

NIGERIAN UNIVERSITY LIBRARIES AND INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

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Abstract

This paper attempts to revisit the strength of Nigerian universities involved in the application of modern-day information technology in their libraries. It also dwells on information technology and how it has turned the world into a global village. The decision to apply automated techniques to library operations should be made in the context of five basic assumptions and then in the context of the institution's local conditions/needs. The paper then discusses the problems encountered by Nigerian university libraries in the process of automation. It suggests that the Nigerian government should re-order the priorities of the nation in order to provide full Internet connectivity to Nigeria. The paper offers suggestions as to what should be done so that Nigerian universities could forge ahead in providing adequate information to their users.

Introduction

The role of the librarian is to acquire, organize, use and disseminate information, and it is only logical that he will employ all the means possible in performing this role. The greatest innovation that has taken place in the twentieth century is the realm of information technology. The introduction of computers and advances in information technology has transformed the global economic landscape.

The information revolution has led to the convergence of the computing telecommunication technologies creating new order electronic communication network covering the world through cable and satellite information superhighways. Global networks have dismantled national boundaries and barriers and created a global village where one can access information from any part of the universe by the mere touch of a button. The consequence is a new paradigm for service delivery, recognizing changing customer needs, and increasing customer sophistication. Information technology has therefore reduced the world to a global village where one can access any part of the world from his/her office or home. The world is today moving in a very fast pace on the technological highway and the fall-outs of this global innovation has enabled the library to achieve enhanced level of productivity and handle a volume of transactions which would have been impossible without the use of computers.

Talking of internet a couple of years ago would have sounded like a fairy tale, but today, information superhighway has blazed the world bringing it together into a real village. The traditional boundaries and barriers have been broken by the Internet and it is now possible for individuals and libraries to conduct some activities electronically while the global space of electronic librarianship is rapidly expanding within and outside the developed countries of the world. Nigerian libraries must join the global trend if they have to remain relevant. They should be able to join the new class of online library service providers and be able to offer cross-border and web-based loan services and transactions.

Forms of Technology/ Systems

There are various forms of technology that have been devised over the years for the effective handling of information and management of library processes. The Computer System: This has been described as a mechanical or electronic machine for carrying out especially complex calculations. Tedd (1977) however adds that the modern electronic computer is not only capable of vast quantities of calculations, but holds within itself the instructions that tell it which calculation to perform. The librarian requires some technological knowledge albeit at an abstract and intellectual level in order to employ it.

It is important for librarians in the developing countries, that the capabilities of each technology should be written up by the vendor and understood by the librarian before committing himself/herself. The computer has made a tremendous impact on the organization, management and dissemination of information that it readily commends itself to any library ready to accept it. The computer has become a household word for people in the developed economies of the world, therefore libraries should see it as a great investment which should be taken up as soon as possible. For the libraries, several systems have been developed for our various house-keeping chores and more still are being designed and refined. The advantages of computerized systems greatly outweigh the disadvantages. With proper planning, Nigerian libraries and in fact libraries in developing countries will derive enormous benefit from the venture.

Advantages of automated systems in the major sections of the library

Cataloguing: In the developing countries, it is a common thing to see a lot of back-log of books waiting to be catalogued or waiting for catalogue cards to be made and some of these books stay for over six months, in some libraries, before they go into circulation. It is equally common to see copies

of the same titles classified in different places as a result of error, not only of pen but also of knowledge. These delays and errors are automatically eliminated in a computerized system. In addition to easily producing several catalogues which could be used in different locations of the library, the system can be used to produce catalogue cards, spine labels, as well as subject bibliographies using the classification scheme.

Acquisitions: The staff in this section are charged with such responsibilities as checking of book recommendations, ordering and receiving, accessioning and the preparation of various reports. Most of these are repetitive and routine by nature, the performance of which are often characterized by errors, ranging from multiple ordering of the same title to delays in preparation of required reports. A computer based system will perform these functions with greater speed and accuracy. It is easy in automated system to print order slips, produce reminders, cancellation notices or even financial reports at short notices. It is also possible to produce accessions lists from the computer systems.

