ISSN 2319-2720

Volume 2, No.1, January – March 2013
International Journal of Computing, Communications and Networking
Available Online at http://warse.org/pdfs/2013/ijccn02212013.pdf

Application Of Information And Computer Technology In Libraries

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ABSTRACT

The paper described the scope of information and computer technology (ICT) in the libraries. The paper also describes the ICT challenges facing information professionals and concept of library 2.0. Prospective work on ICT-enabled learning would help to grasp the opportunities offered by ICT to prepare for learning in the 21st Century that embraces digital technologies for better learning, for better assessment of learning outcomes and achievements, for better teaching and for better social inclusion.

Key words: e-resources, e-journals, library and information science, library 2.0

1. INTRODUCTION

Today libraries are shifting their role from the custodian of traditional information resources to the provider of service-oriented digital information resources. Widespread use of computers, increased reliance on computer networks, rapid growth of the Internet and explosion in the quality and quantity of information compelled libraries to adopt new means and methods for the storage, retrieval and dissemination of information.

The modernization of libraries and information centers enabled information transfer and access, there by establishes a network of libraries and information centers. This initiative helped in resource development, resource sharing and their utilization at various levels. Information professionals subscribe to e-journals, CD-ROM databases, online databases, web-based resources, and a variety of other electronic resources. They participate in library consortia and build digital libraries. However, these libraries have been hampered by many constraints to embark on successful application of information and communication technology (ICT) for their operations, resources, and services [1].

In this age of globalization, the importance of ICT to people generally and information professionals in particular cannot be overemphasized. This is true because ICTs facilitate quick and easy access to a wide range of information and resources worldwide. In fact, it is now difficult to imagine a world without information technology. The provision and use of ICT is part and parcel of the entire system, to both the students, information professionals and the institutions. It is one thing to recognize the importance of ICTs and another to know if they are effectively used by professionals, students and academics. If ICTs are put to effective use, the essence of acquiring them is to a large extent justified vice-versa.

Lowe and McAuley (2002) defined information and communication technology literacy as "the skills and abilities that will enable the use of computers and related information technologies to meet personal, educational and labour market goals''[2]. Ebijuwa (2005) defined ICT as tools used for collection, processing, storage, transmission, and dissemination of information [3]. With advances in ICT, electronic information resources such as electronic books, electronic journals, CD-ROM databases, OPAC, Online databases and the Internet have launched the world into an information age. No institution or organization can still rely on only traditional printed information resource to perform effectively and efficiently. To librarians, ICT is a significant development that provides tools for managing the avalanche of information generated by modern society.

1.1Literature Review

There have been many studies of users of electronic resources in the professional literature in the last few years [4]. In a recent exhaustive review of the literature on the subject, analyzed the results of over 200 studies of the use of electronic resources in libraries published between 1995 and 2003 [5]. The main conclusion of this review is that electronic resources have been rapidly adopted in academic spheres, though the behavior varies according to the discipline.

2. ICT SKILLS FOR INFORMATION PROFESSIONALS

In recent years, work for the information professional has become characterized by fast-paced change and new skills requirements. This transformation has been brought about by the constant emergence of relevant new technologies [6]. Information professionals are increasingly required to adapt their skills and practice in order to gain an awareness of technological advances. As a result, the profession itself exists in a state of flux alongside these emerging technologies, with traditional roles being increasingly subsumed by new skills and working environments and, therefore, job descriptions [6].

Information professionals are now expected to be aware of and capable of using and demonstrating emerging ICTs [7]. There is a need for additional training to augment the traditional skills knowledge base with a competency in ICT use. Information professionals must be flexible and adapt traditional skills to incorporate the requirements of technological advances [8]-[9]. Given the current situation, whereby ICTs are being continuously updated or introduced, and traditional formats are being replaced or supplemented by digital formats (such as e-journals and e-books), it seems likely that there will continue to be a need for regular training for information professionals.There is also an increased focus on communication skills, with more players involved in the electronic information environment. Information professionals are being called upon to work closely with ICT users and providers (including IT staff) and to work in collaboration with others in the profession [10]. Some groups of library user lack necessary IT skills to obtain quality information [11] and, therefore, information professionals will be called upon to act as both educators and intermediaries [9].

