

APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN MANAGEMENT OF INFORMATION RESOURCES AND SERVICES IN KADUNA STATE TERTIARY INSTITUTIONS' LIBRARIES KADUNA-NIGERIA

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Abstract

The application and diffusion of information and communication technology cannot be viewed in isolation from development in telecommunication technology. Innovation in computer and telecommunication technology have resulted in major changes in basic library operations as well as managing information in different offices and organization, such as circulatory reference services, cataloguing and classification, collection development (ordering and acquisition). However, the innovations have prompted many organizations to employ the use of ICT devices to further manage information and records of the organization. On this note, many organizations, now adopt the use of computer systems, database management systems, development of network systems to create, store, preserve, secure and use information for effective decision making in the organization. This paper highlights the prospects and problems of I.C.T in Kaduna state tertiary institutions' libraries. Recommendation for functional I.C.T. in Kaduna state tertiary institutions' libraries have also been given.

Keywords: Information, Communication, Technology, Management, Resources and Services

Introduction

According to Dafiaghor, (2012) explained that the use of information technology in Nigerian academic libraries has been profoundly affecting all aspects of information acquisition, storage, and transfer. Its magnificent development has dramatically changed the mode of library operations and information services. Hundreds of thousands of monographic materials, journals, learning resources, databases, etc. are now available in electronic formats, and these materials can now be accessed from the remote corner of any country, thereby increasing the use of information and literature and the efficiency of information services in Nigerian tertiary institution. Users are now more independent than before; they can access to these electronic formats from their home computers and search databases according to their information needs. Students, teachers, researchers, information professionals, and employees are the user categories in tertiary institutions. Their needs vary; their information or literature-seeking behavior also varies, and they need to be cared accordingly. Requirement of an individual needs to be individually addressed in an efficient way. Information resources also need to be accessed by them depending on their requirements – be they print materials and web-based resources. Electronic resources imply information materials that require the use of electronic devices such as personal computers (PCs), laptops, palm-tops, Notebook-laptops, DVD-,VCD-,CD–players, projectors, phones, I-pods, Iphones, I-pads, internet-, WAN-, LAN- networks, etc for their usage. Some of the most used of these resources include flash-drives, memory cards, DVD-, VCD-, CDRoms, DVD-, VCD-, CD-RAMs, DVD-, VCD-, CD-R; DVD-, VCD-, CD-WR; DVD-, VCD-, CD+WR, etc. (Dafiaghor, 2012).

The traditional services rendered by the library include, readers' services, reference services, reprographic services, Current Awareness Services (CAS), Selective Dissemination of Information (SDI) etc. However, the advent of Information Communication Technology (ICT) has expanded the scope of these services and the tools of information delivery. Today we have e-library and virtual library which provide access to electronic books and journals, online references, web-resources, web-catalogues etc. This "Web-eccentricity" poses a lot of challenges to librarians and information scientists as well as the traditional library users. The challenges are both operational and strategic. The attitudinal challenge is another dimension that needs to be addressed (Idowu, 2009).

Statement of the problem

The rapid changes in information and communication technology causes already uncertain business environment to be even more predictable. Organizations' ability to identify the relevant information needed to make important decisions is crucial, since the access to data used to generate information for decision making is no longer restricted by the manual systems of the organization. Today, the emergence of ICTs made it possible for organizations to record, synthesized, analyze and disseminate information quicker than any other time in history, (Galliers, 2003). He further argued that data can be collected from different parts of the company and its external environment and brought together to provide relevant, timely, concise and precise information at all levels of the organization to help it become more efficient, effective and competitive.

Also, over the years organizations generally have been accumulating heaps of information emanating from different departments and units within and outside the organizations. As a result of this scenario, these organizations are saddled with the tasks of managing the information and records for the purpose of effective and efficient decision making and improve productivity in the organization. The large volumes of different varieties of information generated and disseminated almost on daily basis require more sophisticated devices in its managements.

