		More than 20 Years			
				F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	BASU(G)	Bauchi	State	0	0	3	50	3	50	0	0	0	0	0	0	6	100
2	BASU(D)	Yobe	State	0	0	0	0	6	100	0	0	0	0	0	0	6	100
3	GSU	Gombe	State	0	0	0	0	6	100	0	0	0	0	0	0	6	100
4	AUN	Adamawa	Private	0	0	2	33.3	3	50	0	0	0	0	1	16.7	6	100
5	JUW	Taraba	Private	1	16.7	3	50	2	33.3	0	0	0	0	0	0	6	100
Total				1	3.3	8	26.7	20	66.7	0	0	0		1	3.3	30	100

The Table 4.4 reveals that only 1 or 3.3% of the staff was found with less than one year working experience, 8 or 26.7% were found in between one to five years of experience. Also, 20 or 66.7% were found in between six to ten years of experience and only 1 or 3.3% found to be more than twenty years of experience. By these years, the library personnel could be said to have acquired enough experience on the job to provide valid information for attaining the objective of this study.

The staff's computer literacy and qualifications are tabulated in Table 4.5.

Table 4.5: Qualification of the Library Staff With Computer Science Training

S/N	University	State	Status	Classification of Library Staff in Computer Science Training											
				CCS		DCS		BGCS		HND (CS)		MSc. (CS)		Total	
				F	%	F	%	F	%	F	%	F	%	F	%
1	BASU(G)	Bauchi	State	6	100	0	0	0	0	0	0	0	0	6	100
2	BASU(D)	Yobe	State	5	83.3	0	0	1	16.7	0	0	0	0	6	100
3	GSU	Gombe	State	6	100	0	0	0	0	0	0	0	0	6	100
4	AUN	Adamawa	Private	4	66.7	2	33.3	0	0	0	0	0	0	6	100
5	JUW	Taraba	Private	6	100	0	0	0	0	0	0	0	0	6	100
Total				27	90	2	6.7	1	3.3	0	0	0	0	30	100

KEY: CCS: Certificate in Computer Science DCS: Diploma in Computer Science BGCS: Bachelor Degree in Computer Science

HND (CS): Higher National Diploma in Computer Science MSc. (CS): Masters Computer Science

Table 4.5 has revealed that none of the staff possesses Higher National Diploma or Masters in Computer Science. But all the staff have one form of qualification or another in computer sciences. Those with Certificate in Computer Science were 27 or 90% while 2 or 6.7% have Diploma in computer science and only 1 or 3.3% of them has Bachelor in computer science. With these classifications, most of the staff could be said to have basic Computer Science

educational qualification for application of Information and Communication Technologies (ICTs) to customer services in the university libraries.

4.3 Responses to Research Questions

The main variables assessed with respect to the research questions and objective of the study are addressed in this section. The research questions are addressed as follows:

4.3.1 ICTs Available and Being used by University Libraries in the North East Geopolitical Zone, Nigeria

This question was addressed on the perspective of the library staff and the end users. Their opinions on the available ICTs are tabulated in frequencies and percentages in Table 4.6 below.

Among the ICTs both groups agreed that computer 640 or 98%, Photocopier 587 or 89%, Internet 634 or 97%, and printers 452 or 69% were available in the libraries. But most of the end users (academic staff and students) did not agree that Television, scanner, DVD/CD Player and bar code reader were available for customer service in the libraries. Even among the library staff, the percentage of agreement with the availability of these ICTs were relatively low as indicated in the Table. This is a clear indication that these ICTs were not actually available for customers of the libraries.

4.3.2 ICT-Based Customer Services Available and being Provided in University Libraries in the North East Geo-Political Zone, Nigeria

Table 4.7 shows the responses of library staff and the end users on the ICT based customer services available in the university libraries. The three groups of respondents were presented in the same Table to enable any contrast with respect to the availability of the ICT based customer services.