Given these circumstances, information professionals are required to have increased teaching and communication skills. It is vital for those in management positions to recognize the imperative of continuing professional development (CPD) and ensure that staff are proactive in maintaining up-to-date levels of expertise. The significance of CPD in this climate has been acknowledged by both the United Kingdom's Chartered Institute of Library and Information Professionals (CILIP) and the United States' American Library Association (ALA).

3. IMPACT OF ICT ON INFORMATION PROFESSIONALS

ICTs have become ubiquitous with current and future social and organizational development. The role of these technologies in national development is undeniably significant. As the positive effects of ICTs have continually been noted in developed libraries, it has become critically important for developing libraries of Africa to embrace these technologies. The United Nations Development Program (2001) refers to ICTs as a "powerful enabler of development" because of the significant impact on the economic, scientific, academic, social, political, cultural and other aspects of life [12]. In higher education and human capacity building, there are significant patterns of change because ICTs are impetus for change in traditional concepts of teaching and learning, as well as prime motivation behind the change in scholarly and professional activities.

Library and Information Science (LIS) academic departments have witnessed not only this increasing globalization of higher education but also that of the LIS work place including the consequent extension of competition beyond traditional, institutional, national and regional boundaries. ICTs are significant in the achievement of LIS educational goals and the fulfillment of the primary tasks of LIS schools. Hence, with this conclusion came the realization that there was need for greater infusion of ICT knowledge and skills into LIS course content, as well as thorough diffusion of ICT competencies into the LIS professionals. The changes brought into the LIS profession by ICTs can be divided into two major categories, namely, the natural evolutionary changes, on the one hand, and transformatory changes, on the other [13]. As natural evolution, the library and information science profession has harnessed ICTs to perform old tasks better through the automation of housekeeping tasks such as reference work, bibliographic services, cataloguing, serials, circulation and acquisition, which are performed more efficiently in an ICT environment. Transformatory changes, on the other hand, include the emergence of new functions arising out of an expanded, demand-driven information society, wider or interdisciplinary jurisdiction and closer focus on user needs [13]. These transformative trends represent systematic changes that substantially alter the boundaries of the profession. For example, the increased use of the World Wide Web in private, social, business lives of many people and hence note that it is a vital component of the enabling structure for school, university, career and other use for information and communication [14]. This one platform exhibits the fact that those involved in information services need to be sufficiently prepared to handle both the users of information and the attendant technologies. Thus knowledge of networking, communication and retrieval technologies has become core to the profession. And as distinctions continue to blur between telephones, television and computers [15], information professionals or LIS graduates have to be able to navigate information networks competently so as to provide relevant services and materials for their users. Consequently, LIS curricula need to consolidate ICT concepts, knowledge, skills and proficiency into core competencies, and LIS schools need to provide adequate content and practice that will enable LIS graduates and professionals to adapt and use ICTs effectively.

4. CONCEPT OF LIBRARY 2.0

The concept of library 2.0 derived from web 2.0. The library 2.0 encompasses a range of new and contemporary products and services of ICT that used for evolving collaborative environment required for library 2.0. Owing to library's services, have focusing more on the facilitation of information transfer and information literacy rather than providing controlled access to it. New products and services based of ICT in forms of "Library 2.0" are the interactive, collaborative, and multi-media web-based technologies to web-based library services and collections [16].

The library 2.0 is a loosely defined model for a modernized form of library service that reflects a transition within the library world in the way that services delivered to users. With library 2.0, library services constantly updated and reevaluated best serve library users. The library 2.0 also attempts to harness the library user in the design and implementation of library services by encouraging feedback and participation [17].

