

Integration of Information and Communication Technology in Library Operations Towards Effective Library Services

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Abstract *This paper examined the integration of information and communication technology (ICT) to library operations for effective library services. The paper also reviewed the need for the effective application of ICT as the best tool for libraries to use in assisting educational researches and students in this age of information explosion, in ensuring effective services. The paper also among other things discusses various ICT resources that can be used for effective library operations and services. Also the paper highlighted benefits and challenges of integrating ICT to library operations. The paper concluded by discussing possible solutions to various challenges to successful integration of ICT to library operations for effective services.*

Introduction

Libraries have always been repositories of learning resources. From earliest time, they have provided access to information for scholars and researchers. The constantly increasing amount of information been generated and published, the expanding formats of information storage and retrieval, and ever changing education and research needs of library users make it difficult for any library to be an effective learning resources.

The primary role of the library is to provide information service to support the educational, recreation, cultural, economic and technological endeavours of members in their respective communities. The National Policy on Education (2004) identified the library as one of the most important aspect of educational support services. They are used as media for disseminating information and enhancing literature search and as tool for the development of intellectual compatibilities and promotion of cultural and social integration.

Onohwakpor (2006) stresses library, as a store of knowledge, indispensable to the success of any functional education. He further said that education without the services of library is half-baked education that can only produce narrow minded individual which will not be productive to their community. Efforts are therefore made to acquire, process, preserve and make available the resources to the users. In doing this, type, educational levels, information needs and the objectives of the user community should be taken into cognizance. This is because provision of services in a manner most useful to the library's chants is the ultimate target of all efforts towards effective and efficient services. With the proliferation of information, information is scattered in many areas and in order to keep track of these information many libraries have started embracing the recent developments in information technology to help them for effective library services. It was for this reason that the role of the information immunization technology for effective library services arose as a distinct area of this paper coupled with a view to ensuring the application of the information technology in library operations for effective library service.

Concept of Information and Communication Technology

Information and communication technology (ICT) has been defined by various scholars from different

perspectives. Ayodele (2002) defined ICT as electronic based technology generally used to retrieve, store, process and package information as well as provide access to knowledge. Aluko (2004) also described ICT as enabling technologies (both hardware and software) necessary for delivery of voice/audio, data (high speed and low speed) video, fax and internet services from point A to point B (or possibly to multiply B C etc) using wired and wireless media protocol (IP) and non IP networks. To Nwachukwu (2004) information and communication technologies (ICTs) is the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information. However, in this context, information and communication technology is the use of electronic devices such as computers, telephones, internet, satellite system, to store, retrieve and disseminate information in the form of data, text image and others.

Types and Characteristics of ICTs

Iwu (2003) categorized ICTs into the following:

- i Sensing technologies: these equipments gather data and translate them into form that can be understood by the computer. These include sensors, scanners, keyboard, mouse, electronic pen, touch or digital boards, barcode sensors or readers, voice recognition system, etc.
- ii Communication technologies: These are equipment that enable information to be transferred from the source to user. It also tries to overcome natural barriers to information transfer like speed and distance some of these include: facsimile machines (fax), telecommunication system, telephone, electronic mail, teleconferencing, electronic bulleting boards, etc.
- iii Display Technologies: These are output devices that form the interface between sensing, communication and analyzing technologies and human user. They include: computer screen, printers, television, etc.
- iv Analysis technologies: These are the technologies that help in the investigation or query of data, analysis and indepth query for answers for simple to complex phenomena in research procedures. A complete set of a computer system could be a micro, mini, mainframe or super scamper.
- v Storage Technologies: These technologies facilitate the efficient and effective storage of information in a form that can be easily accessed. They include: magnetic tapes, disks, optical disks cassettes, etc.

Cockrane (1992) identified the following reasons for the introduction of ICT in libraries:

- i The failure of the existing traditional methods to cope effectively with ever increasing volume in the library.
- ii To allow for easy integration of various activities in the library .
- iii Increase in library activities, that is organization and services .

