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Library Automation at The University for Development Studies: Challenges and Prospects

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The automation of a library that basically aims at improving the management of the library's resources and increasing access to these same resources by users has caught on so well in the western world that virtually all academic libraries in that part of the world have automated most of their services. In Africa, however, several challenges are making it difficult for academic libraries to do the same, thus depriving them of the numerous touted benefits a library stands to gain from automating its services. The University for Development Studies (UDS) Library in Northern Ghana embarked on an automation project on one of its campuses that has thus far resulted in the full automation of the cataloguing and circulation operations. This article recounts the experiences of the Library in its bid to automate some of its services. The procedures that were followed, as well as the highlights of the automation, are recounted here. Lessons learned and challenges encountered are presented as an example for other academic libraries in Ghana, Africa, and other developing countries that have plans to automate.

KEYWORDS library automation, ICT applications in libraries, digitized libraries, library management system

INTRODUCTION

It is undeniable that Information and Communication Technologies (ICT) applications have a substantial impact on today's global world. A significant

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number of libraries worldwide, but especially in the western world, have automated virtually all their services. However, unlike many libraries around the world who have taken advantage of the full benefits of automation, in Africa, generally, and in Ghana, particularly, few libraries have taken advantage of the enormous benefits of automation and subsequent networking of their library catalogues.

Automation of a library basically aims at improving the management of that library's resources, and Arkorful (2–4) opines that although library automation is necessary and essential, it is however a very expensive and cost-intensive enterprise

PROFILE OF UNIVERSITY FOR DEVELOPMENT STUDIES (UDS)

The University for Development Studies (UDS), the fourth of six state-owned universities in Ghana was established in May 1992 by the Provisional National Defense Council (P.N.D.C.) Law 279. It began academic work in September 1993 with the admission of thirty-nine students into the Faculty of Agriculture (FOA), Nyankpala. Presently the University has four campuses in three of the ten administrative regions of Ghana, namely: Northern, Upper East, and Upper West regions, respectively. It runs eight faculties (Integrated Development Studies, [FIDS], Planning and Land Management [FPLM], and Law and Business Studies [FELBS] all located at Wa in the Upper West Region; Agriculture Technology [FOA], Renewable Natural Resources [FRNR], and Agribusiness and Communication Sciences are located at Nyankpala, near Tamale in the Northern Region; and Applied Sciences [FAS] and Mathematical Sciences [FMS] at Navrongo in the Upper East Region), one School (School of Medicine and Health Sciences [SMHS]), and the Faculty of Education are located in Tamale with two centers of excellence (Graduate School and Center for Continuing Education and Inter Disciplinary Research [CCEIR], also in Tamale). The University runs undergraduate and postgraduate programs in the Social Sciences, Mathematical Sciences, Agricultural Technology, Medicine, and Allied Health Sciences, as well as in the Applied Sciences (http://www.uds.edu.gh).

UDS's unique role is well captured in its mission statement: to provide programs that will effectively and efficiently combine academic work with community-participation and extension. The University's principal objective is to address and find solutions to the environmental problems and socio-economic deprivations that have characterized Northern Ghana, in particular, but which are also found in some rural areas throughout the remainder of the country (University for Development Studies).

The Library, as the information hub of the University, plays an enhanced role in the fulfillment of the University's mission by providing the necessary information to lecturers and students to facilitate teaching,

learning, research, and knowledge dissemination needs of its clientele in the easiest, fastest, and most comprehensive way possible. As a multi-campus tertiary institution, UDS has a Library Complex at Nyankpala and satellite libraries in all campuses. These campus libraries stock books and non-book materials relevant to their particular subject areas and depend mostly on the Main Library for the selection, acquisition, and distribution of resources.

