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Challenges of managing information and communication technologies for education: Experiences from Sokoine National Agricultural Library

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ABSTRACT

Like many other libraries, the Sokoine National Agricultural Library (SNAL) has already computerized most of its services. The library has acquired a number of ICT facilities that contribute positively to provision of information services**.** However, the new technologies provide new challenges related to acquisition, preservation, maintenance and security issues, training of users, and lack of awareness and commitment among key stakeholders. This paper discusses some of the challenges experienced by SNAL, highlights measures taken to overcome some of these challenges, and proposes strategies for proper management of ICTs in libraries.

Keywords: *ICT; education; challenges; library; electronic information resources*

INTRODUCTION

Information and Communication Technologies (ICTs) have increasingly become indispensable tools for development over the past few decades. Positive effects of ICTs have continually been noted in business, production, education, politics, governance, culture and other aspects of human life. In higher education, ICTs have great influence in teaching, learning, research and other scholarly and professional activities through improved communication and access to information. In libraries, ICTs have greatly simplified acquisition, organization, storage, retrieval, provision and usage of information. Internet and CD-ROMs for example, have greatly enhanced access to a range of current information resources. In sum, ICTs have improved provision of library and information services by overcoming time, distance and other barriers. However, is widely agreed that ICT adoption in libraries is not a panacea to all library problems as initially presumed. Despite their tremendous potential, ICTs have also brought new challenges that must be overcome in order to increase effectiveness and efficiency of libraries in developing countries. This paper discusses some of these new challenges using experiences from Sokoine National Agricultural Library in Tanzania.

The Sokoine National Agricultural Library (SNAL) is both a university library for Sokoine University of Agriculture (SUA) as well as a national agricultural library for Tanzania since 1991 (URT, 1991). The library provides information services in mainly agriculture and related sciences (forestry, veterinary, wildlife, food science, environment, rural development, soil, and others). SNAL serves the university community as well as agricultural information users across the country and beyond. The library is located at SUA's main campus in Morogoro municipality and has a branch at Solomon Mahlangu Campus which is also located in Morogoro.

ICT adoption at SNAL can be traced back to 1989 when the library acquired its first computer through the Swedish Agency for Research Cooperation (SAREC) (Priestly, 1993). The computer was mainly used to facilitate periodicals' data storage and retrieval. Serious computerization of library services started in 1998 by automating the book card catalogue using Micro CDS/ISIS

software. SNAL started providing Internet and CD-ROM services to SUA staff and students in 1999. In the same year the library acquired TEEAL (The Essential Electronic Agricultural Library) - an annually updated full-text and bibliographic digital library of scientific journals in the agricultural sciences. In 2001, SNAL started subscribing to a range of electronic journals in agriculture and related sciences through the International Network for the Availability of Scientific Publications (INASP). A library website (http://snalwww.ac.tz) was established as a 'one stop information centre' for library users. In 2005, the library catalogue and the loan system were converted to a web-based platform known as WEBLIS.

CHALLENGES OF MANAGING ICTs AT SNAL

While new technologies have added value to library services by presenting new modes of collecting, storing, retrieving and providing information, they have also brought new challenges and aggravated some of the challenges that faced libraries before. The challenges relate to acquisition of ICTs, preservation of electronic information resources, maintenance and security issues, training of users, and general lack of awareness and commitment among library stakeholders.

Funds for acquisition of ICT facilities and services

Libraries require sufficient funds to acquire modern ICT facilities such as computers, servers, scanners, photocopiers, software as well as paying for online and offline services such as e-journals and digital libraries. Most of these ICT facilities and services are very expensive and can be purchased from developed countries. On the contrary, experience reveal that most university libraries in Africa and other developing countries get very little funds from their parent institutions and the government for support of their activities (Nwalo, 2000; Mutula,2004). This situation is attributed to among other factors, the poor perception of library services by top leaders and other stakeholders in the parent institutions. In addition, the little funds received fall far below the standard costs of ICT facilities and services.