Information and Communication Technology Facilities in Library Operations and Services

The development and availability of information and communication technologies (ICTs) in libraries have today not only increased and broadened the impact of information resources at their doorsteps, but also placed more emphasis on effective and efficient services. Their applications in libraries, commonly known as library automation, have in deed continued to ease and promote quick and timely access to and transfer of information resources that are found dispensed round the globe. The following are some of the ICT facilities or resources that can be used for effective library operations and services:

- a) **Computer:** Computer can be referred to as the backbone, nucleus or hub of ICT application. In virtually all ICT applications, the computer is interfaced with another devices in order to function effectively. Computer on its own can be used to perform the following function in the library:

- i Ordering / acquisition
 - ii Circulation
 - iii Library data base
 - iv Inter library loan by two or many libraries that are connected
 - v Documentation and administration
 - vi Desktop publishing
 - vii Budgeting
 - viii Cataloguing and classification
 - ix Serial management.
- b) **Internet Facility:** Internet is described as a worldwide network of computer and people. Built upon state of the art technology, the internet makes it possible for thousands of dissimilar physical networks that are not connected to one another and that use diverse hardware technologies to connect and operate as a single communication system. There are locations of various types of information on computer system linked to the internet. It is an important tool for global on line services.
- c) **Video Conferencing:** Through video conferencing, people at different locations in the world could be allowed to hold meetings. Offorma (2000) describes video conferencing as a means of linking up two or more remote computers, all of which have a small camera attached which enables the participants to see each other, to speak to each other and in some systems, to be able to start, send documents through the linked computer. Some libraries use this medium to source for information that not available in their own libraries and at the same time use this great medium to create awareness to users who are ignorant of the available of information resources in the library.
- d) **Electronic Mail (E-mail):** This medium can also be used to send and receive mails. This is commonly and widely used with the internet facilities. E-mail is very useful for sending messages to and from remote areas with enhanced network.
- e) **Networks:** This is a system of interconnected computers for sharing information and resources (Olusanya and Oloyede) this may involve two or more computers in a single office or several computers in different units across an organization or across the country. The networks include the local area network (LAN) and wide area network (WAN). With computer network, libraries can access and share information in different locations and download for users needs.
- f) **Expert System:** Vast amounts of information may be gathered, synthesized and manipulated before decisions are made or conclusion arrived at the some of the complex area of human knowledge. According to Burton (1992) expert systems encapsulate the knowledge and experience of the human expert and make them available to a wider audience. Within information work, expert systems have been applied in the area of cataloguing, classification and information retrieval (MCDonald and Wickert, 1991)

Services Rendered in the Library

The various service provided in the libraries are complimented by available facilities, some of which are technology driven. In modern library, technology application in the provision and performance of library services provided by libraries to patrons. The utilization of emerging technologies in recent times in libraries worldwide has proved beyond reasonable doubt, that a library, whatever its services can perform better when facilities are adequately provided to enhance access to the content of the library.

However, the services rendered in a library differ from are library to another, depending on the clientele, the parent body and type of library. Idowu (2011) enumerated the following library services according to the international standard:

- Reference services
- Document delivery service
- Borrowing, renewing and reserving
- Computerized interactive search
- Technical services
- IT services
- E-library services
- Serials services
- Exhibition and displays
- User education
- Selective dissemination of information (SDI)
- Current awareness (CA)
- Referral service
- Reprographic Service
- Counseling service
- Webliographic service

The Role of Librarians in Delivery of Effective Services

Based on clarity in making choices and in concentrating on the main priorities and confidence in talking about teaching and learning issues, the librarian is required to manoeuvre the library into a strategic position within the school system.

Four strategies:

1. Positioning
2. Proactivity
3. Persistence
4. Patience

Positioning: Ensuring library is represented the main curriculum planning committees - seizing opportunities to get involved in college initiatives and into other areas of curriculum management team.

Proactivity: Is likely to be college specific, since each college has its own concerns and priorities. A strategic proactivity involves taking overall responsibility for the college internet and educational IT programmes and making this work. So that the college is now a show – case for this type of work.