Serials Control: The duties here as in other sections are repetitive by nature. As in acquisitions; the ordering, receiving claims, as well as production of lists of holdings are jobs that are commonly performed by computers in most of the developed countries.

Circulation Control: The duties in this section include charging and discharging of books, reservation, notification of arrivals, over-due notices, fines and the keeping of daily statistics. These are of highly repetitive and routine in nature and can be well taken care of by a computerized system with greater efficiency. The problem of loss of books and over borrowing will be almost eliminated if the system has a tracking mechanism built into it. In this case an alarm will be automatically raised on reaching a certain point, should a user attempt to go out of the library without having the book or material charged out.

There is no section of the library operation to which the computer has not been applied with tremendous gains. The computers perform faster and more accurately and the senior members of staff are relieved from their repetitive and routine jobs for more intellectual activities, while the junior members of staff are equally engaged in other activities. Also the computerized system will be able to produce any statistical reports and answers to administrative questions at short notices.

Network Systems: It is necessary to mention that libraries have the options of going it alone or joining others to form cooperatives or networks. The advantage of cooperative computerized systems is the opportunity it offers to share in the benefits of the computer resources rather than being left out

completely, either because of lack of capital or human resources. As it is well known, the resources and facilities of one library are hardly ever sufficient for the needs of its users and this is even more so for us in the developing countries. In the United States of America and the United Kingdom in particular, such cooperatives abound and some of them have become so well known that they need be mentioned here. Foremost among these are:

1. The Ohio College Library Center (OCLC) set up in 1976 and whose main objective was to share resources between individual libraries and to reduce the rate of rise of library costs (Tedd, 1977). Output of OCLC consists mainly of catalogue cards and many of its customers are thousands of miles away.
2. The Birmingham Libraries Cooperative Mechanization Project (BLCMP) is another project started in 1969 with the aim of providing a cooperative cataloguing system for the Universities of Aston and Birmingham Public libraries. It is currently supplying cataloguing services to several other libraries.
3. The South Western Universities Libraries Cooperative Automation Project started in 1969 and comprising the university libraries of Bristol, Cardiff and Exeter.
4. The Scottish Libraries Cooperative Automation Projects.

The last two cooperative projects were initiated with grants from the British Library Research and Development Department.

Telecommunications: These are vital to the accessibility of information. The telex system, which is used for automatic dispatch and receipt of printed messages falls under this category. It offers a round the clock service and absence from office does not present any problem. It leaves the message with the teleprinter to be picked up any time and this has a great impact on any library cooperation. Also, by the use of multimedia materials, people can view proceedings of conferences and seminars from very distant places. These are being used by the British Open University and could also be used in developing countries particularly in Nigeria, where an Open University has been established. Tapes and video cassettes are already very popular in Nigeria, what remains is for them to be used in Nigerian university libraries for playback of lectures, drama shows and other events of intellectual importance. These are common non-book materials being used in the libraries of developed countries and some developing countries too. They are increasingly recognized not only as important resources for teaching but also for research and study and they are indeed very popular with students and other library users.

Universities as Agents of Development

It is a known fact that a nation cannot develop in isolation of her human resources. Universities are important agents in the development of the human resources of any nation. The major role of universities in national development is achieved through their programmes of teaching, learning and research. Such programmes provide the necessary high-level manpower for the acceleration of social, economic and political progress of the nation. Aguolu (1983) states that the six main functions of Nigerian universities are:

- Conservation of knowledge;
- Pursuit, promotion and dissemination of knowledge through teaching;
- Advancement of knowledge through pure research, applied research and development oriented research;
- Development of human resources for meeting manpower needs;
- Promotion of social and economic modernization.

Aguolu (1983) further states that the academic health, intellectual vitality and effectiveness of any university depend largely upon the state of the health and the excellence of its library which is its lifeblood.

