



Application of Computer Technologies to Reference Services in University and Research Institute Libraries in North Central Nigeria

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ABSTRACT

This study focuses on application of computer technologies to reference services in university and research institute libraries in North Central, Nigeria. Descriptive survey research method was used and the study covered 13 university libraries and 19 research institute libraries in North Central, Nigeria. The population of the study was 234 librarians. Sample size for this study was made up of entire population. Research instruments were a questionnaire and a checklist. Data collected were analyzed using frequency counts, percentages, mean and standard deviation. The findings revealed that computer technologies was used to a little extent for reference services ($=2.07$) in university libraries while in research institute libraries the grand mean of ($=2.84$) showed that computer technologies was highly used for the provision of reference services. The grand mean of ($=2.69$) revealed problems that hindered the application of computer technologies to reference services and the greatest of these was irregular supply of power in university libraries in North Central, Nigeria. Library managements should address irregular power supply; inadequate computer technology infrastructure and inadequate funding that hindered effective application of computer technologies in reference services for effective and efficient services in university and research institute libraries.

Keywords: Libraries, Reference services, Computer technologies.

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I. Introduction

Over the last two decades, computer-based technologies have become dominant forces to shape and reshape the products and services the university libraries have to offer. The application of library technologies has a profound impact on the way library resources are being used. Traditionally, libraries acquire information on paper and print form to be disseminated to users and the emphasis now on electronic based information resources such as the Internet and Compact Disk Read Only Memory (CD-ROM). The library also provides academic guidance to students and extends the frontiers of knowledge through research and publication. This makes the services of the library inevitable. Most of the information required by researchers and lecturers are processed and disseminated through university and research institute libraries which have been described as “the heart of institution” a place where books and users interact together for the transmission of civilization and cultivation of human beings. Interestingly, contrary to

widely held notion that library computerization brings solution to all library problems, Aguolu & Aguolu (2002) stated that computer technology adoption in libraries is not a solution to all library problems as initially presumed. In spite of their tremendous potentials, these technologies have brought new challenges that must be overcome in order to increase effectiveness and efficiency of libraries in developing countries. Recently, these technologies have become a source of development for wealth and power as well as the well-being of humanity (Ahsanullah, 2002). Similarly, libraries in the 21st century have also witness a paradigm shift from traditional model where task/activities were mainly done manually to modern model which involves the use of computer technologies (Nmecha, 2013).

The provision of reference services is very vital to existence and functioning of libraries. Reference services refer to all functions performed by librarians to meet information needs of library users (The American Library Association (ALA) glossary of library and information science, 1983). It includes answering substantive questions, instructing users in selection and use of

appropriate tools and techniques for locating information, carrying out searches, directing and assisting users to locate resources outside the library, keeping reference statistics and developing reference collections. Librarians should be able to examine users' needs and determine the solution through the use of reference services. Ademodi (2004) lamented unawareness of students of these important services in core research activities. As a result, many users do not know where to begin their research. It is therefore necessary for reference librarians to spend extra time with users to carry them through the search process. Hence, computer technologies can be used to provide reference services over the Internet through e-mail, chatting, web-based submission forms, ask a service, video conferencing and VOIP, web contact center and SMS reference services. The fourth law of Raganathan (1992) states that "do not waste the time of the library user." Library users are very busy persons and time-conscious, their time must be saved. This is possible if services can be rendered very fast and promptly so that information can be retrieved quickly. Thus, services like selective dissemination of information, current awareness services, provision of digital reference services and computerized library services are necessary in helping users so that their time can be saved. This law also emphasizes efficient services to users which imply a well-designed and easy-to-use system that will help users locate informational materials quickly and accurately.