Persistence: Pursue issue – proposals monitored, reminders sent – willing to be a member of several committees. Library development is seldom a smooth and painless process – staff cut, finding problems imposed changes on librarians' roles etc.

Patience: Being ready to wait for the opportunity to become proactive without creating undue resistance by trying to bounce people into change. Librarians are 'true believers' but not necessarily make the best advocates, hence the need for patience or cunning!!

Role of ICT in Effective Library Services

Nwankwo (2006), opines that ICTs application to library works and services could be seen as the best way that could be used to assist researchers to adequately solve their literature need for effective research activities. This, according to the writer, is because the application of ICT to library operations greatly helps in the provision of efficient reference and information services, the utilization of network operations such as

cataloguing, authority control, inter library loans and co-operation and in the participation of international bibliographic project. Also Dike (2000) claimed that instant access to information from a multiplicity of source is one of the major roles of ICT application to library services. Not only can it help in locating the materials where the required information can be found easily but ICT helps in sorting out what information is relevant from a mass of irrelevant information.

The use of ICT has impacted on library services according to Igbeka (2008), Adebisi (2009) and Uwaifo (2010) in the following ways:

1. Online Public Access Catalogue (OPAC): It is the computer form of library catalogue to access materials in the library.
2. No Physical Boundary: The user of a digital library need not go to the library physically once it is connected to the internet.
3. Storage Capacity: Digital libraries have the potential to store much more information, since it requires very little space to contain it.
4. Indexing and Abstracting Services: With the aid of ICT, database of print and audio-visual materials can be created and indexed. Also, ICT has made it possible for information seekers to conveniently access a wide range of library produced abstracts (indicative or informative).
5. Preservation and Conservation: An exact copy of the original can be made any number of times without any degradation in quality.
6. Inter-Library Loan: Needed materials from other libraries can be received within the shortest time through the email, courier services.
7. Access to Electronic Resources: Electronic resources are internet based resources such as electronic journals, reference sources, books etc.
8. Document Delivery Service: Document can be sent to needed users through e-mail, fax, etc.
9. Library Retrieval Systems: This involves using Compact Disc Read Only Memory (CDROM) technological mechanism of acquisition of specialized CD-ROM databases in various courses such as sciences, law, technology, agriculture, social sciences, medicine, humanities etc. the prominent ones are MEDLINE in medicine, AGRICOLA and AGRINDEX in agriculture, LEXIS and NEXIS in law, INIS and AGRIS in pure sciences and Public Affairs in social sciences. They are available commercially.

Online Public Access Catalogue (OPAC) is a great relief to users of the library catalogue in the sense that, different users can search for the same information at the same time using different terminals which is impossible through the traditional card catalogue. Also, users can search the online library catalogue through ISSN, ISBN, and combination of title and author etc. Overdue notices are generated and sent to users through their e-mails. Users can reservation and overdue notices in the OPAC system. In the area of reference services, chat technologies, Ask a Librarian, Electronic-mail, fax, telephone, Compact Disc-Read Only Memory (CD-ROM) are used to answer users queries by the Reference Librarian in the technological age (Segun, 2003). Students and researchers can search, read through a single CD-ROM the 30 volume Encyclopaedia Britannica/Americana in the library and printout needed pages. Adequate security of those materials must be taken care of by the porters and other library staff.

It may also be noted that current and relevant information are accessed and downloaded by users through the internet. Some higher institutions libraries in Nigeria are connected to the internet and subscribe to online journals where various databases are searched and used by students and staff in various disciplines. It is a plus to those libraries in the area of providing current and relevant information to their users