Table 4.7: ICT Based Customer Services Available and Provided in University Libraries

ICT based Customer Services Available in University Libraries	Universities Libraries																												Total			
	BASU (G)						BASU (D)						GSU						AUN						JUW							
	HOLU		AS		UGS		HOLU		AS		UGS		HOLU		AS		UGS		HOLU		AS		UGS		HOLU		AS		UGS			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Remote access services	4	67	5	29	45	38	5	83	7	47	95	57	3	50	17	57	65	37	6	100	7	100	41	98	3	50	3	38	23	38	329	50
Electronic Mail (E-Mail)	3	50	7	41	40	36	2	33	3	20	23	14	4	67	11	37	29	17	6	100	3	43	37	88	3	50	3	38	16	26	190	29
Audio-visual services	5	83	7	41	71	64	5	83	6	35	66	40	3	50	14	47	46	27	6	100	6	86	40	95	5	83	3	38	24	39	307	47
Photocopying Services	6	100	17	100	92	83	6	100	15	100	156	93	6	100	28	93	164	98	6	100	7	100	42	100	6	100	8	100	48	79	607	93
Internet services	6	100	17	100	103	93	6	100	15	100	143	86	6	100	30	100	160	95	6	100	7	100	42	100	6	100	8	100	54	89	609	93
E-Query services	1	17	1	6	12	11	1	17	2	13	24	14	0	0	3	10	16	10	6	100	6	86	35	83	1	17	0	0	8	13	111	17

KEY: BASU(G): Bauchi State University Gadau
 American University of Nigeria Yola
HOLU: Head Of Library Unit
 BASU(D): Bukar Abba State University Damaturu
 Jubilee University Wukari
AS: Academic Staff
 GSU: Gombe State University Gombe
 AUN
 JUW: Jubilee University Wukari
UGS: Undergraduate Students

As for the ICT based customer services, both groups agreed that photocopying services 607 or 93% and internet services 609 or 93% were available in the university libraries. But most of the end users (academic staff and students) did not agree that remote access, electronic mail, audio visual and e-query services are available in the libraries. Though among the library staff, the percentage of agreement with the above services were relatively high except E-query that was low as indicated in the Table. This is a clear indication that these services are not actually available to customers of the libraries. Other ICT based customers services which are listed in the table have divergent views from the groups of respondents. Such ICT services include the Bar Code Reader, Remote access services, Electronic Mail (E-Mail) and Audio-visual services. The students who could be regarded as the major group of customers of the libraries did not agree that these services were available in the libraries but most of the staff agreed that they were available even though their percentages of agreement was relatively low compared to the unanimously agreed services identified above. The finding here agrees with the report of Akintunde (2006) who stated that ICT emphasized the use of computer and other technologies such as telephone, Internet to process, transport and transfer voice and data singularly or mixed in libraries. The report further advanced that the new technologies have changed and modified how library staff work and how library users learn and access information in libraries.

4.3.3 Impact of ICTs on the Provision of Customer Services in University Libraries in the North East Geo-Political Zone

Assessment of the impact of ICTs on the provision of customer services in University libraries was based on the response made by the end users of university libraries. Five Likert Scale was used in the course of data collection. The responses of academic staff on the impact of ICT on the provision of customer services are shown in Table 4.8 below.

Table 4.8: Academic Staff Level of ICT Impact on the Provision of Customer Services

Types of ICTs	Academic Staff Level of ICT Impact on the Provision of Customer Service									
	High Impact		Impact		Fair Impact		Rare Impact		No Impact	
	F	%	F	%	F	%	F	%	F	%
COMPUTER	74	96.1	3	3.9	0	0	0	0	0	0
INTERNET	73	94.8	4	5.2	0	0	0	0	0	0
SCANNER	19	24.7	7	9.1	3	3.9	22	28.6	22	33.8
PRINTER	51	66.2	6	7.8	1	1.3	14	18.2	5	6.5
TELEVISION	21	27.3	1	1.3	2	2.6	25	32.5	28	36.4
DVD/CD PLAYER	37	48.1	8	10.4	1	1.3	29	37.7	2	2.6
PHOTOCOPIER	66	85.7	6	7.8	5	6.5	0	0	0	0
BAR CODE READER	1	1.3	3	3.9	1	1.3	2	2.6	70	90.9
TOTAL	77	100	77	100	77	100	77	100	77	100

Table 4.8 shows the academic staff level of ICT impact on the provision of customer services which indicated that computer 74 or 96.1%, internet 73 or 94.8%, photocopier 66 or 85.7% and printer 51 or 66.2% were highly impact on the provision of customer services. The impact of internet coincided with the view of Anyira (2011) who revealed that most of the university students, staff and researchers use Internet for the purpose of sending and receiving mails, browsing information to write assignments, gather information to supplement course materials and literature review, to publish articles, to acquire current and update knowledge, and to register and enroll for examinations. In short, Internet as ICT facility can do so many things if the user is competent of using it. The response of undergraduate students on the impact of ICT on the provision of customer services is shown in Table 4.9 below.

