THE UNIVERSITY OF NAIROBI LIBRARY'S AUTOMATION PROJECT: EMPOWERING THE LEARNING, TEACHING AND RESEARCH ACTIVITIES OF THE UNIVERSITY

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1. INTRODUCTION

The scope of this conference covers two major perspectives. First is the situational positioning, which is pointedly identified as the digital divide, and the second is the process that addresses the first. The term digital divide as a concept suggests the existence of differences that set countries and regions apart in the application and use of Information Computer Technologies (ICTs). As a consequence, there will also be differences in the accruing benefits. These differences will be in the areas of infrastructural settings, levels of available human resource and capacity, skills, financial resources and support allocated to the development and application of ICTs. The second perspective refers to the efforts and measures put in place by different institutions to address the issues raised by the first. The following presentation looks specifically at the latter perspective as it applies to the University of Nairobi (UoNBI) Library, against the background of the digital divide.

A significant feature of the UoNBI Library's automation project is the context within which it has taken place. This aspect becomes important in that it formed the environmental embodiment of the principles and concepts that triggered and guided the automation process.
For the UoNBI Library, the automation process was triggered and has been largely influenced by the following main factors:

1.1 The Expansion and growth of the University

The phenomenal growth of higher education in general and university education in particular in the post independence era is well documented. As the only university at the time, the UoNBI experienced first hand throes of expanded student intakes, and the programmes themselves, response to pressure and unprecedented increased demand for higher education. In the 1984/85 academic year the University had a total enrollment of about 7,000 students, ten faculties, five institutes and one school. Presently this may not signify tremendous growth, but the University was just a little over ten years old at the time. The continued growth led to the opening of new public universities and the establishment of a series of private universities.

This new development, however did not stop the growth trend in the UoNBI, a fact evidenced by the institution's current size of 35,000 students, 14 faculties, 8 institutes and 2 schools.

1.2 Shrinking budgets and escalating costs of information materials

At around the period that public universities in developing countries were sagging under the weight of expansion and growth of both student numbers and academic programmes, the countries' economies were experiencing sluggish growth that made it necessary to introduce a series of structural adjustments. The effects of the SAPs were felt in all the sectors including higher education. As a result, governments' financial support to the institutions of higher learning, universities included, plummeted to the lowest levels. This, coupled with the escalating costs of books and journals, led to the unfortunate outcome, where the acquisition of information materials came to a near standstill. The UoNBI Library, which had subscriptions to over 3,000 current journal titles, could now only afford a handful of core titles. Book procurement was no better and many of the courses were taught with support from books with out dated imprints.

1.3 Global ICT developments and other related initiatives

Meanwhile, computers and related technologies were widely used in accessing and processing information especially in the developed countries. Members of staff who studied at universities in Britain and in the United States observed the first hand benefits that automated systems introduced in the management of information and its access, and expected some form of computer application within their own Library.

Librarians had all along studied various aspects of library computer applications as part of their training, while some had actually taken specialized computer library courses. In this regard, precedence was set and there were therefore expectations. These ICT related advances complimented the new thinking and the theories that encouraged learning methods that emphasized learner-centred approaches rather than teacher-centred methods. Consequently, educational systems the world over shifted their emphasis to the use of a wide variety of learning resources as a way of making the learning process more meaningful and imparting skills to the learners. By so doing, libraries and the use of computers came to the centre stage of the learning process.

1.4 University of Nairobi's mission and vision

Finally, the University's strategic objective of ensuring excellent performance was a key factor in influencing the Library's automation project. The University's strategic plan is specifically clear on the issue of the desired targets and expected outcomes in the institution's core activities of learning, teaching and research. This particular objective cascades directly to the Library's primary objective of empowering the University's core functions through the provision of information. Although the University Library has a strong foundation in form of traditional methods of acquiring, processing and disseminating information, it was now imperative that the service went through some form of metamorphosis to adequately meet the new challenges of information delivery.

2. THE PLANNING PROCESS

Given the impetus set by the above conditions, the UoNBI Library took cognition of the fact that the automation of its operations presented crucial avenues that would assist in addressing some of the challenges that were facing the service. In internalizing this challenge, it was important that the Library had a clear concept of what it was required to do. The requirement was not to simply move the Library from a hard copy environment to a soft copy one, as that was difficult to achieve, rather, the challenge was to set up a new electronic environment, and ultimately integrate the two, namely the electronic based resources on the one hand, and the print based resources on other, for maximum benefit to users.