Michael Casey coined the term "Library 2.0" on his blog Library Crunch as a direct spin-off of the terms Business 2.0 and Web 2.0. Casey suggested that libraries, especially public libraries, are at a crossroads where many of the elements of Web 2.0 have applicable value within the library community, both in technology-driven services and in non-technology based services. He described the need for libraries to adopt a strategy for constant change while promoting a participatory role for library users [16].

There are some tools and techniques of library 2.0 which are being used by today's libraries: Blogs, Wikis, Streaming Media, Tags or Tagging, Social Networks, RSS Feeds, Synchronous Messaging, Podcasts, Mashups and etc.

Some benefits of Library 2.0 are as follows:

a. CAS can receive in very effective manner.

b. A very quick communication can possible with library staff.

c. Library can easily get users feedback in minimum span of time.

d. It can keep update to library's users regarding its daily activities.

e. Multimedia data can be accessing by user and able to give feedback.

5. ELECTRONIC THESIS AND DISSERTATIONS

Related to institutional repositories, especially in university libraries, is the provision of access to full-text copies of Electronic Thesis and Dissertations (ETD). Without ICTs it has been impossible to access full-text copies of thesis and dissertations from a remote location. While in developed countries, thesis and dissertations have been made available on microfiche and microfilm, in sub-Saharan Africa, the only way to have access to these resources has been by paying a visit to the libraries where the collections are housed. As a result, thesis and dissertations in Africa have largely been closed collections accessed mainly by students and researchers residing in the host country. ICTs have changed this arrangement. Some universities libraries, especially in South Africa are implementing projects aimed at providing access to full-text copies of ETDs and these include the libraries of the following universities:

- University of the Witwatersrand
- University of the Western Cape
- University of Pretoria
- Rhodes University
- University of Johannesburg

Also worth noting is that libraries from the following universities in SCANUL-ECS region have participated in the development of a Database of African Thesis and Dissertations (DATAD), hosted by the Association of African Universities (AAU), by contributing bibliographic records of their thesis and dissertations to the database:

- Addis Ababa University, Ethiopia
- Eduardo Mondlane University, Mozambique
- Kenyatta University, Kenya
- Makerere University, Uganda
- University of Dar es Salaam, Tanzania
- University of Zimbabwe

DATAD, which is currently providing only bibliographic records, is expected to finally provide access to full-text ETDs, and this will increase the number of libraries providing access to ETDs in the SCANUL-ECS region.

6. USE OF E-RESOURCES BY INFORMATION PROFESSIONALS

Many types of library materials such as journals, books, patents, newspapers, standards, photographs, pictures, motion pictures or music are now available in electronic or digital form. From the user's point of view, digital resources hold many advantages such as time and place convenience, timeliness, ability to search directly on text (as against the catalogue records), ability to link to further reading material and ability to disseminate and share information. From the library's point of view digital format offers convenience of storage and maintenance, cost advantage, ability to target global users, etc. However, digital resources also pose human, social and technological problems, such as discomfiture in reading on the screen, problems in internet access and speed, poor infrastructure, lack of sufficient skills to use the digital resources, and perceptional change resulting from right to use rather than physical possession, etc. [18]

E-Journals: Libraries have been exploring to cope with the problems of ever increasing prices of journals, space requirements and decreasing level of usage as the journals get older. Nevertheless, libraries are required to maintain back issues of the journals, usually in bound form. Electronic journal helps the librarians in addressing these problems to a great extent without significantly affecting the service levels. E-journals can be accessed via internet from any web enabled PC. Depending on the type of subscription, one or more users can access the service simultaneously, either directly from an independent web enabled PC or in a local area network through a proxy server. E-journals also offer the benefit of full text searching and downloading of articles. Many publishers of electronic journals offer their journals through consortia of libraries at much lower rates, example INDEST (Indian Digital Library of Engineering, Science and Technology), and

INFLIBNET are two such consortia operating in India [18]. Access to articles in electronic journals can also be made through aggregator services which offer searchable databases of contents of e-journals from several publishers, and links to journal site for full text [18]. Emerald, OCLC and J-Gate are some of the example of e-journal aggregator services. The main disadvantage of electronic journal is that libraries cannot physically possess the journals.