Information and Communication Technology

The new information society is characterized by information technology revolution. The Internet, which is the electronic superhighway, is the crowning glory of the new information society. Alasa and Kelechukwu (1998) state that the idea of Internet or superhighway is based on the principle that every piece of data held electronically anywhere is potentially accessible to any person with appropriate computer technology. The Internet originated in the United States of America under ARPANet (Advanced Research Projects Administration Networks) which was an experimented wide area network. It offers a worldwide information and communication technology. Information Technology refers to electronic-based technology which can be used to collect, store, process and package information and provide access to knowledge. The pace of technological change in information technology in recent years has led to revolutionary changes in the processing and dissemination of data and to the emergence of an information society, with immense effects on production, services, cultural values, economic development, organization of labour, the environment and society as a whole. In a rapidly evolving world order, information is the ultimate currency of change that influences access to resources and the method and speed of delivery.

In industrialized countries, electronic mail and networks in general have allowed users to obtain better access to data banks located nationally and internationally. These services are slowly making inroads into developing countries, though at present, getting on to a network such as the INTERNET requires investment in support services and efficient telecommunications systems which are currently unobtainable in a number of developing countries.

Globalization

The concept of globalization describes the changes that have been wrought and are still in process by information technology. At the heart of today's globalization is the ease with which information moves around the world and provides ample opportunities for ideas, innovations and life styles, to get easily spread to all nooks and crannies of the globe. With the whole world moving into digital age, teaching and learning would equally become digitalized.

Nigerian universities have a lot to do to be able to become global players like their counterparts around the world. They need to reorient their service culture. Central to the maintenance and enhancement of good service is the continuous development of good and sound professionals. As such, there is an upsurge in the use of Information and Communication Technology (ICT) as a result of demand and supply.

Main Characteristics of Information Technology

Information Technology (IT), considered by many as revolutionary, has witnessed rapid development and diffusion in an increasing number of sectors. The characteristics of IT are particularly attractive. It cuts the cost of information processing, speeds up data transmission, decreases size and increases reliability of equipment while enhancing the importance of software.

IT systems allow for interactivity, a time and labour saving procedure for tasks formerly rendered by human operators. It is, for example, possible to query databases on-line and receive materials organized on the basis of one's specifications. Networking has been facilitated by IT which has made it possible to link discrete devices with systems. Thus, enhancing efficiency has been the main objective behind the application of IT.

Staff Training

The computerization of university libraries in Nigeria is an on going process. All units of the libraries are to be involved in it. Training and retraining, learning by doing and learning by interacting contribute to technological capability building. Training and re-training can help to

improve the ability to apply technology and the capacity to adapt it and improve on it leading to innovations.

Although the technological revolution in information technology and telecommunications has aroused much interest among policy makers, the business sector, the media and the academic world in industrialized countries, little is known about the obstacles to accessing information technology and the diffusion and use of information technologies in developing countries particularly the low income economies. For developing countries wishing to accelerate the diffusion and application of information technology, investments in education in general and technical skills in particular are essential requirements.

A high literacy rate among the general population is essential, as well as the formulation of training programmes to improve computer literacy. In addition, people with special technical skills in computer sciences – for example, programming, data analysis, microcomputer processing and maintenance of information technology equipment – will be required.

Research and ICT

Research or dissemination of knowledge is an intensive personal and social activity. It is essentially a cerebral activity. The advancement of knowledge takes place by collective efforts of researchers around the world. In the production of new knowledge, researchers use what is already known. The generation of knowledge is only one part of the research process; for knowledge to be useful, it should be shared with other researchers and communicated in a suitable format to different users. Thus, information and communication are two very important aspects of communication.

Researchers in developing countries are terribly handicapped in both aspects. Today, many institutions in developing countries cannot afford to maintain good libraries. Most libraries in Sub-Saharan Africa have not subscribed to any journal for years (Arunachalam, 2003). The rapid changes taking place in the ways new information is published, stored, disseminated, and retrieved using the rapidly advancing information and communication technologies (ICTs) have exacerbated the relatively deprivation suffered by researchers in the developing world. The new ICTs has not just made each operation faster, but has caused greater synergy between these operations in ways unthinkable in the print era. For example, if your library subscribes to the web of knowledge as well as electronic versions of journals published by several leading publishers (such as Academic Press, Wiley InterScience and Reed Elsevier) with whom ISI has agreements, you can, sitting in front of your terminal, seamlessly move from one paper in a journal published by Elsevier to the full text of another

paper (which is cited in the first paper) in a journal published by another publisher. All within a few seconds with a few strokes of mouse clicks. Nigeria, being a developing country, her researchers are handicapped as far as ICT is concerned.