II. Statement of the Problem

The advance in computer technologies such as the computer, CD-ROM and the Internet has revolutionized reference services. Apart from providing wide access to information and new instructional possibilities, it has also succeeded in providing timely information to library users by reducing the time lag between generating and accessing useful information. There is a felt need for extensive use of computer technologies to effectively discharge reference services (Madu, 2010). The effect of non-utilization of computer technologies in delivering reference services undermines the functions of a 21st-century librarian, thus constituting frustrations for users' ability to effectively and efficiently use the libraries under study in an information age such as this. This is due to the fact that library users cannot do without the use of these modern technologies. The researcher also observed that the present state of reference services in university and research institute in North Central, Nigeria is bedeviled by a number of problems ranging from inadequate funding through inadequate skills in the use of computer technologies to lack of computer technologies infrastructure. The consequences of these could lead to inability of the libraries under study to provide current and timely information to their users. It may also lead to inability of these libraries to meet their users' information needs. Hence reference services in these libraries need to be improved to provide effective and efficient services. Therefore, the problem of this study is to determine ways of applying computer technologies to reference services in university and research institute libraries in North Central, Nigeria.

III. Objectives of the Study and Research Questions

The main purpose and specific objectives of this study include the following:

1. Determine extent to which computer technologies are used for rendering reference services in university and research institute libraries in North Central Nigeria.
2. Identify constraints against effective application of computer technologies for reference services in university and research institute libraries in North Central Nigeria.
3. Identify strategies for improving application of computer technologies for reference services in university and research libraries in North Central Nigeria.

This study sought answers to the following questions:

1. To what extent are computer technologies used for reference services in university and research institute libraries?
2. What are the constraints that affect application of computer technologies to reference services in university and research institute libraries?
3. What are the strategies used to address the constraints that affect application of computer technologies to reference services in university and research institute libraries?

IV. Literature Review

Reference services began in late nineteenth century, and it defines role of librarian as a provider of information, assistance, and instruction (Bopp & Smith, 2001). These services have not changed. What has changed is how librarians provide these services. The term "reference services" has been defined in various ways by different scholars. Ifidon (1997, p. 105) defined reference service as "the springboard to the library and librarianship, wherein one is involved with all aspects of information both theoretical and practical." It is personal assistance given to user in finding specific information, whether direct or indirect. Prytherch (2000) defined it as provision and organization of reference work by a library. Reference services deal with the provision of reference work which includes assistance given to users in their search for information on various subjects. Reference services involve providing answers to questions asked by library users. When a library user has information need and comes to the library and presents request, reference librarian in return strives to provide an answer to the question from the information resources in library. Thus, the essence of reference work in this paper is to provide personal service. Similarly, Udensi & Akor (2014) stated that Reference service is a direct personal assistance to readers seeking for information in the library. Consequently, reference services in Nigeria libraries is an age long tradition as reference librarians serve as pilot toward directing information seekers on the latest information that are inherent in a particular field of human endeavour, the provision of qualitative reference service will no doubt promote research and development for national development. The primary function of the reference department as observed by Nwalo (2003)

among other things is answering reference questions and user education. Thus, reference department serves as a meeting point between the library and its external environment. Since reference department is one of the major areas of library where contact is made with the public, the reference librarian serves as contact channel. The effectiveness and efficiency of this contact is premised on the ability of the reference librarian to effectively meet the information need of users which in turn promotes public image of the library and improves library patronage (Lawal, 2002). In enumerating the rationale for traditional and digital references, Anyaogu (2007) & Ominyi (2011) opined that it should include the assistance of users in making the best selection from the universe of recorded information. In addition, Katz (2002) highlighted that promoting an end product of information sought by the user and teaching people how to find information are other duties of a reference librarian. According to Ozioko (2005), computer is presently the best gift technology has presented to the library to improve its operations and services integrated. While CD-ROM is a storage device that can hold variety of information including bibliographical databases, full-text journals, newspapers, directories, dictionaries, encyclopedia, archives etc. For him, the Internet is an information super highway that possesses a number of special and general capabilities on reference services.

Furthermore, advent of computer technologies has changed the way of searching for information and what to expect from reference services. (Jibia, Mubaraka, & Jirgi, 2013) affirmed that the use of computer-based reference services can augment current level of local information resources in developing countries. This can be done through efficient wireless connections to university and research institute libraries to undertake online search of bibliographic databases. Introduction of computer and the Internet in libraries has expanded the role of reference beyond the use of mail, telephone or fax machine. In parallel with numerous changes in the profession, reference services have also changed. Nowadays, librarians not only help patrons at reference desk but also in cyberspace. This new type of service is called digital or virtual reference. It has emerged as a result of various factors, including advent and wide use of the Internet and development of software capable of providing synchronous and asynchronous services (Alessia, 2004). Similarly, Ezeani (2004) noted that computer technologies have made it possible to organize, retrieve, provide and access current information in many different formats. The search for information has now assumed a new dimension whereby library users are increasingly becoming more conscious of an individualized approach. Thus, users want personalized access to information without any assistance from reference librarians. Okeke (2005) cited in Anyaogu (2007) listed the services provided in both traditional library and digital environment as stated in Table I.