However, observations by the researcher revealed that management of information and records in Kaduna state tertiary institutions is ineffective and thereby rendered lots of information and records of the organization not retrievable, not accessible and to a large extent not useful to the organization. Since, more often information and data are found to be lost. Another resulting problem is information redundancy, poor data security and preservation measures and inability to share data/information among departments in Kaduna state tertiary institutions.

In the late 20th and early 21st centuries, library automation and the internet revolutionized information access and library operation around the world. The effect on academic institutions has been profound. It enables users to access library resources from sites hundreds or thousands of miles away. Library in academics institutions can now provide information access to off-campus faculty and students wherever they are located. To meet the ever increasing demands for information availability, academics libraries must now subscribe to electronic resources such as e-books, full text journals and on-line bibliographic database in addition to the print formats. While the availability of these electronic resources enables remote access to needed information, concomitantly, they present issues and challenges (Idowu, 2009).

It is against this background that this research was designed to adopt the application of Information Communication Technology in management of information in resource and services in Kaduna state tertiary institutions' libraries.

Application of ICT in Management of Information resources and services the (prospects)

The great advances being made in the field of Information communication technology, there are great possibilities for the application of ICT in academic libraries in Kaduna state tertiary institutions, in this direction there is room for ICT application in the academic libraries in many ways including the following:

ICT and Electronic Collection Management

According to Cotter and Koehler (2002) observed that the ICT and electronic library has four attributes:

- a) Management of resources with a computer
- b) The ability to link the information provider with the information seeker via electronic channels
- c) The ability for staff to intervene in the electronic transaction when requester by the information seeker and
- d) The ability to store, organize, and transmit information to the information seeker via electronic channels.” An electronic library utilizes both electronic information resources and electronic means to manage and move those resources.

There are sound reasons for us to consider collection management or as Budd and Harloe (1997) suggest that content management in a networked environment, libraries bring more than organization and intermediation to information collections. They also bring authority. Inclusion in a collection implies pertinence, appropriateness.

ICT and Records Management

According to International Records Management Trust (n.d) observed that well managed records are a foundation for good Library services; they serve both to document the policies, transactions and activities of library and to provide a trusted source of information to support decision-making and accountability. Many Library operations that traditionally depended on information derived from paper records have become partially or wholly automated. As Library migrates to an on-line environment, records in electronic form are providing the basis for conducting business, serving the users, managing resources, measuring progress and outcomes, and protecting their own and others’ rights. Records management is becoming increasingly dependent on technology. It is important therefore to have objective means of assessing the strengths and weaknesses of records systems and determining whether they are capable of capturing, maintaining and providing access to records over time.

Library is now more dependent on information in electronic systems to carry out their day-to-day functions and make decisions; common examples include systems designed for: Human resource management, Online public access, Institutional repository, E-resources and Services, Licensing and ordering, Registration, and Benefit delivery. New technology is making significant contributions to improving Library resources and services, achieving development goals and advancing e-library strategies. However, records management is not being given the attention it requires in the transition to the electronic environment. In too many cases, ICT systems are introduced without the essential processes and controls for the capture, long-term safeguarding and accessibility of electronic records. This undermines the ability of Library staff to trust the information generated by Library ICT systems.

Bibliographic Access Tools in an Electronic World

Cotter and Koehler (2002). Explained that metadata is a relatively new term building on an old concept of cataloging or bibliographic control as a tool for identifying and locating

information. Metadata means “data about data.” Librarianship has traditionally used the terms “bibliographic control,” “cataloging,” and “indexing” for “metadata.” With the advent of electronic collections, digital libraries, and the Internet, and the increasing availability of numeric and textual databases, information classifiers and catalogers have begun addressing the bibliographic management of distributed databases.