Technology and Participation in Research Programmes

The decline of global political blocks, the expansion of convenient and not so expensive air travel and above all, the advent of the internet have facilitated scientific communication, contact and collaboration. More research and development collaborations are likely to develop with internet-facilitated innovations such as virtual research laboratories and the simultaneous use of virtual data banks by researchers around the globe, and 'grids', which depend in a fundamental way on access to high bandwidth networks. In the west, such networks have become both affordable and highly reliable. Most researchers in developing countries, even those who are eminently qualified to take part in such collaboration, are excluded simply because, they do not have access to the right technology. Since many of Nigerian University libraries are yet to be automated, the researchers will have problems of being able to access research laboratories.

Libraries and Information Technology

The university library is the heart and soul of the institution. It is really the heart of the education enterprise and it is also the reservoir of knowledge communicated through information resources. It plays a crucial role in the advancement of teaching, learning and research. Books are the carriers of civilization. Without books, history is silent, literature dumb, science crippled, thought and speculation at a standstill. Traditional print collections are being transformed into versatile electronic resources and the globe is going through a transitional phase in the evolution from print on paper to digital or electronic tubes. Librarians and documentalists must be conversant with developments in information and its communication technologies for the organization and dissemination of information in order to increase knowledge. Digital resources are drastically changing the way in which libraries function. The current trend sees information including full-texts being accessed from laboratories, offices and homes twenty-four hours a day. In recent times, people talk of virtual libraries. What is a virtual library? A virtual library is the capability to provide access to information resources of other institutions across town, or across the world using digital technologies. It is the dream of many academic libraries to join the growing legion of virtual libraries all over the world. They want to make their resources as well as those of other well-endowed libraries accessible to their patrons wherever they may be.

It is gratifying to note that many Nigerian libraries are now automating their services so as to join the developed nations in the millennium race on the information super-highway. Efforts are being made by Nigerian universities to make information available in the format of the new information and communication technology. The efforts are seen in the digitization of library records, the creation of library web sites, the adoption of an off the self-cataloguing software and virtual academic sites. This is because, we appreciate that information has become a strategic resource in the world today, especially in this “knowledge based millennium” where information and communication technology (ICT) are the driving tools or utility in the same way as water and electricity have become major resources to every nation’s socio-economic development and global economy.

In Nigeria, we must admit that the rapid development and expansion in global “Information Technology (IT)”, presents special challenges and difficulties in such things as electricity, hardware, internet accessibility, telecommunications, telephones, etc. These basic hurdles must be overcome before Nigerian libraries can participate meaningfully in the IT revolution and square up with the challenges for globalization. Computer communications have become increasingly important for anyone involved in organization of knowledge, storage and retrieval of information. The computer is the quickest and most efficient tool for organizing and disseminating regularly the vast amount of information produced. For libraries in particular, computer communications provide the fastest and most efficient capabilities for acquiring, processing, sorting, storing, retrieving, and disseminating information. In the developed world, many libraries have access to computer communications such as the OCLC (On-line Computer Library Centre). The portable lap tops that can easily be carried from one place to the other, bring organized knowledge and processed information to users’ doorsteps at all times.

OCLC avails users to the resources of at least 38,000 libraries around the world using 75 databases including MARC records with full text access to 7,500 journals. It is no doubt, a window to the world of information.

Virtual Academic Sites

With the achievement of direct Internet connectivity, Nigerian university librarians have more challenges awaiting them on the Internet. There are libraries and institutions that provide data in general and specific academic disciplines that should be explored and exploited by staff and students. Some of the sites already surveyed and found relevant for academic purposes are interdisciplinary, such as STN International Databases (<http://www.stn-international.de/stndatabases/cluster.htm/>) that holds 207 databases in virtually all disciplines from pure and applied sciences,

humanities, and technology; Internet Public Library (<http://www.britannica.com>) and Encarta (<http://encarta.msn.com>). The 'yahoo' front page provides a list of subject areas – arts and humanities, business and economy, computer and internet, education, government, health, science, social sciences, etc., that can be visited for more detailed materials/sources.