Table 4.9: Undergraduate Students' Level of ICT Impact on the Provision of Customer Service Customer Services

Types of ICTs	Undergraduate Students' Level of ICT Impact on the Provision of Customer Services									
	High Impact		Impact		Fair Impact		Rare Impact		No Impact	
	F	%	F	%	F	%	F	%	F	%
COMPUTER	518	94.4	11	2.0	3	0.5	10	1.8	7	1.3
INTERNET	505	92	40	7.3	4	0.7	0	0	0	0
SCANNER	132	24	9	1.6	4	0.7	5	0.9	399	72.7
PRINTER	401	73	23	4.2	111	20.2	12	2.2	2	0.4
TELEVISION	91	16.6	63	11.5	31	5.6	85	15.5	279	50.8
DVD/CD PLAYER	259	46.8	111	20.2	90	16.4	80	14.6	9	1.6
PHOTOCOPIER	504	91.8	13	2.4	15	2.7	12	2.2	5	0.9
BAR CODE READER	24	4.4	11	2.0	36	6.6	15	2.7	363	66.1
TOTAL	549	100	549	100	549	100	549	100	549	100

Table 4.9 shows that undergraduate students revealed that computer 518 or 94.4%, internet 505 or 92%, photocopier 504 or 91.8% and printer 401 or 73.1% have high impact on the provision of customer services. Emojorho and Nwalo (2009) and Patil (2011) stated that Internet and computer have revolutionized the world of information. They are some of the technological innovations that have greatly influenced the development of communication strategies and practices in both library and business communities in the world.

4.3.4 Users' Satisfaction with the ICT Based Customer Services in University Libraries in the North East Geo-Political Zone, Nigeria

End users responded on the satisfaction with ICT based customer services provided by the university libraries. Five Likert Scale was used in the course of data collection and the result of the academic staff is presented in Table 4.10 below.

Table 4.10: Level of Academic Staff Satisfaction with the ICT Based Customer Services

Types of ICT Based Customer Services	Level of Academic Staff Satisfaction with the ICT Based Customer Services									
	Highly Satisfied		Satisfied		Fairly Satisfied		Rarely Satisfied		Not Satisfied	
	F	%	F	%	F	%	F	%	F	%
Remote Access Service	4	5.2	8	10.4	12	15.6	2	2.6	51	66.2
Electronic Mail (E-Mail) Services	10	13	18	23.4	5	6.5	9	11.7	35	45.5
Audio Visual Services	25	32.5	11	14.3	3	3.9	1	1.3	37	48.1
Photocopying Services	62	80.5	11	14.3	4	5.2	0	0	0	0
Internet Services	73	94.8	3	3.9	1	1.3	0		0	0
Electronic Query Services	6	7.9	2	2.6	1	1.3	1	1.3	67	87.0
Total	77	100	77	100	77	100	77	100	77	100

Table 4.10 shows that the responses of academic staff indicated Internet services 73 or 94.8% and photocopying services 62 or 80.5% were strongly satisfied. But the response on the remote service 51 or 66.2%, electronic mail service 35 or 45.5% and audio visual service 37 or 48.1% indicated that academic staff were not satisfied. There is need for university libraries to improve on these services. Undergraduate students' responses on the satisfaction with ICT based customer services is shown in Table 4.11 below.

Table 4.11: Level of Undergraduate Students' Satisfaction with the ICT based Customer Services

Types of ICT Based Customer Services	Level of Undergraduate Students' Satisfaction with the ICT Based Customer Services									
	Highly Satisfied		Satisfied		Fairly Satisfied		Rarely Satisfied		Not Satisfied	
	F	%	F	%	F	%	F	%	F	%
Remote Access Service	24	4.4	43	7.8	38	6.9	21	3.8	423	77.0
Electronic Mail (E-Mail) Services	49	8.9	32	5.8	53	9.7	10	1.8	405	73.8
Audio Visual Services	95	17.3	17	3.1	37	6.7	92	16.8	308	56.1
Photocopying Services	441	80.3	36	6.6	12	2.2	25	4.6	35	6.4
Internet Services	457	83.2	17	3.1	26	4.7	21	3.8	28	5.1
Electronic Query Services	24	4.4	28	5.1	37	6.7	39	7.1	421	76.7
Total	549	100	549	100	549	100	549	100	549	100

The responses of undergraduate students show that internet services 457 or 83% and photocopying services 441 or 80% were strongly satisfied while remote access services 423 or 77%, electronic query services 421 or 76.7%, electronic mail services 405 or 73.8% and audio visual services 308 or 56.1% were not satisfied. The satisfaction of both academic staff and undergraduate students showed no difference based on the responses made.