The term “metadata” has been adopted to reflect this broader application and bibliographic control of a wide range of information products. Historically, card catalogs typically were limited to no more than three access points (author, title, subject), two more than the earliest catalogs. OPACs, because of the speed and “agility” of computers, support multiple access points. Computer scientists, and now Internet entrepreneurs, have developed metadata systems for digital libraries and Web search engines. These include systems to automatically capture and harvest imbedded metadata like PICS and Dublin Core as well as the various XML-based markup systems. These indexes resemble classic indexing structures. Many search engines, for example, follow inverted indexing principles, while many of the search directories are based on faceted chain-indexing models. A proliferation of metadata and metametadata tools is being developed to provide access to digital information. Metadata issues need also to be understood as information professionals build collections with materials in a growing number of formats, for often different format implies different metadata. A separate paper in this volume addresses metadata systems in more detail (Cotter and Koehler, 2002).

Interlibrary Loan Model

Interlibrary Loan (ILL) is a process by which one library borrows from other libraries materials it does not hold in order to meet the information needs of its patrons. Interlibrary Loan is not a new concept nor is it one that emerged out of the digital revolution. ILL is however facilitated by various online services including electronic union catalogs (like OCLC’s World Cat) and automatic ILL request services attached to OPACs (Online Public Access Catalogs) and online databases. The ILL community has developed a continuing interest in using the Web and other means to facilitate the ILL process. The North American Interlibrary Loan and Document Delivery (NAILDD) Project promotes the development of efficient ILL/DD delivery systems using networked technologies.

NAILDD has identified three areas of primary concern: “comprehensive and flexible management software, improvements in ILL billing and payments, and system interoperability via use of standards.” (Jackson 1998). OCLC has played a major role in developing system interoperability, facilitating billing and financial transfers (IFM or ILL Fee Management), and development of management software. A number of international initiatives led by the Research Libraries Group (RLG), the Library Corporation (TLC), Ameritech Library Services (ALS), AGCanada, and others have sought to improve system interoperability and information flows, thus enhancing digital access. OCLC manages an international Interlibrary Loan Service or Global Sharing Group Access Capability (GAC), built upon its union catalog WorldCat. It utilizes a standard Web interface and software (<http://www2.oclc.org/oclc/pdf/printondemand/ill.pdf>). Many countries have developed model codes for ILL, for example the American Library Association – Reference and User Services Association (ALA-RUSA) Interlibrary Loan Code for the United States (http://www.ala.org/rusa/stnd_inc.html). ILL exchanges among countries are guided by the International Federation of Library Associations and Institutions (IFLA) International Lending: Principles and Guidelines for Procedure (<http://www.ifla.org/VII/s15/pubs/pguide.htm>) (Cotter and Koehler, 2002).

Universal Borrowing Models

The Universal borrowing models (UB) allows libraries to treat authorized users from one system to borrow (access collections) from libraries within a consortium. The term “universal” actually refers to providing access to everyone within a defined group, not universal in the sense of totally opened.

In the United States, two examples of UB arrangements for digital access are:

a) Libraries under a common jurisdiction permit intra-jurisdictional lending. For example, in Georgia, public libraries have banded together to form the Public Information Network for Electronic Services (PINES). These libraries are regulated by the Georgia Public Library Service. PINES offers an electronic union catalog and interlibrary borrowing and return services (<http://pines.public.lib.ga.us/>). The Georgia public and academic libraries also participate in GAILEO, to provide system wide commercial database services.

b) The Association of Research Libraries (ARL) manages the “Reciprocal Faculty Borrowing Program” among its member university libraries. “Conducted under the aegis of the Research Libraries Advisory Committee to OCLC, the intent of this program is to promote and facilitate scholarly research and communication among faculty members of research universities that are ARL members.”

Privileges may but do not necessarily include borrowing rights. [http://www.pace.edu/library/collection/Faculty Borrowing.html](http://www.pace.edu/library/collection/Faculty+Borrowing.html). In the increasingly digital world, the pre-coordinated groups of organizations in consortia have become increasingly active and pervasive due to the need to get the most favorable conditions under licensing agreements. Cost models for publishers of digital information are in serious flux and the need for groups that build collections to work together in their dealings with publishers and in developing access infrastructures for digital collections has become increasingly important (Cotter and Koehler, 2002).