Whereas a number of web sources are free, most of these databases have to be paid for in order to access the resources. In other words, subscription is critical for adequate exploitation of academic databases in particular. Many of the Nigerian university libraries are yet to resolve how to pay for subscription of on-line (digital) journals and texts.

Nigerian University Libraries and the Acquisition of Journals for Research and Scholarship

Escalating costs of print journals have made life miserable for scientists (and other scholars) in developing countries. The advent of electronic sources of information has made the situation even worse. Even when both information and communication were entirely mediated by the printed word, there was a big gap between the richer and poorer countries that increased with the passage of time. The researchers in the developing countries face inadequate access to literature. The researches conducted in developing countries lack visibility. It gets buried in an obscure corner of the world output of literature. Very few papers published from developing countries become citation classics or find a place in the list of key papers on the emerging research front. Lack of participation to the right kind of technology can jeopardize one's chances for participation in research programmes.

Fortunately, there are a number of journals and archives which are now available free on the web. The British Medical Journal (BMJ) is one of the earliest to be made available free. The electronic version of BMJ carries additional materials than could not be accommodated in the print version for want of space. Individual libraries can have access to some of these such as: AGRICOLA, CAB, SEARCH, CHEM. ENG. ABSTRACTS, MEDLINE, etc.

Internet as a Global Library

The Internet may be seen as global library, i.e., a library of libraries. Though the Internet, just as the library, provides information of many kinds, it only transmits data. The data can be of texts, pictures, graphs, publications, sounds, video or more. The internet provides various services for interacting with computers. The Internet is a huge, rapidly growing library with a sky rocketing collection, yet it does not have catalogues.

Nigeria Universities and Information Technology

The age is technological. Some of Nigeria universities are already technologically inclined. The laudable objectives of universities cannot be achieved without the presence of vibrant university libraries. A university is as good as its library. Therefore, the university library is a very important academic sector of the university. University funding in Nigeria has continued to dwindle since the mid 1980s along with the down turn in economic fortunes of Nigeria. The universities and their libraries have not been adequately funded by both the Federal and State governments which are the proprietors of the institutions. This has resulted into the deterioration in the quality of library materials, facilities and services. Also this has resulted in many of the university libraries not being able to acquire collections comprehensive enough to meet the needs of their users. They have not been able to progress beyond the level of application of traditional methods of providing library services not to talk about progressing into the state of vigorous application of sophisticated information technologies (IT) in their libraries. The age of information society and 'global village' is already upon us even though the impact is not being felt in Nigeria as it is in other developed and developing countries of the world. The current trend in the provision of information in libraries worldwide is through the application of information technologies for the information provision and expansion of the scope of information available to library clients irrespective of their location. This has the added advantage of ensuring effectiveness and efficiency in services provided.

Nigerian universities are still at the crawling stage of automation in their library services compared with their counterparts all over the world. Encyclopedias, other reference works, journals, etc., in various disciplines are now being held on diskettes, etc., and can only be accessed electronically. This development poses an enormous challenge to Nigerian university libraries. How are these libraries going to cope with the provision of information for their teeming patrons in the face of inadequate funds, increasing demand by students and faculty for up to date information and faster means of accessing them? Nigerian students and faculties know that libraries can be linked through network. Resources in libraries that are in a network are pooled together and they enlarge the range of information search. With this awareness, users are bound to expect these services from the university libraries.

Some attempts have been made to automate library services in some Nigerian universities. Such efforts have been partially successful. From 1994 onwards, there has been some slight improvement especially with the assistance of World Bank under the National University Commission (NUC)/World Bank credit facility agreement for federal universities in

Nigeria. The Kenneth Dike Library of the University of Ibadan; Hezekiah Oluwasanmi Library of Obafemi Awolowo University, Ile-Ife; the University of Jos Library are examples of the very few university libraries which have automated their services to a large extent.