From its inception in 1993 until the current time period, the Library has seen a gradual transformation. The Library's collection has grown from the mostly static, print-based research collections to include a substantial quantity of electronic resources on CD-ROM. The Library also made significant efforts to secure online access to scholarly journals and other electronic resources through the Program for the Enhancement of Research Information (PERI) that was funded by DANIDA and INASP and later through the Consortium of Academic and Research Libraries in Ghana (CARLIGH). Over 10,000 electronic journals online were made available for use at all campuses through such online databases as Emerald, EbscoHost, Wiley, IEEE, HINARI, AGORA, OARE, and ScienceDirect.

The Library has a central place in every academic institution, and Vyas (468–69) indicates that this has resulted over the years as the necessity for academic libraries to evolve and move with the times to deliver on the requirements of academic libraries in meeting the academic needs of their clientele in the tertiary institutions. This requires significant rethinking and restructuring in light of recent advances in information and communications technology (AAU 2002).

Consequently, the UDS Library is attempting to embrace emerging technologies and to provide proactive leadership in a new digital society. Fortunately, this changing picture of the Library is beginning with the Navrongo Campus Library's automation project, which is expected to enhance ICT application for both staff and patrons and possibly serve as a springboard for projecting both the prospects and challenges of computerization of a multi-campus library system.

LIBRARY AUTOMATION IN SUB-SAHARA AFRICA

Hopkinson (304–12) points out that 25 years ago while most libraries in industrialized countries had not only computerized their catalogues but also their circulation processes, in developing countries, there was minimal library automation outside that of organized UN agencies such as FAO and AGRIS. Meaningful library automation in Africa commenced in the 1980s and was driven by a number of factors. This was enhanced during the late 1980s with the introduction of the CDS/ISIS library management software, which was given freely to libraries by UNESCO (Mutula, 292–307).

Enormous progress was then made from the early part of 2000, when support was given to some university libraries to set up the necessary networked infrastructure and provide the requisite hardware and software. Further progress was made when negotiation with publishers resulted in journals and databases being made available free or at heavily discounted prices through programs such as AGORA, eIFL, HINARI, and PERI. All these went with a lot of training programs for many African librarians and IT staff (Rosenberg, 5–13).

The slow pace of sub-Saharan African universities in library automation was attributed to, among other factors, prolonged adverse economic conditions, budgetary constraints, high cost of ICT facilities, inadequate ICT skills, inefficient electricity/telecommunication infrastructure, and lack of ICT strategies/policies (Chisenga).

Since then, library automation especially in academic and research libraries has gained momentum in many African countries. This is mainly due to the numerous benefits the libraries stand to gain; an improvement in efficiency, performance and better access to information resources; as well as the need to deliver quality service (Nkhoma-Mawumza, 120).

OBJECTIVES OF THE STUDY

The article seeks to outline the experiences of a University Library in its bid to automate its services with reference to the following:

1. Choice of Campus (this is with regards to multi-campus universities, that is, universities with more than two campuses);
2. Choice of software;
3. Funding;
4. Training of staff;
5. Automation of the Library;
6. Challenges
7. The way forward;
8. Conclusions; and
9. Recommendations

These experiences of the UDS Library are highlighted for the benefit of libraries which intend to automate.

CHOICE OF CAMPUS LIBRARY

The proposal for the automation project was sent to the Teaching and Learning Innovation Fund (TALIF), an initiative of the Government of Ghana

and the World Bank for funding of infrastructural developments in educational institutions. Approval was finally given in the amount of US$ 199,868 to be awarded as a grant for the execution of the project in October, 2006.

The actual amount for the purchase of equipment, networking, and making the system fully functional was US$ 93,834.47. Because of the insufficiency of the amount, all four campus libraries could not be automated. Subsequently, a decision was taken to start with the Navrongo Campus Library. This decision was based on the fact that of all the campus libraries, the Navrongo Campus Library, as at that time, was the biggest and most conducive for that kind of project. It had a seating capacity of about 300 and a student population of about 5,000. All the other campus libraries were in makeshift accommodations and were expected to move into purpose-built libraries in a few years' time.