4.3.5 ICT Competence of Customer Services Staff in University Libraries in the North East Geo-Political Zone

The assessment of the competence level for the provision of ICT based customer services in the University libraries was based on the staffs that are responsible for the service

delivery. The staff competence in some of the aspects of ICT for their effective application to customer services in the University Libraries is tabulated in Table 4.12.

Table 4.12: Classification of the Library Staff by their ICT Competence

Level of ICT Competence	Name of University Libraries										TOTAL	
	BASU(G)		BASU(D)		GSU		AUN		JUW			
	HOLU		HOLU		HOLU		HOLU		HOLU			
	F	%	F	%	F	%	F	%	F	%	F	%
Basic Computer Knowledge(MS Office)	6	100	6	100	5	83	6	100	4	67	27	90
Competence in Database Software(ILS, Dspace)	1	17	1	17	1	17	4	67	1	17	8	27
Competence in Internet Facilities	1	17	3	50	3	50	6	100	3	50	16	53
Competence in Search Engines / Web browsers (Google, Opera)	4	67	4	67	4	67	6	100	3	50	21	70

KEY: BASU(G): Bauchi State University Gadau BASU(D): Bukar Abba State University Damaturu
 GSU: Gombe State University Gombe AUN: American University of Nigeria Yola
 JUW: Juby University Wukari
 HOLU: Head Of Library Unit AS: Academic Staff UGS: Undergraduate Students

Table 4.12 shows that 27 or 90% of the staff have basic computer knowledge for the application of Information and Communication Technologies (ICT) to customer services in the University Libraries. Also 8 or 27% said they were competent with databases software and 16 or 53% said they were competent with internet facilities while 21 or 70% were competent with search engine/web browsers. These distributions imply that the staff could be said to have the basic skill required for the application of Information and Communication Technologies (ICTs) to customer services in the university libraries.

4.3.4 Challenges of ICT based Customer Services in University Libraries in the North East Geo-Political Zone

A number of challenges to the effective provision of the ICT based customer services were listed on which the two groups of respondents expressed their opinions. The only item that was not common to both groups was in the area of funding the libraries which the end users did not have the advantage of. Among the staff, 28 or 93.3% of them said that inadequate funding is a major constraint to effective provision of ICT based customer services in the libraries. Only 2 or 6.7% of the staff disagree with this opinion. Items that were common to both groups are listed in Table 4.13 with their respective opinions in frequencies and percentages.

Table 4.13: Challenges Militating Against Effective Provision of ICT Based Customer Services in the University Libraries

Challenges to ICT based customer services in University Libraries	Universities Libraries																												Total			
	BASU (G)						BASU (D)						GSU						AUN						JUT							
	HOLU		AS		UGS		HOLU		AS		UGS		HOLU		AS		UGS		HOLU		AS		UGS		HOLU		AS		UGS			
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Inadequate Fund	6	100	-	-	-	-	4	67	-	-	-	-	6	100	-	-	-	-	6	100	-	-	-	-	6	100	-	-	-	-	28	93
Epileptic power supply	6	100	17	100	107	96	6	100	15	100	143	86	6	100	30	100	146	87	0	0	2	29	4	10	6	100	8	100	53	87	549	84
Poor conducive environment	4	67	12	71	92	83	2	33	9	60	68	41	3	50	11	37	80	48	0	0	1	14	0	0	5	83	4	50	24	39	315	48
Inadequate competent staff	2	33	6	35	41	37	4	67	5	33	91	54	2	33	11	37	57	34	0	0	1	14	7	17	3	50	4	50	34	56	268	41
Inadequate facilities	6	100	17	100	100	90	6	100	15	100	49	29	6	100	24	80	106	63	0	0	1	14	2	5	6	100	8	100	52	85	398	61
Poor network	6	100	17	100	104	94	5	83	14	93	137	82	6	100	29	97	139	83	0	0	0	0	4	10	6	100	8	100	53	87	528	80

KEY: BASU(G): Bauchi State University Gadau BASU(D):Bukar Abba State University Damaturu GSU: Gombe State University Gombe
AUN: American University of Nigeria Yola JUW: Jubly University Wukari
HOLU: Head Of Library Unit AS: Academic Staff UGS: Undergraduate Students

The rating of the challenges differed by the respective groups. For example, the most militating problem observed by the library, academic staff and students is the epileptic power supply where 549 or 84% of them said epileptic power supply was a major problem to the application of the ICT based customer services in the libraries. This is followed by the poor network with 528 or 80% of the library and academic staff, and students ranking it as the second major challenge. Closely associated with the poor network is the problem of inadequacy of ICT facilities which is represented by 398 or 61% in the libraries. The problem of poor conducive environment and inadequate competent staff was not seen by most students as major challenges to the ICT based customer service provision in the libraries.