V. Methodology

The study adopted descriptive research design. The study covered 13 university libraries and 19 research institute libraries in North Central, Nigeria. The

population of this study was 234 librarians. Sample size for this study was made up of entire population. Research instruments were a questionnaire titled "Questionnaire on the Application of Computer Technologies to Reference Services in Libraries" (QACTRSIL) and a checklist developed by the researchers. A response rate of 183(78.21%) was recorded. Data collected were analyzed using frequency counts, percentages (%), mean (\bar{x}) and standard deviation (SD).

VI. Discussion of Findings

From Table I there are other services apart from reference services that computer technologies can be applied. These services are geared towards satisfying users' needs, aspirations and expectations (Iyishu & Nkanu, 2013). In the same vein, Mabawonku (2004) noted that students need to use reference services, book reserves, inter-library loans and access to electronic databases.

TABLE I
TRADITIONAL AND DIGITAL LIBRARY ENVIRONMENT

<i>Traditional Library Environment</i>	Digital Environment
<i>Reference services</i>	Digital Reference services
<i>Inter-library loan services</i>	Electronic resource sharing
<i>Current Awareness services</i>	E-mail services
<i>Distribution of contents of Journal received</i>	Facsimile services

The application of computer technologies in Nigerian university and research institute libraries have become the most realistic way and means of providing timely, accurate and efficient reference services. The importance of providing right information at an appropriate time for university and research institute libraries in North Central Nigeria goes a long way in enhancing academic research. It's a truism that information increases knowledge of user, reduces their level of uncertainty and reduces variety of choices. In order for information to be effective, it must be accurate, timely and relevant.

Consequently, Jagboro (2003) asserted that there is urgent need for librarians to re-skill and update their knowledge of computer technologies application to provide reference services. This will enable them fit into present dynamics of information service environment. Besides, librarians in university and research institute libraries are now expected to be aware of and capable of using and demonstrating computer technologies to deliver effective services. Watts (2004) remarked that given current information environment where the use of computer technologies is continuously being updated or introduced and traditional formats are being replaced or supplemented by digital formats such as e-journal and e-book on the Internet, there will be a regular and continuous training of librarians to be conversant with current computer technologies to avoid obsolescence. Lochure (2004) also stressed the need for librarians to instruct users on how to find informational materials independently and this should be given priority on the Internet. Libraries need to acquire application software package that are interactive and screen-oriented, menu-driven and flexible. The choice of application software

packages will depend on specific library reference services.

It was observed by Tiamiyu (2005) that automated services were far from being adequate and out of 29 different automated services one would expect in a modern university, only about 40 per cent were available and utilized. Federal universities that had enjoyed higher levels of funding for automated systems had higher output of automated services than non-federal universities. Major obstacles militating against automated services in universities include inadequate funds, electricity supply and telecommunications connectivity, as well as inadequate human resources for automated systems. Respondents were marginally satisfied with services of computerized accounting system and MIS-related databases, but were very dissatisfied with level of automated library services. Nmecha (2013), also identified poor power supply, inadequate ICT literacy, computer virus; financial problem and inadequacy of computer technologies as factors that can affect the free flow of reference services.

Furthermore, Gama (2008) investigated availability and application of computer technologies in delivering Reference (RIS) in six university libraries in Nigeria. It was a descriptive research. Study was based on results of preliminary study conducted in twenty four federal university libraries in Nigeria. Results of preliminary study showed only six out of seventeen university libraries had CD-ROM, computer and the Internet used for RIS delivery. The results also revealed that search for information is now assuming a new dimension whereby information users are increasingly becoming conscious of individualized approach. Library users want personalized access to information without any assistance from reference librarian. The haste with which library users want answers to their questions has called for the use of modern technological devices such as computers, CD-ROM, the Internet etc to assist librarians. The study is useful to this research because, it seeks to find out use of modern technologies rather than manual methods of information dissemination.