CHOICE OF SOFTWARE

It is absolutely essential that any library attempting to automate make a decision regarding the kind of software to use. The UDS Library opted not only for software that was comprehensive, but also, one that they were familiar with; is user friendly and affordable; and one that provides some level of training and support. Fortunately, two of the staff had attended a demonstration as well as a familiarization workshop on the Alexandria Library Management software, which was organized by Nala Consultancy Services at Busua Beach Resort in Ghana a few months prior to the writing of the proposal for the automation project.

In addition, three (3) of the six (6) state-owned university libraries that had embarked on automation projects earlier had all chosen the Alexandria software but were at different stages of implementation. Their experiences with the software indicated that the product was worth acquiring because of its remarkable performance. Thus, a familiarization tour of these three (3) sister universities were undertaken by three (3) of the core library staff involved in the implementation of the automation project and the Director of ICT of UDS. These, coupled with assurances of training and support from the vendor eventually influenced the UDS Library's choice of Alexandria as the software to use for its automation project.

FUNDING

Ghanaian university libraries obtain financial support from two main sources: internally generated funds and national funding of their parent universities by the government.

Internally generated funds are funds that are realized within the University through the payment of fees by students, consultancies, and charges on certain services provided by the universities. Students in the Ghanaian public universities pay Academic Facility User Fees (AFUF) and the libraries receive 10% of all such payments (Arkorful 2007).

The libraries are also expected to be allocated 10% of total recurrent expenditure from government subvention to the public universities; however, this is not strictly adhered to in most public universities as a result of the many competing interests (Thompson 2).

Due to the general inadequacy of funding in Africa, educational trust funds have been set up in different countries to augment the government's efforts at financing education. Income from these Trust Funds accrues from taxes levied for certain projects in the educational sectors, such as the Ghana Education Trust Fund (GETFund) in Ghana and the Educational Trust Fund (ETF) in Nigeria (Arkorful 2007).

To enable tertiary institutions in Ghana to fulfill their mandates and contribute more meaningfully to national development, the Teaching and Learning Innovation Fund (TALIF), an initiative of the International Development Association Group of the World Bank with 10% counterpart funding from the Government of Ghana, was launched in March 2004 and was planned to last for five years, 2004–2009 (National Council for Tertiary Education [NCTE] 15). TALIF was set up to support innovations that seek to improve education in tertiary institutions in Ghana. Eligible institutions therefore included all ten state-owned polytechnics, all public universities, private tertiary institutions with three years' continuous accreditation, as well as national supervisory bodies such as the National Council for Tertiary Education, National Accreditation Board, and the National Board for Professional and Technician Examinations (Dansieh and Ocloo, 7).

TALIF made use of well-publicized calls for proposals to all eligible institutions to induce individuals to submit proposals that articulated specific innovations for projects that were intended to initiate clearly defined measurable milestones (Dansieh and Ocloo, 7).

It was during the third of such calls for proposals that the UDS Library set up a team to put in a proposal for the Navrongo Campus Library Automation Project in 2006. The proposal was accepted and performance contracts were signed between the UDS Library and the NCTE on October 2, 2006.

Technical hitches from the National Procurement Authority delayed the commencement of the project until the latter part of 2010.

STAFF TRAINING

Many of the technical staff in almost all academic libraries in Ghana were trained in traditional librarianship. Ogunsola states that traditional

librarianship involves collections of books, manuscripts, journals, and other sources of recorded information.

The Ghanaian academic library staff, therefore, find it difficult to cope with the requirements of the technological age. Training and upgrading of skills of the library staff is a necessary prerequisite for the successful implementation of any automation project. This is especially useful in the areas of e-resources management, e-services development, teaching skills, and even how to correctly input data into the system, as well as how to trouble-shoot when difficulties arise (Rosenberg 2005).

It was as a result of the aforementioned circumstances that a series of training sessions, all of which involved practical hands-on sessions, was used to train staff. The first of these training sessions was a two month visit to the Mortenson Center in the USA by the Lead person of the project. This was followed by a 5-day training of all staff with a demonstration version of Alexandria software by the vendor. The purpose of this was to get staff acquainted with the software and the different modules with their respective functionalities. This was then followed up with another 7-day practical training of staff on the effective use of the different modules when the software was installed.