However, the challenges identified include among others: power supply, poor network and inadequate ICT facilities for the effective application of the ICT based customer service provision in the libraries. This finding is in line with Oyedum (2007) who opined that ICT facilities like computer, printer, television, radio, telephone, GSM, scanner, video recorder, Internet and e-mail services etc contribute immensely toward information communication development in university libraries. The finding is in line with Gbaje (2007) who lamented that the implications of transporting library services to online environment for the Nigerian academic libraries in the digital age are enormous, particularly with the dynamic nature of digital technology which is constantly creating the need for new skills, work environment and work method. The efficiency of service provision can only be achieved through regular staff development. Okiy (2010) who articulated that training and retooling of librarians in the necessary ICT skill is necessary for the benefits of globalization of library services to be impacted on academic libraries and their users in Nigerian universities.

4.4 Hypotheses Testing

The hypotheses formulated to establish the Application of Information and Communication Technologies (ICT) to customer services in University Libraries with statistical validity for the investigated variables are tested in this section. The hypotheses are tested as follows:

Hypothesis I: There is no significant difference among staff of the selected institutions in their level of competence on the use of ICT based customer services in the university libraries in the North East Geo-Political Zone of Nigeria

The staff of the respective university libraries were selected for the test of this hypothesis because they are responsible for the provision of the ICT based customer services. The One Way Analysis of Variance was used for the test because of the multiple levels involved. The analysis of variance model is summarized in Table 4.14.

Table 4.14: One Way Analysis of Variance on Competency by the Institutional Staff

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	83.829	4	20.957	7.858	.000
Within Groups	66.671	25	2.667		
Total	150.500	29			

(Critical value for F at 25 DF = 2.76, $P < 0.05$)

The observed F-values (7.858) for the test is higher than the critical value of 2.76 at the same degree of freedom (4, 25). The observed levels of significance (0.0.00) for the test is lower than 0.05 ($P < 0.05$). This means that the respondents differ significantly in their competency in the use of ICT devices investigated in the study. With these observations, there is no sufficient evidence to reject the null hypothesis that there is no significant difference among library staff of the selected institutions in their competency level on the use of ICT based

customer services in the university libraries in the North East Geo-Political Zone of Nigeria.

Table 4.15 presents the mean scores of the respondents by their respective institutions.

Table 4.15: Mean scores of the Respondents on the Competency Level by their Institutions

S/N	Institutions	State	Status	N	Mean	Std. Deviation	Std. Error
1	BASU(D)	Yobe	State	6	1.0000	.81650	.22646
2	BASU(G)	Bauchi	State	6	3.5833	1.08362	.31282
3	GSU	Gombe	State	6	3.9130	.79275	.16530
4	JUW	Taraba	Private	6	3.1667	.84515	.14086
5	AUN	Adamawa	Private	6	3.9286	.73005	.19511
Total				30	3.2143	1.24561	.12583

The result reveals that respondents from Damaturu had the least mean score on the competence level while the highest competence scores was obtained from respondents from Yola and Gombe institutions respectively. However, the mean scores were subjected to a mean separation test to determine the institution whose staff competence was significantly different from the others in the test. The Scheffe Procedure was used for the post hoc test and the result is summarized in Table 4.16.

Table 4.16: Result of Scheffe Procedure on the Mean Scores by the Different Groups

(I) Institution	(J) Institution	Mean Difference (I-J)	Std. Error	Sig.
BASU(D)	BASU(G)	-2.58333(*)	.33895	.000
	GSU	-2.91304(*)	.29379	.000
	JUW	-2.16667(*)	.27397	.000
	AUN	-2.92857(*)	.32612	.000
BASU(G)	BASU(D)	2.58333(*)	.33895	.000
	GSU	-.32971	.30151	.878
	JUW	.41667	.28223	.703
	AUN	-.34524	.33309	.898
GSU	BASU(D)	2.91304(*)	.29379	.000
	BASU(G)	.32971	.30151	.878
	JUW	.74638(*)	.22602	.034
	AUN	-.01553	.28701	1.000
JUW	BASU(D)	2.16667(*)	.27397	.000
	BASU(G)	-.41667	.28223	.703
	GSU	-.74638(*)	.22602	.034
	AUN	-.76190	.26668	.095
AUN	BASU(D)	2.92857(*)	.32612	.000
	BASU(G)	.34524	.33309	.898
	GSU	.01553	.28701	1.000
	JUW	.76190	.26668	.095

* The mean difference is significant at the .05 level.