ICT and Archiving Electronic Information Resources

Hodge, and Frangakis (2004) ascertain that Preservation and permanent access begin outside the purview of the archive with the producer or the creator of the electronic resource. This is where long-term archiving and preservation must begin. Information that is born digital may be lost if the producer is unaware of the importance of preservation. Practices used when electronic information is produced will impact the ease with which the information can be digitally archived and preserved. Several key practices are emerging involving the producers of electronic information. First, the archiving and preservation process is made more efficient when attention is paid to issues of consistency, format, standardization and metadata description before the material is considered for archiving. By limiting the format and layout of certain types of resources, archiving is made easier. This is, of course, easier for a small institution or a single company to enforce than for a national archive or library. In the latter cases, they are faced with a wide variety of formats that must be ingested, managed and preserved. In the case of more formally published materials, such as electronic journals, efforts are underway to determine standards that will facilitate archiving, long-term preservation and permanent access. The Andrew J. Mellon Foundation has funded a study of the electronic journal mark-up practices of several publishers. The study concluded that a single SGML document type definition (DTD) or XML schema can be developed to support the archiving of electronic journals from different subject disciplines and from different publishers with some loss of special features (Inera, Inc. 2001). Such standardization is considered key to efficient archiving and preservation of electronic journals by third-party vendors. The DTD developed by PubMed Central for deposit of biomedical journals is being considered as a generalizable model for all journals.

ICT Analyst

Elisha, M. J. (2006) observed that the use of ICT to provide access to educational resources to library patrons, ICT can be used to facilitate on-the-job training and retraining of information professionals. As noted above ICT is developing at a pace very difficult to keep up with, as such there is need for the information professionals to know and follow trends in ICT. Since “information professionals are being called upon to work dozily with ICT users and providers (including it staff) and to work in collaboration with others in the profession. Some group of users lack the necessary IT skills to obtain quality information, information professional will therefore be called upon to act as both educators and intermediaries, given these circumstances, information professionals are required to have increased teaching and communication skills” (Ashcroft and watts, 2005).

Thus, the relevant manpower is developed or acquired within our academic libraries; all advances in ICT application will not be fully utilized. Unfortunately, too much emphasis has been placed upon the development of ICT information in developing countries and not enough consideration has been given to human resource development. Stein Muller (2001) suggests that many ICT users are self taught and are capable of developing an understanding of ICTs through the experience of utilizing them. If thus be the case, the countries unable to provide extensive access to ICTs are inevitable marginalized, as they are less likely to produce capable self-taught persons (Ashcroft and watts, 2005). For the Nigerian academic libraries to take full advantage of the opportunities offered by ICT and its application in the library environment it must create extensive access to ICT and relevant tutorial packages on new technology applications, software and software management and CD-ROMs which will enable the ICT professionals within the library setting to install, manage, maintain and repair ICTs easily and to assist other ICT users to maximize the opportunities offered by ICT as well as ensure effective collaboration such as in a digital: reference service (Elisha, 2006).

Application of ICT in Management of Information resources and services (the problems encountered)

For clarity, the problems hindering the effective application of ICT in Nigerian academic libraries in general and Kaduna state tertiary institutions as partial will be discussed topically as follows:

Problem of Funding

Academic Libraries in Nigeria is not adequately funded. The fate of academic libraries is not different as funding for this library, which comes largely from their parent institutions and ETF, now TET-Fund, has not been sufficient. As the purchasing power of revenue accruing to different levels/tiers of government in Nigeria continues to diminish, responsibilities and obligations of these governments continue to expand. This has severely limited the amount of money available for the capital and recurrent expenses of the country's academic libraries, amongst other educational and social services. It is, therefore, very clear, as captured in Nigerian library literature that academic libraries in the country cannot continue to rely on the present sporadic and insufficient budgetary allocations by government through their parent institutions. In line with the foregoing, some income-generating ventures have been identified, which if implemented, would yield the additional financial resource required to meet the increasingly complex demand of library services in 21st Century tertiary institutions (Nnadozie, 2013).