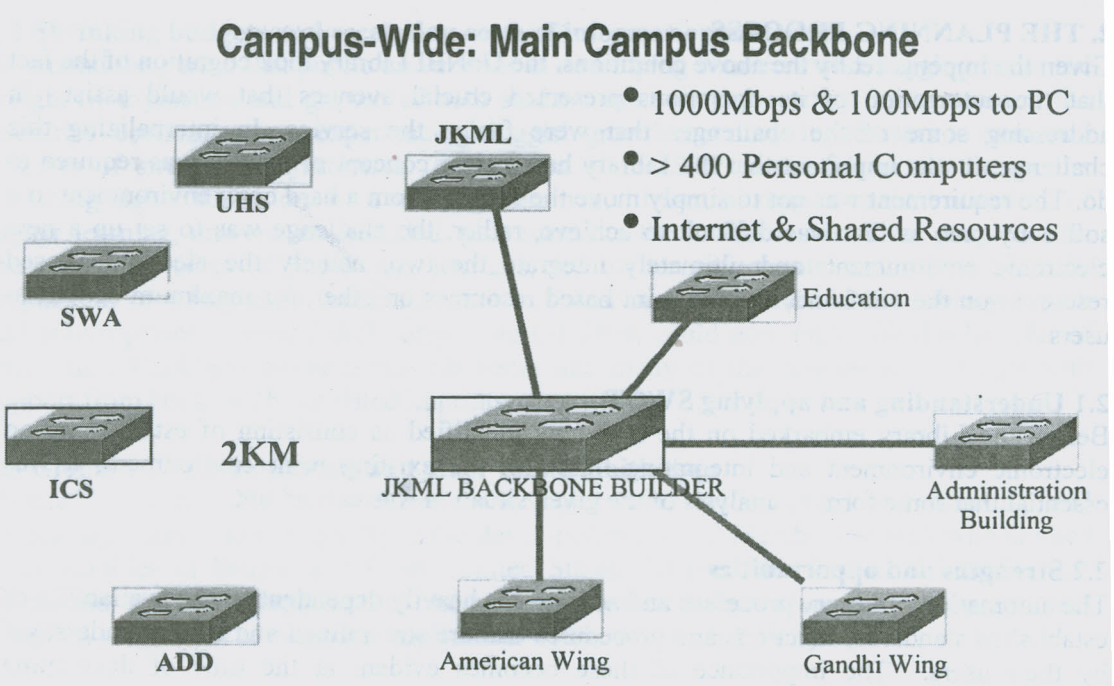
2.1 Understanding and applying SWOT

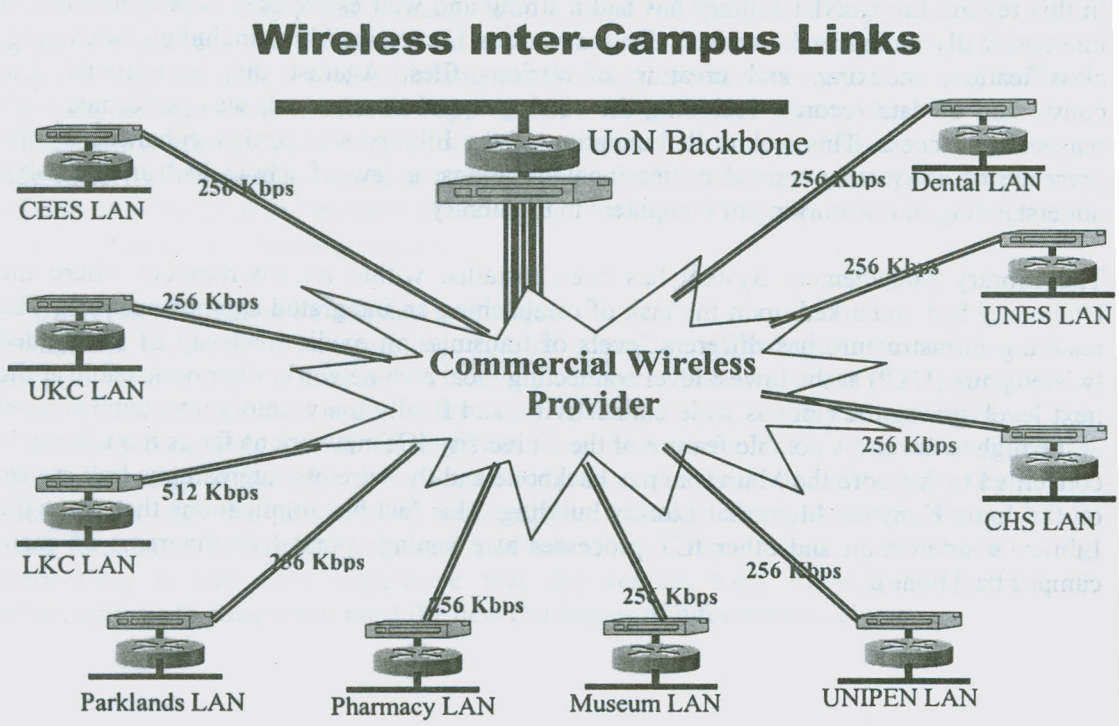
Before the Library embarked on the task now identified as consisting of establishing an electronic environment and integrating this with the existing print environment, it was essential that some form of analysis of the given situation was carried out.