The result reveals that staff from Damaturu had the least competency score and were significantly different from all the other four institutions' staff in their competency levels. There was significant difference in the competence level of staff from Gombe and Taraba institutions. Between the other staff from the rest institutions no significant difference was observed.

Hypothesis II: There is no significant difference between the library staff and end users (academic staff and students) on the Challenges militating against the effective use of ICT in the provision of customer service to end users in the University libraries of North East Geopolitical Zone of Nigeria.

The sum of the rated challenges militating against the effective application of the ICT based customer services in the library by the two groups (staff and students) constituted the dependent variable used in this test. The two sample t-test was used for the hypothesis because of the two independent groups. A summary of the result is presented in Table 4.17.

Table 4.17: Two Sample t-test on Challenges to Application of ICT Based Customers' Services in the University Libraries

Groups	N	Mean	Std. Deviation	Std. Error	t-value	DF	P	Remarks
Staff	30	3.2143	1.24561	.12583	0.351	654	.726	Not significant
Users	626	3.2623	1.24852	.05329				

Critical value for t at 654 DF=1.96

The result did not show significant difference between the library staff and the end users on the challenges encountered in the application of the ICT based customer services in the libraries. The observed t-value (0.351) is lower than the critical value of 1.96 and the observed level of significance obtained in the test is 0.726 ($P > 0.05$). With these observations, there is no sufficient evidence to reject the null hypothesis. Therefore, the null hypothesis that there is no significant difference between library staff and the end users on the challenges militating against the effective use of ICT in the provision of customer service to end users in the University libraries of North East Geopolitical Zone of Nigeria is thus retained. Some of the challenges identified here were problem of power supply, inadequacy of facilities and others. The finding here agrees with Faboyinde (2006) who observed that the poor state of Nigerian economy has made the cost of installation of ICT facilities prohibitive

to some libraries likewise Mohammad (2007) who maintained that academic libraries in Nigeria are plagued by epileptic power supply among others in their effort to connect their libraries to the internet. The finding agrees with Adomi (2010) who noted that inadequate manpower in libraries to perform ICT-based tasks is one of the problems facing academic libraries.

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the summary of the investigation into the application of Information and Communication Technologies (ICT) to customer services in some selected University Libraries of the North East Geo-Political Zone. Other issues in the chapter are a summary of the major findings, recommendations and suggestions for further study.

5.2 Summary of the Study

The advent of Information Communication Technology (ICT) has been regarded as the most important dimension in modern library management. Universities being academic and research institutions are expected to lead in this vanguard with well-equipped libraries that support the learning, teaching and research activities of their parent organizations. As an integral part of the university system, it is expected to contribute immensely toward the success of its programmes for national development. University libraries are expected to select, acquire, organize and disseminate information to meet the broad and varying needs of the university community for information, research and aesthetic enjoyment. The application of ICT to customer services is expected to contribute heavily toward efficient and effective processing and dissemination of information.

The application of ICT to customer services units has many advantages in that it reduces the number of repetitive routine tasks, it is more efficient than manual services, it enables library customers to have access to library and even what is in other libraries and more importantly it speeds up the customer services. The provision of customer services using manual method in the university libraries under study is too tedious, repetitive, time consuming and can serve very little number of users at a time. To effectively carry out the investigation, two structured questionnaires were designed and administered to library staff,

academic staff and students of some selected university in the zone through the stratified random sampling technique using the survey method. A total of 30 library staff, 77 academic staff and 549 students were thus successfully filled and returned for the study. Two hypotheses were tested along the objectives and research questions of the study. The data collected were subjected to a descriptive analysis using frequency tables while the hypotheses were tested using one way analysis of variance and two sample t-tests. The major findings from the analysis of the data and test of the hypotheses are stated below.