Similarly, SNAL has for many years, increasingly received very little funds from government allocation through the university. For example, observations show that whereas SUA received an average of 46.14% of its approved budget from the government between 1998 and 2001, the library received as low as 7.15% of its approved budget in the same period. In the financial year 2005/06, the university received about 62% of its approved budget from the government but SNAL received only 3% of its approved budget in the same year (SNAL, 2002; SUA, 2005). Normally there are no specific funds allocated for acquisition of ICT facilities. This implies that funds for acquisition of new ICT facilities and services can only be found by reallocating or redirecting the meagre funds obtained. This is usually difficult as the demand for other traditional library services is also growing.

A number of measures have been taken by SNAL to overcome the problem of inadequate funds. First, the library has been constantly pressing for more funds from the university and the government. In 2002, the SNAL Board formed a task force to prepare a technical paper that explains why SNAL requests for more funds (SNAL, 2002). The paper was presented to the university management although it didn't change the situation. Secondly, SNAL opted for open source software in library automation activities. Currently, the library is using WEBLIS which is open source software. Third, the library has been seeking alternative sources of funds mainly from donor agencies. Through NORAD, VLIR, and SIDA-SAREC support, the library has been able to automate key library activities, acquire computers, and subscribe to e-journals. By June

2007, SNAL had about 100 computers, and subscribes to a number of online and offline databases.

Storage and preservation of electronic information resources

Electronic information resources include abstracting and indexing services, full text materials such as reference books, electronic journals, article delivery services and free resources on the Internet, CD-ROMs, digital libraries and other electronic databases. These electronic information resources can be accessed through electronic networks from intermediary information providers or mounted locally within the institution or within the library (Breaks, 1999). While a lot of electronic information is available freely, electronic information resources for academic purposes require careful selection, acquisition, organization and should be made available, and preserved in ways that are different from traditional print materials. Keeping and handling CD-ROMs for example, is challenging, as they are used by students who actually not conversant with handling and using such facilities. In addition, conditions such as dust, heat and dampness have negative effects to CD-ROMs and other ICT facilities. By June 2007, SNAL had about 580 CD-ROM databases, of which 52 were not working because of technical problems. Preservation of electronic resources like electronic journals is even more challenging. So far, no one method has been adopted for preserving such information resources. Most online resources are volatile in the sense that they can be made available today and disappear the next day.

Maintenance and security issues

Frequent maintenance of ICT facilities is crucial to sustainability of any ICT services. It is imperative that there are qualified technical personnel for managing and maintaining ICT facilities and networks that the library system runs. However, many libraries have inadequate qualified ICT personnel. Most traditional librarians have low ICT skills and sometimes have technology phobia. Some libraries have managed to recruit and train their own ICT experts but failed to retain them. Consequently, many libraries depend on ICT experts from outside. For example, SNAL relied on expertise from Belgium during the seven years of library automation. This suggests that deliberate strategies are required in terms of staffing and training for sustainable management and maintenance of ICT services in libraries.

SNAL has been training its existing staff in ICT related programmes in order to overcome the challenge of inadequate ICT personnel. By June 2007, two library staff had already acquired diploma in information technology, one had a first degree and two others had been trained to postgraduate level. In addition, there have been in-house training to enable every library staff acquire computing and information literacy skills.

In terms of security issues, SNAL has been experiencing threats such crushing of databases due to low security settings, and computers being attacked by viruses and worms. According to (OECD, 2003), library management has the responsibility to build up a culture of confidentiality, protection and security. Privacy protection is not just a technical issue; it also involves issues such as educating and training library staff and users for privacy and limiting access to personally identifiable information (Fisser, 2001). Computers require up to date antivirus software, most of which are very expensive.