2.2 Strengths and opportunities

The automation of library processes and activities is heavily dependent on the availability of established standards, functions and procedures that are streamlined and clearly understood by their users. The importance of these becomes evident at the time of developing specifications and formulating the perimeters to be used with the automated system.
In this regard, the UoNBI Library has had a strong and well established base consisting of internationally recognized standards for the various library activities including cataloging, classification, indexing, and creating of various files. Against this background, the conversion of data records, including the catalogue and user record, was performed with reasonable success. This technical foundation of the Library was further enhanced by the presence of adequately trained professional librarians, a few of whom had an extensive understanding of the working of computers in the library.

The Library Management System has been installed within an environment where the University had embarked upon the task of establishing an integrated campus network. The resulting infrastructure has different levels of transmission media made up of unshielded twisted pairs (UTP) at the lowest level connecting local area network, fiber optic cable at the next level, giving the campus wide connectivity, and finally the wireless intercampus level at the highest level. A notable feature of the University ICT network as far as the Library is concerned is that both the Main Campus backbone and the wireless intercampus link are set on the Jomo Kenyatta Memorial Library building. This fact has implications that place the Library's automation and other ICT processes at a vantage point (see diagrams on main campus backbone).


Campus-Wide: Main Campus Backbone
• 1000Mbps & 100Mbps to PC
• > 400 Personal Computers
• Internet & Shared Resources
JKML
UHS
SWA
Education
ICS
2KM
JKML BACKBONE BUILDER
Administration Building
ADD
American Wing
Gandhi Wing


Wireless Inter-Campus Links
UoN Backbone
CEES LAN
256 Kbps
256 Kbps
Dental LAN
256 Kbps
UNES LAN
256 Kbps
UKC LAN
Commercial Wireless Provider
256 Kbps
CHS LAN
512 Kbps
LKC LAN
256 Kbps
256 Kbps
256 Kbps
256 Kbps
Parklands LAN
Pharmacy LAN
Museum LAN
UNIPEN LAN

A further aspect that contributed to giving the Library a firm foundation in the automation project, was the status quo in which the Library's leadership role and confidence in dealing with huge quantities of information, and giving quality control through the evaluation of the different sources of information was firmly well established and respected.

Finally, the Library's network of partnerships at both the local and international levels provided opportunities for collaboration in the aspects of capacity building, resource sharing, and more importantly, for the supply and installation of the system. As mentioned earlier, the global developments and trends in ICT put pressure on many organizations and institutions and required them to implement and apply the new technologies. A local example is (KENET) Kenya Education Network, which is charged with the responsibility of providing Internet connectivity and links to all educational institutions including schools, colleges and universities. Part of this responsibility relates to the creation of local content. In performing this particular task, it will be necessary that KENET works with librarians as the managers and keepers of knowledge and information. It becomes imperative therefore that the libraries' records and operations must be automated. The availability and comparative ease of access to e-resources through online publishing, e-journal subscription and the Internet offerings of a variety of databases also presented an opportunity for the Library to meet the needs of the users in a fast and more efficient manner.

2.3 Weaknesses and threats

The University management has shown strong commitment to the automation project all along. However, the process itself requires extensive budgetary outlays and there have been times when the financial requirements for the project have had to be put on hold. This problem has been largely addressed and met with support from the VLIR E-LIB project that has formed the mainstay for the library's automation. Traditional policies and structures tended to create obstacles especially when some of the staff wished to cling to old methods and found it difficult to accept change.

Some of the threats that have to be considered and appropriately addressed are generally related to the ICT environment outside the University. For example, there are issues of a regulatory framework that is both conservative and restrictive, while also tending to encourage a monopolistic approach. Unfortunately Kenya, unlike a few other African countries, has no access to the International fiber cable, and so the local regulations put heavy restrictions and controls on the use of satellite which offers a viable alternative to the International fiber cable. The result here is poor connectivity (downlink 4 Mbps; uplink 1 Mbps.) with bandwidth costs that are up to a 100 times more than those of their counterparts in Europe and North America.