A staff identified as having adequate requisite know-how was then sponsored to KNUST, Kumasi for two weeks to understudy the basics of the technical management of the system so he would handle minor problems as and when they occurred. KNUST Library was selected because it had staff with the required expertise for the technical management of the system, and they were also using the same Alexandria software.

A final practical training session was then organized a month after the system had started running. This was basically to address problems staff were encountering with regard to usage of the system.

AUTOMATION OF THE LIBRARY

TALIF approved to fund the proposed automation project in October, 2006. The entire project was estimated to cost US$ 199,868 and it was to be completed within a period of two years. The project was eventually handed over in 2011 at a cost of US$ 162,000. The reduction in cost was because two staff who were to visit libraries that were using automated systems in USA or South Africa could not undertake the said trip. In addition, there were a few variations to the original budget and these further decreased costs.

The Library Management Software used for the automation was Alexandria Version 6. This was used for processing items as well as patron registration. The software was configured and login accounts were provided for staff involved in the processing. To incorporate patrons' into the database, they were registered. This involved providing a form designed to capture their

personal information as well as educational records to each patron. The forms were collected and the data entered into the server. Again, photographs of patrons were taken during this registration exercise. The registration exercise was completed by capturing patrons' passport-sized photographs and providing them a unique barcode on their respective institutional identity cards. This unique barcode was then captured in the database.

CHALLENGES

Automating an academic library does not come easily. The problems encountered ranged from poor electricity supply, poor culture of maintaining equipment, insufficient ICT skills of staff, and poor security arrangements to financing.

Frequent Power Outages/Surges

The entire Navrongo Campus often has a problem of either voltage surges or complete power outages. These do not only damage electronic devices, but affect, to a great extent, the performance of sensitive communication devices such as modems, database servers, and even the client computers. Again, they seriously slowed down the services provided to patrons in the Library. When power is off, the only option currently available to the Library is to revert to the laborious, manual, and outmoded service delivery where library cards and manual borrowing and submission of borrowed books or materials are employed. This affects the statistics captured by the library software system, leading to misleading reports. Maintaining manual records and blending it with figures extracted from the software system has not been easy for the Circulation staff.

It is ideal when efficient, durable, and high voltage-supply Uninterruptible Power Supply (UPS) gadgets are provided, particularly to the database server as well as the client computers. The security gate should also tap its power from the UPS. However, installation of a standby generator would ease this problem significantly. Also, efficient step-up voltage stabilizers should be installed to provide adequate power and prevent power surges.

Maintenance Culture

It is often stated that government employees in Ghana do not have or conform to maintenance schedules of equipment and even, in some cases, do not maintain equipment in so far as the equipment are working. Frequent cleaning, servicing, and management of the database server as well as the clients' computers should be the collective responsibility of every staff in the library. Computers, and for that matter servers, are very sensitive to

dust particles, as these seriously retard their bus communication and processing. It is imperative that at least every week, the entire server and the client computers are properly cleaned and serviced to ensure their healthy long life. Library staff need to be trained and provided with the necessary tools dusters, brushes, blowers, and so forth, to enable them perform routine cleaning and maintenance. Covering equipment after usage, particularly over the weekends and holidays, could minimize dust accumulation. Also, the library should be provided with air conditioners to minimize the inflow of dust into the Library.

Technical Skills

The Navrongo Campus Library conspicuously lacks staff that can really lessen the gap of quality between ICT and modern library services. Some training has been given to reduce this gap, but without a doubt, this has been grossly inadequate. Modern libraries are undergoing digitalization; therefore, the staff that work in such libraries should be ready to move with modern trends in ICT. Few staff are competent with regard to IT. This poses a real challenge to the human resource strength. It is absolutely necessary that at least all the staff in the Library should possess some basic knowledge in IT and be prepared to learn modern or new IT skills.