In surveying user's satisfaction with reference, lending and user education services in academic libraries in Cross River State, Nigeria; Iyishu & Nkanu (2013) used stratified and simple random sampling techniques to select 500 registered library users from three academic libraries. An 18-item questionnaire, pilot tested and validated was used for data collection. Three null hypotheses were tested using t-test analysis at 0.05 level of significance. The findings revealed that users have a higher than average satisfaction with reference, lending and user education services in academic libraries in Cross River State, Nigeria. The study recommends, among others, that academic libraries should store information materials, both books and non-books, which will be systematically organized and arranged for easy access in meeting the information needs of users. This study is germane because, it seeks to find out the satisfaction of reference services to users in enhancing reading and research.

Table II lists computer technology application to reference services in university and research institute libraries.

TABLE II
MEAN AND STANDARD DEVIATION OF RESPONSES ON THE EXTENT OF
COMPUTER TECHNOLOGIES USED FOR REFERENCE SERVICES IN
UNIVERSITY AND RESEARCH LIBRARIES

S/No	Items	University Libraries		Research Institute Libraries	
		Mean	SD	Mean	SD
1.	Computers	2.06	0.98	2.90	1.25
2.	Scanners	2.06	1.15	2.84	1.23
3.	Printers	2.07	1.13	2.98	1.08
4.	CD-ROM	1.97	1.19	1.59	1.21
5.	Internet services	2.27	1.29	2.90	1.33
	Grand Mean	2.07	1.05	2.84	1.00

(University libraries N=120; Research Institute Libraries N=63)

VHE-Very High Extent, HE- High Extent; LE-Little- Extent; NAA-Not At All

Table II revealed that Internet (2.27), printers (2.07), computer units (2.06), scanners (2.06) and CD-ROM (1.97) were used to a little extent for reference services in university libraries. The grand mean total of (\bar{X} =2.07) indicates that computer technologies were used to a little extent for reference services in university libraries in North Central, Nigeria.

While in research institute libraries we have the following: printers (2.98), Internet (2.90), computer units (2.90), scanners (2.84) were highly used for reference services. However, CD-ROM (1.59) was used to a little extent. In conclusion, the grand mean of (\bar{X} =2.84) showed that computer technologies were highly used for the provision of reference services in research institute libraries. This means that majority of the available computer technologies were used for reference services in research institute libraries in North Central, Nigeria. The findings of this study agree with Jibia, Mubaraka, & Jirgi (2013) that the use of computer – based reference services can augment the current level of local information resources. This result confirms Gama (2008) study which revealed that the search for information now is assuming a new dimension whereby information users are increasingly becoming conscious of individualized approach. The library users want a personalized access to information without any assistance from the reference librarian. The haste with which library users want answers to their questions has called for the use of modern technological devices such as computers, CD-ROM, the Internet, etc to assist librarians.

Table III considers the constraints in universities and research institute libraries. Results in Table III revealed that in applying computer technologies to reference services university librarians were constrained by: irregular power supply(\bar{X} =3.23), inadequate computer technology infrastructure(\bar{X} =3.07), inadequate funding(\bar{X} =3.00), unavailability of computer technology maintenance culture(\bar{X} =2.96), librarians inadequate skills in computer technology (\bar{X} = 2.81). However, university librarians did not accept low Internet bandwidth (\bar{X} =2.48), unavailability of computer technology policy document (\bar{X} = 2.40), high cost of accessing the Internet (\bar{X} =2.27) and delay payment to host site (\bar{X} =2.27) as constraints that affect the

application of computer technologies to the reference services in university libraries. The grand mean of ($\bar{X} = 2.69$) shows that there are problems that hindered the application of computer technologies to reference services and the greatest of all these problems was irregular supply of power in university libraries in North Central, Nigeria.