3. IMPLEMENTATION OF THE AUTOMATION PROJECT

In the mid 1980s, the Library internalized the computerization issue and started exploring ways and means of getting the system automated. Discussions were held with vendors and a number of systems were demonstrated. These efforts culminated in the drawing up of the

Library's specs, which was done in conjunction with the Institute of Computer Science. A proposal was presented to the World Bank with a request for support, but they instead opted to finance a collection development project. In the meantime CDS/ISIS, a UNESCO software with limited applications, was now available and staff were using it for training and implementing some cataloging applications.

3.1 VUBIS Library Management System

A final breakthrough came in 1999 in form of an agreement with the Free University of Brussels (VUB) regarding VUBIS, a library system that they had developed. The agreement provided for an attractive price (1/3 of the cover price) to be implemented within the scope of the Network/E-lib project as a component of the University wide UoNBI/VLIR programme. Aspects of the agreement made provision for the four modules of the system and related software, a phased out implementation of the various modules, and training of trainers as each module of the system is implemented.

The process of installing the system took off in April 2001, when the cataloging module and the Online Public Access Catalogue (OPAC) were installed.

3.2 Retrospective conversion of the catalogue records

The UoNBI Library consists of a system of 12 libraries spread out in the institutions various Colleges and Faculties/Institutes. The basic library functions, including acquisitions serials control and the coordination of the cataloging process are centralized and there is a union catalogue.

As the automation process proceeded, it was initially necessary to have the union catalogue online. Effectively, this meant the retrospective conversion of 300,000 manual catalogue records so as to create the database upon which to base the automation project. This was a daunting task which was done manually in 2003 through a University funded project that took about six months to complete.

3.3 Bar-coding

For the circulation module to be activated, all the loanable materials as well as the borrowers' library cards needed to be bar-coded as a means of entering them into the automated system. The bar-coding of library materials has been set out in phases based on the individual College/Faculty Libraries. To date, most of the materials in the main JKML (Jomo Kenyatta Memorial Library) are bar-coded, and the next biggest library, the Chiromo Library of the College of Biological and Physical Sciences has started processing their materials.

Preparations for the circulation module involved the conversion of the user records consisting mainly of the students' nominal roll and staff record. Further work include working out definitions for the various parameters.

The University has plans to issue both students and staff with smart cards. This is a plan with long term implications and it will therefore not be implemented in the immediate future. In the meantime, as automation progresses and the circulation module is activated, users will require to have identities that the system can recognize. A stop gap measure has been introduced where barcodes will be put on the current University I.D. cards which will then be re-embossed.

4. THE MAIN FEATURES OF THE VUBIS LIBRARY SYSTEM

As it has already been stated, the VUBIS Library Management System was developed by library staff in the Free University of Brussels. An important development with regard to the system and one worth noting is that at the initial installation, the Library was working with VUBIS Classic, which was DOS based. Since then GEAC, the commercial company that markets the system, has now developed VUBISM@RT, which is a window based version of the software. The UoNBI is the first user in Africa, but there are over two hundred libraries that use the system in Europe and America.

The VUBISM@RT has the following integrated modules: cataloging, acquisitions, serials, circulation, Web OPAC, system control and miscellaneous. Of these modules, the Library has installed the cataloging module, the circulation module and the web OPAC.

The VUBIS Smart **Web OPAC** is configured to allow the library to work with the available search methods and indexes used. A search can use any of the following to retrieve a document:

- Personal author;
- Corporate author;
- Title;
- Title word;
- All the fields of the record; or
- The ISBN/ISSN number

The VUBIS Smart **Catalogue module** supports the management of multiple databases and has the following functionalities:

- The cataloging function;
- Authority files management;
- Maintenance of holdings;
- Report support functions (statistics, sorting, printing etc.)

The **Circulation module** supports circulation functions including the following:

- Issue;
- Discharge;
- Renewals;
- Reservation;

- Fines;
- Blacklisting of offenders;
- Overdue notices;
- Registration of patrons etc.

The acquisitions module provides facilities for acquisitions management, including orde processing and financial control.

The VUBIS Smart **Serials module** has a subscription maintenance part and a serial circulation.

The **V-link** is an interface that links a user to added information on a particular item i resources defined by the Library and could for example include web resource o subscription databases. The UoNBI V-link connects to PERI journals, the Amazon onlin book service and Library of Congress.

5. OUTSTANDING ISSUES

The automation project of the UoNBI has come a long way since its inception about fiv years ago, and reasonable progress has been made. However, the process is still ongoing an many issues are still outstanding while the new development has also introduced ne challenges. In this regard, the acquisitions and serials modules are yet to be installed, an the bar-coding of materials in the system is not yet complete. The following sectio summarises aspects that either require special consideration or are in the process of bein addressed.