E-Books: E-book has been described as a text analogous to a book that is in digital form to be displayed on a computer screen. E-books can be read just like a paper book, using dedicated E-Book reader such as Gemstar e-Book or on a computer screen after downloading it. There are also some newer technologies developing such as electronic paper, which is much like paper, except that the text can be changed, and talking books in MP3 format. E-book offer advantages like portability, 24 hours access, text search, annotation, linking, and multimedia and self-publishing possibilities. Development of e-book is still in the infancy stage and issues like compatibility, e-book readers, availability and intellectual property rights are to be addressed before it can be implemented on large scale [18].

Information professionals' is another variable influencing the use of electronic resources. It is reasonable to assume that the more an information professionals uses the library, the more familiar they will be with its resources, including its electronic resources. However, if an information professional use the library primarily as a quiet and convenient place to study, they may not be aware of its resources at all, as compred to the one who never puts a foot in the library. Several studies have shown that information professionals use the library mostly as a place to study and make photocopies, but do not make great use of some of the available library services, such as interlibrary loan and the reference desk [19].

The library website is created as a tool to serve the user and professionals. It serves as a channel of communication for various activities of the library and works as a knowledge portal to all the library users including information professionals [19]. Along with the electronic recourses it enlists various other activities related to the library. The website is updated at regular intervals and is suitably linked with the university website. It provides up to date information on library collection, library rules and regulations, online services, links to the major e-journal databases, publications of library professionals, links to other central universities. It also serves as a gateway to announce new initiatives and activities. As far as electronic resources are concerned, library website enlists all the resources on a single web page termed as 'Online Services'. It further provides links to subscribed databases, UGC-Infonet databases, public domain databases, OPAC, DELNET, JCCC@UGC-Infonet, popular magazines, etc. Through the 'Online Service' webpage users get access to all e-resources, which are further listed on separate page with a brief description. A screen shot of the library website is given. The website is highly accessed by the user communities. Many more value additions will be made to the website with the passage of time [20].

It is believed that it keeps the user up-to-date as far as the databases are concerned. Once the users are aware of the availability they will use it. Besides, also provide e-referencing service. Users send their queries through e-mails regarding various library services and especially for e-resources. The queries are promptly responded by the reference personnel [20].

7. ICT CHALLENGES FACING INFORMATION PROFESSIONALS

There a number of challenges facing information professionals on the use of ICT in information provision particularly in libraries in African countries, and these include:

- Inadequate technological infrastructure to support the integration of ICTs in the curricula [21]. This refers to issues as poor or lack of national ICT policy, low internet connectivity, inadequate supply of electricity, inadequate number of PCs, etc. There is need for policies that deregulate satellite communication and other telecommunication links, regulate ISPs, regulate government and cross-border data flows, etc. ICT policies can help address stringent tax regimes that still treat computers, communication equipment and other peripherals as luxury items, thus imposing heavy import duties on them and subsequently rendering these items very expensive.

Internet access is now widely available, but the efficiency is poor as many libraries in African countries experience downtime, several times a week [21]. The telecommunication services are the root cause of these downtimes in terms of, either, low bandwidth, technical faults and other network configuration problems. There are also many external systemic factors such as electricity, transport networks, import duties etc. which impact on internet service delivery on the African continent [22]. In some institutions, access is limited, not only by the number of Internet service points, but also by the time that access is available or permitted, leave alone the difficulty of bandwidth. Yet for research purposes, access to the Internet is no longer a luxury or privilege for only a few people because in academic circles, access to the Internet and hence to the world's stores of knowledge is a necessity. Libraries in African still need to lobby to gain greater access to Internet resources for academic staff or

research. Thus there is urgent need for improved ICT policies and infrastructure in institutions and countries.