5.3 Summary of Major Findings

The major findings from the descriptive analysis of the study were:

1. The ICT facilities available in the university libraries in North East geopolitical zone are computer, internet, photocopier and printer that are available and are being used.
2. The ICT-based customer services available and are being provided in the university libraries include photocopying services, internet and printing services.
3. The study revealed that computer, internet, photocopier, printer and DVD/CD player have highly impact on the provision of customer services in university libraries.
4. The end users were highly satisfied with the photocopying service and internet services of the libraries.
5. The Customer services staff have the basic skill required for the application of information and communication technologies to customer services.
6. The major challenges militating against the application of information and communication technologies to ICT based customer services are epileptic power supply, poor network, inadequate ICT facilities, and inadequate funds.

(Inferential Findings)

Hypothesis I: There is no significant difference among the library staff of the selected institutions in their competency level on the use of ICT based customer

services in the university libraries in the North East Geo-Political Zone of Nigeria, the hypothesis is retained.

Hypothesis II: There is no significant difference between the library staff and the end users on their impression on the challenges militating against the effective use of ICT in the provision of customer service to the end users in the University libraries of North East Geopolitical Zone of Nigeria, the hypothesis is retained.

5.4 Conclusion

From the analysis of the data, the researcher concludes that university libraries in the North East were not left behind in terms of ICT application. There are ICT facilities and services rendered to their end users among which are computers, internet, photocopiers, printers; and internet, and photocopy services which were available and provided by the university libraries.

The application of ICT based customer services in the university libraries within the zone is faced with many challenges which include lack of adequate power supply, and inadequacy of ICT facilities and equipment as well as adequate funding.

5.5 Recommendations

The following recommendations are made based on the findings and conclusion reached in this study:

1. University libraries should provide ICT facilities like scanner, television, DVD/CD player and bar code reader to be available for the use of users.
2. Also, University libraries should provide and make the following ICT based customer services like e-mail, audio visual, remote access and e-query services available to their end users.

3. University libraries should provide and make scanner, Television and bar code reader accessible for more impact on the provision of customer services.
4. University libraries should improve the ICT based customer services like remote access, e-mail, and audio visual services to satisfy their end users.
5. University library staff should be encouraged for training and retraining in the area of ICT application through attending conferences and seminars.
6. University libraries should be funded well so that the challenges to the ICT based customer services would be minimized. More importantly, libraries should devise a means of generating additional incomes apart from the main source, through having a functional printing press, this will help immensely.

5.6 Suggestions for Further Studies

This study focused on application of ICT based customer services among University libraries in North East geopolitical zone. There is a need to replicate this study in other Zones of the Federation towards improving the use of ICT based customer services in the university libraries in the country.

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APPENDIX I

QUESTIONNAIRE ON THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES TO CUSTOMER SERVICES IN SOME SELECTED UNIVERSITY LIBRARIES IN THE NORTH-EAST GEO-POLITICAL ZONE, NIGERIA

Department of Library and Information Science

Faculty of Education

Ahmadu Bello University, Zaria

13th March, 2013

Dear Respondent

I am a postgraduate student of the above named department carrying out a research entitled “Application of Information and Communication Technologies to Customer Services in University Libraries in the North East Geo-Political Zone, Nigeria”.

I am seeking your assistance to kindly respond honestly to the items in the questionnaire. The questionnaire is going to be used for this research alone and your contributions will be appreciated. All information given will be treated confidentially.

Thank you

Yours sincerely

Balarabe Idi

(Researcher)

APPENDIX II

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

AHMADU BELLO UNIVERSITY ZARIA

QUESTIONNAIRE FOR THE HEADS OF LIBRARY UNITS CUSTOMER SERVICES IN
UNIVERSITY LIBRARIES

Section A: Bio-Data

Instructions: Tick [] the appropriate.

1. To which institution do you belong?
 - a. ABTI
 - b. BASU (D) Damaturu
 - c. BASU (G) Gadau
 - d. GSU Gombe
 - e. JUW Wukari

2. Gender: (a) Male [] (b) Female []

3. Highest Educational Qualification
 - a. Secondary School Certificate []
 - b. Diploma in Library and Information Science []
 - c. Higher National Diploma in Library and Information Science []
 - d. Bachelor of Library and Information Science []
 - e. Master in Library and Information Science []
 - f. Ph.D Library and Information Science []
 - g. Others, please
specify.....