TABLE III
MEAN AND STANDARD DEVIATION OF RESPONSES ON THE CONSTRAINTS THAT AFFECT APPLICATION OF COMPUTER TECHNOLOGIES TO REFERENCE SERVICES IN UNIVERSITY AND RESEARCH INSTITUTE LIBRARIES. (UNIVERSITY LIBRARIES N=120; RESEARCH INSTITUTE LIBRARIES N=63)

S/No	Constraints	University Libraries		Research Institute Libraries	
		Mean	SD	Mean	SD
1.	Inadequate Computer technology infrastructure	3.07	0.89	2.54	1.03
2.	Irregular power supply	3.23	1.07	2.63	1.11
3.	Inadequate funding	3.00	1.07	2.73	1.02
4.	Inadequate accommodation	2.52	0.99	2.22	1.17
5.	Unavailability of computer technology policy document	2.40	1.02	2.08	1.07
6.	Librarians inadequate skills in computer technology	2.81	1.23	2.03	1.08
7.	Unavailability of computer technology maintenance culture	2.96	1.02	2.05	1.13
8.	Outdated computer technology equipment	2.58	1.21	2.03	0.88
9.	High cost of accessing the Internet	2.27	1.22	2.51	1.22
10.	Low Internet bandwidth	2.48	1.04	2.52	0.91
11.	Delay payment to host site	2.27	1.04	2.32	0.99
	GRAND Mean	2.69	0.87	2.33	0.76

VHE-Very High Extent, HE- High Extent; LE-Little- Extent; NAA-Not At All

While research institute libraries revealed that: inadequate funding ($\bar{X} = 2.73$), irregular power ($\bar{X} = 2.63$), inadequate Computer technology infrastructure ($\bar{X} = 2.54$), low Internet bandwidth ($\bar{X} = 2.52$), high cost of accessing the Internet ($\bar{X} = 2.51$) affect the application of computer technologies to reference services in research institute libraries. While delay of payment to host site ($\bar{X} = 2.32$), inadequate accommodation ($\bar{X} = 2.22$), unavailability of computer technology policy document ($\bar{X} = 2.08$), unavailability of computer technology maintenance culture ($\bar{X} = 2.05$), librarians inadequate skills in computer technology ($\bar{X} = 2.03$) and outdated computer technology equipment ($\bar{X} = 2.03$) did not affect the application of computer technologies to the reference services in research institute libraries. Besides, the grand mean of ($\bar{X} = 2.33$) revealed that research institute libraries in North Central, Nigeria had very few constraining factors on the application of computer technologies to the reference service delivery; the greatest of all these factors was inadequate funding ($\bar{X} = 2.73$). Despite, the existing constraints, the prospect of computer technologies application to reference services is very crucial. The findings of this result confirmed Onilude &

Apampa (2010) findings that the bandwidth available could be inadequate compared to the number of users and this account for the very low speed of connectivity. Majority of the staff require more training in the use of computer for research activities. Infrastructural challenges constitute a major barrier to the accessibility of on-line resources which supports research and development. Besides, the meagre approved funds which could have been used for the development of the library including computer technologies according to Ayo (2001) are in some cases diverted to other areas. Furthermore, Edom (2007), identified inadequate number of ICT facilities as well as irregular power supply as the major problem of ICT application. While Aduwa-Ogiegbaen & Iyanu (2005) identified funding; inadequate number of infrastructure, limited access as impediment of ICT's reference services.

Table IV lists strategies suggested by librarians in university and institute libraries to enhance application of computer technologies. Emerging results from Table IV revealed the followings as appropriate strategies for addressing constraints facing university libraries: training and retraining of library staff in the use of computer technologies ($\bar{X} = 3.62$), regular power supply ($\bar{X} = 3.59$), competency of librarians in the use of computer technologies for delivery of reference services ($\bar{X} = 3.56$), regular computer technology maintenance ($\bar{X} = 3.55$) and the use of On-line Public Access Catalogue (OPAC) to access holdings of other libraries based on computer technologies ($\bar{X} = 3.51$). These findings showed that all the identified strategies were appropriate for enhancing the application of computer technologies to reference services in university libraries ($\bar{X} = 3.36$). The most appropriate of all these strategies was training and retraining of library staff in the use of computer technologies ($\bar{X} = 3.62$) in university libraries in North Central, Nigeria.