- Funding and sustainability of the technology is the major non-technical constraint in LIS schools [23]. Most universities decry the issue of under-funding in most of its functions. Besides, the unprecedented, phenomenal and multifaceted growth and development of the ICTs themselves pose another challenge. This rapid pace and transient nature of technological development requires sustained funding. While the centralization of ICT services, hence funding, has been found to be the most affordable system for institution-wide development and use of ICTs, it only works well where there exists a policy that has explicitly incorporated the goals and needs of all sectors, including those of the libraries and information centers. In institutions where the political economy is slanted, coupled with the absence of such a policy, libraries and information centers may suffer from neglect and hence be unable to develop and use ICTs.

- Among the constraints cited by respondents in the study [23] were the issues of (a) re-skilling lecturing staff so as to improve their ICT competency, (b) lack of systems manager, support staff or ICT experts, and (c) low levels of students' epistemological access. Manda (2006) observes the lack of ICT knowledge and skills among staff [21].The problem of brain drain i.e. that staff sent overseas for training either do not return to their posts or are taken up by other organizations that are able to offer them higher remuneration [24]. This suggests that in so far as re-skilling academic staff is concerned, opportunities are available but there is still no guarantee that the problem will be solved because of the prevalence of skills shortage at macro or national levels [25].

There is still a serious need for technical support with high level expertise in the maintenance aspects of ICTs. Because of poor maintenance and insufficient skills to diagnose system problems and swap parts, there are many out-of-commission machines which could easily be re-activated and used. The problem of technical expertise is two faceted. In the first place, there are not enough people qualifying or attaining ICT specialist skills at the speed at which the technologies are adopted. Secondly, the problem of brain-drain whereby the few experts opt for better paying jobs overseas.

8. CONCLUSION

ICT skills is important as it is a pre-requisite for networking of e-library services and resource sharing. It also enables promotion of e-learning, usage of e-Journals, e-Books and creation of electronic institutional repositories. The operations in a library require ICT skills in order to achieve more efficient and effective functioning and for providing excellent library and information services.

ICT infrastructure would involve hardware, software, and other telecommunication facilities. Sufficient ICT skill is very essential for the successful application of ICT in libraries. The application of ICT to store and process vast amount of information coupled with the ability of information professionals to transmit this information from one location to another has tremendous impact on the storage, retrieval, and dissemination of information in libraries. The value of electronic resources and services are that it can be easily shared, distributed, updated, manipulated, and rapidly searched. Lastly, the usage of all e-resources is becoming high and well appreciated. The impact of ICT skills has promoted the usage of electronic resources in terms of e-journals, e-books, etc.

The information professional with high computational skills are more likely to use the electronic information resources more than those with inadequate ICT skills. More so, web enabled services are provided through library web page. New services include access to the internet and internet based tools and services, access to electronic information sources and digital library of local and institutional documents. Journals, books, dissertation and thesis, course material and patents are some of important sources of information that are now available in electronic form. Electronic resources provide 24 hours any where flexibility and convenience of use by multiple users and full text searches and faster delivery. Subject gateways are one of the useful tools to provide web access to internet resources. Digital libraries provide local contents in the electronic form through internet to global clients. Finally, it is necessary to be proactive and to develop a stronger understanding of future Learning needs and future learning environments. Prospective work on ICT-enabled learning would help to grasp the opportunities offered by ICT to prepare for learning in the 21st Century that embraces digital technologies for better learning, for better assessment of learning outcomes and achievements, for better teaching and for better social inclusion.

9. RECOMMENDATIONS

1. Funds should be made more available to equip e-libraries with sophisticated technological equipment needed for e-resources.
2. Training courses should be organized for the awareness and use of e-resources for information professionals
3. Access to internet should be made available at little or no cost for information professionals in other to use e-resources often.

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