Security

In every database and LAN network installation, security becomes the first and most important area that needs detailed attention. Physically installed security gates monitor library materials entering and leaving the library. In addition to this security installation, there are some personnel tasked to do manual body searches. Again, the database server is locked in a secured room away from unauthorized individuals, to avoid database injection. Also, every patron including lecturers was required to enter a desired password during registration and had his/her photograph taken to prevent patron impersonation. All these are security measures put in place to make the automation secure.

However, there are still some “ports” visible that can weaken the aforementioned security. First, the security gate installed is limited as it cannot sense unprocessed materials when they are at a certain height. It is therefore recommended that the staff be vigilant on materials leaving the gates.

Financing

The printing of barcodes for both patrons and the books or materials is expensive. Even the installation of client computers and server(s) coupled with secured LAN technology all require a reasonable financial commitment.

Troubleshooting network problems is also another real threat to the smooth running of the project. When new books are catalogued, they must be provided with a barcode as well as security label and pocket. Though the staff of the Library can still work without the scanner (to capture the barcode numbers assigned to both patrons and library books), their work will be much easier when using scanners, not only to accurately capture the assigned barcodes to both library books and registered patrons, but also make their services fast.

THE WAY FORWARD

The automation of the library is at different levels. Each higher level is an improvement of the previous one. The Navrongo Campus Library is now enjoying the Primary Level of Automation (PLA), where a patron can only search and know the status of a library book before he or she comes to the library to borrow. He can also make reservation through this service. Additionally, cataloguing library materials using OPACs have now been made possible. A great number of materials can now be processed faster and as a result patrons have quicker and easier access to library materials. The Library is expected to span into the Secondary and if possible, Tertiary Automation Levels within the shortest possible time. At these stages, it is expected that all materials, including books, online journals, and even e-books can be downloaded and read online.

Furthermore, the campus library also aims at sharing its bibliographic content with other campus libraries of UDS and even other tertiary institutions. This would pave way for exchange of students for research and knowledge sharing.

A more stunning benefit of the automation of the Navrongo Campus Library is its ability to enable patrons to surf the Internet, particularly, the scholarly websites, such as ScienceDirect, HINARI, AGORA, AJOL, and EBSCO (Voorbij and Ongering 2006). This enhances scholarly communication as well as research implementation.

CONCLUSION

There is no doubt that the automation of the library has brought increased enhancement to the services delivered by the Navrongo Campus Library. First, manually operated housekeeping chores such as the borrowing and returning of books and materials have become fast, easy, and reliable. Also, generation of reports regarding transactions is also done easily and quickly by the click of a button. This helps in efficiently administering the Library, as well as cataloguing and circulation of books and other library materials. It also helps to trace, with ease, any overdue material or book borrowed.

Patrons can now more easily access materials in the library.

An important indirect impact that the automation has left is that it has greatly helped in upgrading the IT skills not only of library staff, but of patrons as well.

Finally, when other campus libraries are also automated, they can be "hooked" to the Navrongo Campus Library to share bibliographic content. This is especially important as UDS is a multi-campus institution. Even other non-governmental tertiary institutions can be connected together through the WAN technology and share collections. A more striking prospect is when the UDS Library System becomes connected to research institutions such as the Council for Scientific and Industrial Research, the Ministry of Food and Agriculture, and even the Ghana Library Authority to exchange and share technical, scientific, and scholarly ideas.

RECOMMENDATIONS

Arising out of the experiences of the automations, the following recommendations are made:

- To realize its real purpose of enhancing teaching, learning, and researching interactions when other campus libraries are also automated, UDS needs to automate the other campus libraries.
- The Navrongo Campus Library must be adequately supplied with needed logistics such as barcode printer, papers, barcode scanners, and adequate number of computers to ensure that it functions effectively.
- Management should ensure that the expanded IT infrastructure that the automation has also provided is fully utilized to enhance service delivery.

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