While results revealed the following strategies for research institute libraries: adequate funding for computer technologies equipment ($\bar{X} = 2.92$), availability of computer technologies for reference services ($\bar{X} = 2.90$), conducive accommodation for computer technology equipment ($\bar{X} = 2.89$), adequacy of computer technology infrastructure ($\bar{X} = 2.86$), access to the Internet through computer technologies ($\bar{X} = 2.86$), provision of current and up-dated computer technology equipment ($\bar{X} = 2.79$), training and retraining of library staff in the use of computer technologies ($\bar{X} = 2.73$), regular power supply ($\bar{X} = 2.71$), competent librarians in the use of computer technologies for delivery of reference services ($\bar{X} = 2.69$), adequate subscription of books through the Internet ($\bar{X} = 2.62$), regular computer technology maintenance culture ($\bar{X} = 2.60$), availability of computer technology maintenance policy document ($\bar{X} = 2.54$), adequate subscription of journals through the Internet ($\bar{X} = 2.52$).

TABLE IV
MEAN AND STANDARD DEVIATION OF RESPONSES ON THE STRATEGIES
USED TO ADDRESS CONSTRAINTS THAT AFFECT APPLICATION OF
COMPUTER TECHNOLOGIES TO REFERENCE SERVICES IN UNIVERSITY
AND INSTITUTE LIBRARIES. (UNIVERSITY LIBRARIES N=120; RESEARCH
INSTITUTE LIBRARIES N=63)

S/No	Strategies	University Libraries		Research Institute Libraries	
		Mean	SD	Mean	SD
1.	Availability of computer technologies for reference services	3.42	0.81	2.90	1.24
2.	Adequate funding for computer technologies equipment	3.37	1.03	2.92	1.19
3.	Adequacy of computer technology infrastructure	3.27	0.91	2.86	1.16
4.	Training and retraining of library staff in the use of computer technologies	3.62	0.64	2.73	1.32
5.	Regular power supply	3.59	1.02	2.71	1.25
6.	Conducive accommodation for computer technology equipment	3.44	0.79	2.89	1.23
7.	Regular computer technology maintenance culture	3.55	0.75	2.60	1.25
8.	Competent Librarians in the use of computer technologies for delivery of reference services	3.56	0.75	2.69	1.24
9.	Availability of computer technology maintenance policy document	3.04	0.81	2.54	1.26
10.	Provision of current and up-dated computer technology equipment	3.20	0.88	2.79	1.29
11.	Access to the Internet through computer technologies	3.24	0.79	2.86	1.28
12.	Adequate subscription of books through the Internet	2.94	1.15	2.62	1.26
13.	Adequate subscription of journals through the Internet	3.13	1.02	2.52	1.30
14.	Use of On-line Public Access Catalogue to access holdings of other libraries based on computer technologies	3.51	0.85	2.49	1.30
	GRAND Mean	3.36	0.66	2.72	1.16

VA-Very Appropriate; A-Appropriate; LA-Little Appropriate; NA-Not Appropriate

While the use of On-line Public Access Catalogue (OPAC) to access holdings of other libraries based on computer technologies ($\bar{X} = 2.49$) was not appropriate. Generally, the strategies proposed here were found to be appropriate for enhancing the application of computer technologies to reference services in research institute libraries ($\bar{X} = 2.72$); the most appropriate was found to be adequate funding for computer technologies equipment in

research institute libraries in North Central, Nigeria. The findings of this result confirmed Jibia, Mubarak, & Jirgi (2013) that regular power supply and adequate training and retraining of library staff in the use of computer technologies as most personnel in the reference section lack these skills.