Barriers to ICT Integration in library services

- **Poor infrastructural Facilities:** The problem of poor infrastructural facilities especially erratic power supply have been the major cause of set back in the integration of ICT in library services. Government should therefore provide enabling environment that would allow donor agencies to provide investors particularly those in information sector to take full advantage of recent advances in information technology to bring our libraries up-to-date. In this regards, efforts should be made to make the Nigerian technology limited and power Holding services more efficient that what is currently obtained.
- **Low Level of ICT Compliance:** Many users and members of the library community require knowledge of ICT. To meet this challenge, libraries and librarians can help make ICT knowledge available by creating electronic learning centre within the libraries. Such creation will go a long way to satisfy knowledge thirsty citizenry whose only handicap is lack of opportunity.
- **E-Library:** The library can lose its relevance in ever-changing world of information technology, if nothing concrete is done. E-library could be used to deliver library services and make library facilities available to the reading public in a modern and cost effective way. By so doing, the relevance of the library could be further sustained.
- **Cost:** Despite the fact that ICT is applicable to library service, high cost of ICT equipment could not make it to be widely utilized by most libraries. Adidoye, Adererele and Adelokun (2010) stress that most library users and librarians could not afford the cost of common personal computer.
- **Poor Maintenance of ICT Equipment:** Most libraries lack conducive environments for keeping and effective functioning of ICT equipment. Besides, most of the ICT equipment are poorly managed by most libraries. In addition, the cost of maintaining ICT equipment are very high.
- **Frequent Change in Technology which Might Lead to Total Overhauling of the Existing System:** frequent changes in software upgrading leads to total overhauling of the existing system as we have in some academic libraries in Nigeria.
- **Lack of Sufficient Monetary Allocation/Poor Funding:** most libraries do not allocate sufficient money to the building of ICT infrastructure.
- **Lack of ICT Policies:** There is a lack of systematic ICT policy in most libraries in developing countries which impedes the deployment of ICTs.
- **Inadequate Technical/Skilled Manpower:** There are deaths of technical manpower in the area of ICT in Nigeria. Faulty equipment is abandoned in some libraries because there is no knowledgeable staff to repair them.
- **Inability of the Government to Monitor Effectively the Policy on Information Technology:** various polices on ICTs in Nigeria like NUNET, school-net etc are not properly monitored. Also, there is lack of systematic ICT policy in most libraries in developing countries which Nigeria is part of them.
- **Erratic Power Supply:** ICT infrastructures depend mostly on electricity to function and access the needed information.
- **Technophobia:** the use of ICTs is easier for younger libraries. Several studies, according to Ezeani have shown that older librarians find it difficult to use some of these newer technologies.

Possible Solution to ICT Integration in Library Services

1. Government should endeavour to vote huge amount of money for ICT infrastructural development in libraries.
2. There should be training and retraining for library staff at all level in respect of use of ICT.

3. The concept of e-library should be revitalized in Nigeria libraries.
4. All taxes on ICT resources should be removed. Also where possible their prices should be subsidized
5. ICT equipment should be serviced regularly by expert, faults should be promptly corrected.

Conclusion

Despite the challenges facing the availability and usability of ICTs in Nigerian libraries, librarians and authorities in various institutions must find means of making the facilities and resources discussed in this paper available to their users. It may be noted that if the libraries are provided with the various ICT facilities by the various authorities with adequate funds cum power supply, users and staff of the libraries will utilize the resources. Staffs that are not ICT compliant may be shown the way out if they refused to change for better.

Recommendation

This paper therefore suggests and recommends the following; as a means of enhancing and facilitating maximum use of ICT in library service and operations.

- There must be adequate planning and survey by any library before the introduction of ICT in order to forestall frequent change in the use of the hardware and software;
- Libraries in their zeal to provide qualitative service should open an electronic library where users and library community who do not have the knowledge of the use of ICT can be trained so as to develop the skill on how to exploit the information available for them in the ICT media.
- Adequate funds should be provided by the government and all stakeholders in education sector. This is necessary to enable libraries acquire and procure all ICT equipment that can improve the quality of their services.
- Librarians should equally partake in ICT utilization in the educational enterprise as a developer and not an operative. This he could do by seeking appropriate training, consulting teachers and always considering curricula related educational needs and involvement. However, it is important that in the enthusiastic embracing of the introduction and application of ICT in the library, librarians should not neglect basic tasks like shelf tidying, stock editing and overdue recall.
- There is need for complementary efforts by different stakeholders (librarians, governments etc) to support effective ICT revolution in Nigeria. Appropriate training should be given to librarians in order to improve the qualities of their services.

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