5.1User training

As we implement the automated system, we are well aware of the fact that its impact wil only be realized when users are fully on board. An evaluation of the process would thus no be focusing on the technical features of the implementation process, but rather on use base targets and related outcomes. For example, in a recent performance indicator matrix, th Library's targeted goals for the use of e-resources for the next one year are 90% and 70% for the students and for staff respectively. The implication here is that the related issue o information literacy is critically linked to the eventual success or otherwise of the Library' automated system.

5.2 Sustainability

The sustainability of the new automated systems and other related ICT technologies rais serious matters of concern that should be addressed at the time the projects ar conceptualized and at the time of their inception. Sustainability here is meant to include th various levels of resources covering the human, financial and infrastructural aspects amon others. It is often the case that this is an area that does not receive enough consideration. Fo example, the UoNBI E-Lib project came about through a partnership with the Fre University of Brussels. Although the Library has made efforts in the area of capacit

building and providing skills that support the running of the system, a lot of expertise needed in, for example, the programming and fine tuning of the system once installed had to be outsourced from Brussels. More immediate technical issues are referred to the University's ICT department. Our experience indicates that there is a strong need for locally available high level library –specific IT skills and applications. The issue of adequate financial resources cannot be gainsaid. It is clearly understood and it's linked with an appropriate regulatory framework well articulated.

5.3 Consortia and their role

Many of the issues that librarians come across as they face up to the challenge of automating their operations and functions have a common genesis and generally apply to a large number of libraries. In deed, the felt need for this conference is an indicator of this established fact. It would therefore make sense to tackle these issues collaboratively, sharing experiences and actual resources. In this regard the role of consortia and the success they have recorded has been clearly demonstrated in other parts of the world. This is still a very potent area and I wish to announce with quite some gratification that KLISC (Kenya libraries and Information Services Consortium) has now been registered as a society. It is hoped that the presence of consortia in the region can be felt particularly in the areas of selection, procurement, compatibility, applications and lobbying in all aspects of ICTs.

6. CONCLUSION

The University of Nairobi has been involved with the automation process for over ten years, although the actual process has been operationalised over the last four years. During this period, the Library as an institution has grown through the challenges presented by the process in its entirety from its conceptualization to the eventual implementation. Whereas there have been some false starts and pitfalls, the experience has had an impact that has given an additional element to the Library in terms of the enrichment and enhancement of the library service. In this regard the process has to an extent contributed towards reducing the digital divide. Nevertheless, the potential and full impact of this development remains unrealized. This latter position has implications that go beyond the immediate institutional level as touched on issues and agendas that require national and international considerations.

ISSUES THAT EMERGED FROM THE FIFTH SESSION

1. It is important to assess the existing resources (human, infrastructure, etc) in the library before selecting a system. This helps in establishing what is suitable and sustainable.
2. Involvement of the University Executive in planning and implementation of library Automation (Vice Chancellors, Director of the Computer Centre, other stakeholders) was noted as very essential for the success of automation projects. In addition, setting up of project teams and committees plays an important role. For assured success, there is need to carry out regular consultation throughout the automation process
3. Contract signing is very crucial but it should be done with library as well as the legal and IT staff inputs.

4. It is important to use both the direct and indirect costs assessment methods when carrying out system evaluation processes. The indirect costs associated with new systems should be addressed from the start; otherwise they tend to be overlooked and yet they slow the project progress. Examples included: the cost of resistance, learning/training costs and the cost of redefining roles. These all have an effect on the project progress although they are often overlooked.
5. It was noted that Library staff who are well grounded in library professional tasks are pillars in the Library automation process and their contribution should be valued. There is a tendency of over-emphasizing the role of the IT staff.
6. Following standards, like using MARC compliant systems, is important especially in support of resource sharing.
7. The presence of an active system user group to share experiences/ information and provide peer support was very important. Thus, keeping in touch through list-serves & e-mail with other automated institutions using the same systems was recommended to strengthen Library automation in the region.

RECOMMENDATIONS DRAWN FROM THE FIFTH SESSION

1. Utilizing system user groups to share information and provide peer support was highly recommended. It was noted that this provides an avenue to interview other users of the system about how well they are using it and develop a consensus on what needs revision.
2. Vendor support in terms of well documented systems; assistance whenever difficulties are encountered; the ability to release new versions that address bugs and other operational requirements were regarded as some of the most essential features that lead to the success of library automation processes.