VII. Implication of the Study

Nigeria and other African public bodies have adopted the use of computer technologies in their Universities and Research Institute Libraries through various research engines such as Google, Yahoo, Wikipedia and telnet (chat service). In the university and Research Libraries, the following types of information technologies are available for effective utilization by the library users: they include computers, Internet, virtual automated, e-data bases and CD ROM. In Nigeria and other African Countries some people utilize the computer technologies on daily bases while others use the computer technologies on weekly and monthly bases. The governments have policies on computer technologies and have introduced information Technologies in many public institutions. Governments have established agencies for promoting the use of information technologies in Universities and Research Institute Libraries. Such agencies include National Communication Commission and National Information Technology Development Agency. However, it was also found that computer technologies were not applied in reference as most services were still performed manually. Application of these technologies were expected to have increased productivity, improved quality of tasks/services in university and research libraries in the North Central Nigeria but this is not to be as the performance of reference services by librarians were still very low. This implies that librarians and relevant library authorities and managements should develop service charter that will clearly define the vision, mission, roles and computer technology policy and application in university and research libraries in North Central Nigeria.

Besides, application of computer technologies in reference services in university and research libraries is still being constrained by inadequate computer technology infrastructure, irregular power supply and inadequate funding. These imply librarians were still performing reference services manually and users could not benefit fully from these technologies application in research and developmental activities. This also implied that library managements can request for fund from their parent organizations for the purchase of modern state-of-the-art equipment.

Suggested strategies to solve the problems discovered in this study include making computers available, providing adequate funding for computer technologies and training and retraining of library staff in the use of computer technologies in university and research institute libraries in North Central Nigeria. This implied that these strategies are possible solutions to constraints that affect application of these technologies in reference services. It also implies that these strategies will form a baseline for the formulation of computer technology policy that would be used for provision of reference services in university and research institute libraries in North Central Nigeria.

VIII. Recommendations

The following recommendations are made based on the findings of study:

1. Library authorities in North Central Nigeria should ensure that available computer technologies in university and research institute libraries are regularly serviced, maintained and effectively utilized for the provision of reference services.
2. Application of computer technologies in reference services in university libraries should be encouraged as this would boost the morale of libraries and improve efficiency of librarians in providing current and timely information to their users.
3. The use of computer technologies for reference services should supplement users' current discovery and librarians should stimulate awareness of users with current and relevant information in university and research institute libraries.
4. Library managements should encourage and sponsor librarians to vigorously pursue continuous training through seminars/workshops and other professional education courses on computer technologies to improve themselves and become relevant in their profession.
5. Librarians should also be encouraged to look inward in developing their own programs with the help of programmers to suit context of their routine library services.
6. Library managements should address the following constraints: irregular power supply, inadequate computer technology infrastructure and inadequate funding that hindered effective application of computer technologies in reference services in university and research institute libraries.
7. Library managements should also consider the following strategies: training and re-training of library staff in the use of computer technologies, adequate funding for computer technology equipment and availability of computer technologies for reference services in university and research institute libraries in North Central Nigeria.

IX. Conclusion

In universities and Research Institute Libraries, there is need for adequate training of staff in the use of Information Technologies, provision of enough computers in the libraries and alternative power supply in case of power failure. To train the Library Staff on computer skills, Nigerian Library Registration Council of Nigeria regularly organize workshops for Librarians on various methods of using Information Technologies for rendering Library Services to their users.

In spite of decades long assertions of paperless libraries due to the emergence of ICTs and particularly the Internet, university and Research Institute Libraries especially in developing countries, have to maintain hybrid modes of operation where both print and electronic information resources and services are being provided to cope with deficiencies in technology development. As the Universities and Research Institute Libraries in Nigeria and other African Countries are being automated and

networked and their collections are in both print and electronic formats. The Libraries have computers, Internet, virtual automated, e-data bases and CD ROM.

There is need for comparative to enable Libraries be aware of the type of computer applications available in various Institutions, so that they can inculcate it in their Institutional Libraries. The problems observed affecting the use of Information Technologies in delivering Library Services in Nigeria and other African Countries are inadequate funding and lack of training of Library staff in the use of computer Technologies for reference services.

The importance of applying computer technologies in rendering effective reference services in university and research institute libraries in North Central Nigeria cannot be overemphasized. It is the bedrock of successful reference services and an avenue for understanding users' queries and meeting their information needs. Some constraints to effective and efficient reference service were identified. The paper recommends among others training and retraining of library staff in the use of computer technologies in university and research institute libraries in North Central Nigeria to meet users' information needs. By so doing, they will be able to help users articulate their information needs, provide answers to their queries, and sustain their patronage.

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