Lack of comprehensive ICT policy

Elisha, M. J. (2006) explained that no library can be effective without a policy, which sets out aim and objectives, identifies user groups and services and indicates priorities among

them, though the library indicated that it has plans to develop ICT policies this also showed that the use of ICT policies by academic and researchers is quite recent and that they started investing on ICT facilities without functional policy statements.

Besides there is the need to develop an overall national ICT policy for Nigerian academic libraries within which both the private and the government owned academic institution should developed for our academic libraries, continued investment on ICT will be disjointed and thus unable to yield meaningful results.

Poor ICT knowledge

There is a severe and pronounced “low level computer literacy among Nigerians” (Okoye, 2005). This makes it difficult for them as users and patrons of academic libraries to make full use of available ICT facilities. This problem is further aggravated by the “shortage of technology literate staff in library, the lack of skilled human resources to install and manage technology networks and poor funding to attract such staff or develop such skill in existing staff (Ashcroft and Watts, 2005). The poor ICT knowledge among both users and professionals in Nigeria makes it difficult for the Kashim Ibrahim Library to go far in their application of ICT. Library is lacking resources and technical support, and staff needing continuously to acquire appropriate training in order to deliver up-to-date services and trouble shoot equipment (Bill and Melinda Gates Foundation, 2005, p8). Without the relevant ICT skills, the Kashim Ibrahim Library ICT professionals are unable to guide the library patrons maximize available ICT facilities and explore the opportunities they offer (Elisha, M. J. 2006).

Conclusion

The role of library and information professionals have changed altogether, their role is not just as custodian of books but to teach the students how to use the existing resources, frequently organizing workshops, current awareness, debates, develop users/staff on how to manage the library resources and services. Library professionals cannot ignore the changes in the field of ICT and redefining as well as reengineering the library resources and services is the need of the hour. Information professionals must change the way of managing documents with latest tools and technologies. Staff has to give instruction, training to users to promote optimum use of information sources.

The ultimate aim of adoption ICT is to facilitate effective transformation of information sources to learning/research. Any plan of implementation which deviates from this aim is likely to result in futility. Integration of ICT with library resources and services should be curriculum driven instead of technology driven in view of future curriculum reform. The implementation of ICT programs in library services should entails building a culture among people.

Recommendation

- 1) Kaduna state tertiary institutions’ Library needs funds to initiate the full implementation of ICT in management of information resources and services, the government of federal republic of Nigeria should play vital role by allotting sufficient funds for purchasing and maintaining ICT in libraries.
- 2) A comprehensive collection development policy for e-resources should be maintained by the Kaduna state tertiary institutions Library, in order to follow a set of standard practices for acquisition and management of electronic information resources. There should be specific budget for new resources and the renewal of existing resources.
- 3) Professional organizations such as the Nigerian Library Association (NLA) and library administrators should organize short-term training programmes and workshop for library

professionals in computer applications in library and information services, online information retrieval, data processing, electronic publishing, and also software such as Microsoft Office, CDS/ISIS, etc.

- 4) A long-term plan is an essential component of the long-term implementation of ICT in Kashim Ibrahim Libaray.
- 5) Standby electric power generating set should be procured and be uncuttable in order to ensure constant power supply for proper utilization of ICT facilities. Since ICT relies heavily on electric power, every effort should be made to ensure that the systems are always powered as required.
- 6) Management and full utilization of the facilities should be properly done. The users should have enough time. Through proper planning, organizing, directing and controlling of the IT facilities so that the best could be made of the facilities. Restricted access to the facilities will not lead to the attainment of the desired objectives, but at the same time, measures should be put in place to ensure that the facilities are not abused.
- 7) Networking should also be improved, since is one of the most effective ways of serving users' needs comprehensively. Networked access to databases would help get newly-published information to library users.
- 8) Good maintenance culture should be developed in the Kashim Ibrahim Library. There is no gain leaving any broken system to suffer because more harm could be done through such inaction. Rather, more qualified technologists should be employed to ensure efficient maintenance culture for better results.
- 9) Well-trained and skilled personnel are essential ingredients for implementing ICT in library. Steps should be taken to develop properly trained and competent people for this purpose.

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