Information literacy among library users

Library users need both computer and information literacy (IL) skills to effectively use the rapidly growing and changing information resources. However, many library users think that knowing keyboard and mouse operations enables them to effectively utilize electronic information resources. Unfortunately this is not the case. A person who knows all computer hardware and software, and every keystroke may not be information literate at all. Although there are some overlaps between IL skills and computer literacy skills, these are two different concepts. Computer literacy skills relate to computer hardware and software (keyboard, mouse, printer, file management, word processing, spreadsheets, databases, Internet etc.), while IL focus on efficient and effective use of information sources to obtain required information. Lack of IL skills has been pointed out as one of the major causes of underutilization of electronic information resources in many African libraries (Adam and Wood, 1999; Dulle and lwehabura, 2004).

Experiences from SNAL show that most library users (both SUA staff and students and users from outside the university) lack adequate IL skills. Most users fail to use even the simplest library catalogue (OPAC) to locate books and other library material. As a result, many information resources like CD-ROMs, e-journals, and online databases available in the library remain underutilized. On the other hand, many library users complain that there are no relevant information in the library to meet their needs. Furthermore, observations made at SUA reveal that most academic works (thesis, dissertations, Special projects, research reports, papers and teaching material) at SUA have very old references. This implies that information users at SUA lack the necessary skills and awareness to obtain and use up to date information most of which is made available electronically.

SNAL has been organizing and conducting information literacy training sessions for different user groups. However, the sessions have not been very successful in terms of attendance and impact due to several reasons – the seminars are not accorded any official status by the university, thus do not receive the support of students; and that the duration for the seminars has been too short and inconsistent as it falls outside university timetable (Dulle and Lwehabura, 2004). Recently, the library has proposed a university-wide formal and systematic IL programme. The programme aims at creating awareness on a wide range of information resources; equipping users with skills for determining their information needs; providing users with ability to locate and retrieve relevant information; enabling users to evaluate information and its sources; and facilitating users' understanding of ethical and legal issues surrounding information use.

Awareness and commitment among key stakeholders

Continuous commitment and involvement of key stakeholders is important when integrating ICTs in organisational functions. Low awareness on the importance of ICTs among the university top management has been great obstacle to ICT development at SNAL. It has been difficult for university top officials to support initiative that aim at increasing availability, access and utilization of electronic information resources in the university. According to Tusubira (2004), real change and progress in ICT integration occur where there have been top-level commitment, and lack of progress and moving in circles where there is none.

Low bandwidth

Bandwidth refers to the amount of information that can be carried in a given time period (usually a second) over a wired or wireless communication link, expressed as bits per second (bps) (PLATO, 2006). The higher the bandwidth, the more data can be transferred in bits per second. Whenever there are few data transferred in bits per second (low bandwidth), users get frustrated as it takes long to retrieve information from the internet. Low bandwidth is a problem common to

many universities in Africa and SUA is no exception to this. For more than five years the bandwidth at SUA has remained 256/128 kps, making Internet connectivity in the university extremely slow. Effects of low bandwidth are felt more in the library than other sections of the university because of the need to download information resources.

Unreliable power supply

ICT facilities rely on electricity for their functioning. Frequent power cut is a persistent problem in Tanzania. This affects among other things, management and utilization of ICT facilities and service. In 2001 the library requested the university to purchase a back up generator in order to combat the problem of unreliable power supply. The backup generator has however, not solved the problem as no funds are being allocated to for fueling and running the generator.

CONCLUSION

Many libraries in Africa are well down the road in terms of ICT development but there are great potential still to be explored. Whilst ICTs have expanded the possibilities for access to information, they also present new challenges for users and librarians alike. Therefore, librarians and other stakeholders in the universities are urged to rework their profession to extend the traditional territories from the traditional library to the global information services, from the territorial library to the virtual library, or a combination thereof. Choosing appropriate ICT hardware and software; continuous pressing for more funds from parent institutions; seeking for alternative sources of funds; staff and user training; and raising awareness are the among key strategies that can lead to effective utilization of ICT facilities and services in libraries.

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