4. How long have you been working in the library?
 - a. Less than one year []

- b. 1 – 5 years
- c. 6 – 10 years
- d. 11 – 15 years
- e. 16 – 20 years
- f. More than 20 years

Section B: Type of ICTs available and are being used in University Libraries in the North East Geo-Political Zone, Nigeria.

Instruction: Tick [] as many as possible.

1. Which of the following ICT facilities are available in your library?

- a. Computer
- b. Internet
- c. Scanner
- d. Printer
- e. Television
- f. DVD/CD Player
- g. Photocopier

Section C: ICT based Customer Services available and are being provided in University libraries in the North East Geo-Political Zone, Nigeria

Instruction: Tick [] as many as possible

1. Which of the following ICT based Customer Services available and are being provided in your library?

- a. Remote access services
- b. Electronic Mail (E-Mail) services
- c. Audio-visual services
- d. Photocopying services
- e. Internet services
- f. E-Query services

Section E: ICT Competence of Customer Services Staff in University Library in the North East Geo-Political Zone, Nigeria.

Instruction: Tick [√] the appropriate.

1. What is your highest qualification in computer science?

- a. Certificate in computer science
- b. Diploma in computer science
- c. Higher National Diploma in computer science
- d. Bachelor Degree in computer science
- e. Master in computer science

2. Which of the following items are you competent with?

Instruction: Tick [√] as many as possible.

- a. Basic computer knowledge (MS Office)
- b. Competency with databases software (ILS, Dspace)
- c. Competency with internet facilities (Web Application)
- d. Competency with search engines/web browsers (Google, Opera)

Section F: Challenges to ICT based customer services delivery in University libraries in the North East Geo-Political Zone, Nigeria.

Instruction: Tick [√] as many as possible.

1. What are the challenges to customer services delivery in your library?

- a. Inadequate funds
- b. Epileptic power supply
- c. Poor conducive environment
- d. Inadequate competent staff
- e. Inadequate facilities
- f. Poor network

APPENDIX III

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

AHMADU BELLO UNIVERSITY ZARIA

QUESTIONNAIRE FOR ACADEMIC STAFF/UNDERGRADUATE STUDENTS

Section A: Biodata

Instructions: Tick [] the appropriate.

1. To which institution do you belong?
 - a. AUN
 - b. BASU (D) Damaturu
 - c. BASU (G) Gadau
 - d. GSU Gombe
 - e. JUW Wukari
2. Sex (a) Male (b) Female

Section B: Types of ICT Facilities available and are being used in University Libraries in the North East Geo-Political Zone, Nigeria

Instruction: Tick [] as many as possible.

1. Which of the following ICT facilities are available and are being used in your library?
 - a. Computer
 - b. Internet
 - c. Scanner
 - d. Printer
 - e. Television
 - f. DVD/CD Player
 - g. Photocopier
 - h. Bar Code Reader

Section C: ICT based customer services are available and are being provided by University libraries in the North East Geo-Political Zone, Nigeria

Instruction: Tick [] as many as possible.

1. Which of the following ICT based customer services are available in your library?

Instruction: Tick [] as many as possible.

- a. Remote access services
- b. Electronic Mail (E-Mail) services
- c. Audio-visual services
- d. Photocopying services
- e. Internet services
- f. E-Query services

Section D: ICT impact on the provision of customer services in University Libraries in the North East Geo-Political Zone, Nigeria.

To what extent do ICT impact on the provision of customer services in university library?

Tick the appropriate []

Information and Communication Technologies	HighImpact	Impact	FairImpact	Rare Impact	No Impact
COMPUTER					
INTERNET					
SCANNER					
PRINTER					
TELEVISION					
DVD/CD PLAYER					
PHOTOCOPIER					
BAR CODE READER					

Section E: Customers' Satisfaction with ICT based Customer Services in University Libraries
in the North East Geo-Political Zone, Nigeria

1. To what extent are you satisfied with the ICT based customer services?

Tick the appropriate []

ICT based Customer Services	Highly Satisfied	Satisfied	Fairly Satisfied	Rarely Satisfied	Not Satisfied
Remote access services					
Electronic Mail (E-Mail) services					
Audio-visual services					
Photocopying services					
Internet services					
E-Query services					

Section F: Challenges to ICT based customer services delivery in University libraries in the
North East Geo-Political Zone, Nigeria.

1. What are the challenges to ICT based customer services delivery in your library?

Instruction: Tick [] as many as possible.

- a. Epileptic power supply
- b. Poor conducive environment
- c. Inadequate competent staff
- d. Inadequate facilities
- e. Poor network