In fact, in Nigeria, the Hezekiah Oluwasanmi Library is leading in the world of library automation. The first phase of its computerization was completed and handed over in 1997. Since then, about 12,000 bibliographic data have been entered into its database. The second phase of its computerization project is nearing completion. When completed, the library will be offering its users an on-line public access (OPAC) to its local database, a library website, a two-point internet access in the Reference Section of the library and on-line access to "Infotra one line", a remote on-line database. Each cataloguer will be provided with a PC with internet access to enable remote access to bibliographic databases thereby facilitating early movement of books to the shelves. Fortunately, the Obafemi Awolowo University community has the on-line database search of "Infotra one file" covering many disciplines and its trial access was recently offered by the Hezekiah Oluwasanmi Library. Many of the users in Obafemi Awolowo University community are versed in the use of the internet and its resources and the professional librarians are prepared to take the less skilled ones through the learning process.

Other Nigerian libraries such as the Ahmadu Bello University, University of Ilorin and University of Lagos libraries are at various stages of automating their library services. The National University Commission (NUC) made proposals for automating all Nigerian university libraries and connecting them to the Internet through a project tagged (NutNet) – Nigerian Universities Network) through a national gateway at the NUC in 1995 (Onyekwelu, 1998). So far, there is no Internet gateway in Nigeria. The Internet Service Providers (ISP) in Nigeria make use of external gateways located in the United Kingdom, United States of America, Italy, South Africa or in any other foreign country to carry out various other services on the internet such as e-mail services. The Nigerian Universities Network is to connect all Nigerian universities and university centers in one national computer network (Internet) with a gateway at National University Commission through the Nigerian Universities Network. This project is yet to be fully implemented in the various universities in Nigeria.

The Way Forward

Technological advances in the developed world could leapfrog those in the developing countries with the provision of necessary infrastructure and above all, the political will. Digitization in Nigeria can become a reality with careful planning and commitment of human, material and financial resources. The Federal Republic of Nigeria has recently put a task force in

place to see to it that there is constant power generation in the country. Regular electricity supply will help to go a long way in the automation services. Also, Nigerian government has taken a bold step by giving licenses to a number of private telecommunication industries thereby increasing the number of telecommunication lines available in the country.

Conclusion

We are aware that some of the problems that had been hindering automation of our library systems have been the questions of infrastructures, especially electricity, the huge amount of money involved and the problem of justification before the funding authorities. As for the first problem, almost all the big institutions where these big libraries are based have their own power generating plants quite independent of the Nigerian Electric Power Authority (NEPA). Furthermore, there are computing centers in most of these institutions and some can function with or without NEPA. The problem of NEPA has been with us for quite a while now and no one knows when it will end. Today, many commercial houses in Nigeria, especially banks have computerized their systems. Although libraries are not in the same class as industries, in that our products cannot satisfy the same economic analysis, yet computers in libraries should be seen as invaluable investments in the production of well informed and well educated manpower for the nation. There is no better justification for our library systems than our improved services.

Nigerian library systems need computerized systems urgently now. The chief executives should take the bull by the horn and make the attempt to bring their libraries to the level of their counterparts in the developed countries. That is the only way to develop and where they cannot do it alone, they should form a network of cooperating libraries to ensure that we are not left out of these new technological trends. The telex, video tapes and digital compact discs should also be brought in as important non-book materials for the performance of our duties. According to Lim (1982), Librarians from the developing countries must always be aware of the problems which automation can lead to, but should not use them as excuses for ignoring developments in library automation, for otherwise they may become permanently saddled with only second class technology.

Digital technology is globally providing opportunities for libraries to perform services that in the past seemed almost impossible. It is now easy for libraries to use new ways to implement the traditional functions of content selection, acquisition, cataloguing and classification, reference services and library instruction. The reality is that libraries are being transformed from the traditional libraries to virtual libraries with their accompanying facilities including provision of information and other services on the Worldwide Web (WWW).

The Nigerian situation is gradually improving as positive steps are being taken by the Federal government through the Ministry of Education to digitalize the libraries in the education sector in Nigeria. This will certainly improve the educational system in terms of digital technology. Nigerian university libraries cannot afford to be left out in the new information super-highway. Digital technology can indeed prove to be a valuable instrument to enhance learning and extend the reach of information resources to those who seek them wherever they are. Nigerian universities libraries have to join the virtual library club since some publishers publish only in electronic format. We must face the challenge of information communication technology age.

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