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LIBRARIES: DYNAMIC ENGINES FOR THE KNOWLEDGE AND INFORMATION SOCIETY

Papers Presented At the 44th Annual Conference and Annual General Meeting of the Nigerian Library Association, 2006

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FOREWARD

I welcome you to the 44th annual National Conference and Annual General Meeting of the Nigerian Library Association taking place from 18th – 23rd June, 2006 at the Centre for Women Development, Central Area, Abuja. The theme of this year's conference is **'Libraries: Dynamic Engines for the Knowledge and Information Society'.** The key objectives of the conference include providing a platform for delegates to exchange views, share experiences, learn from best practices and develop sustained networks with colleagues in and outside the country. We expect that this conference will create the environment for self development and for turning libraries into dynamic engines to drive the knowledge and information society in Nigeria.

The papers presented at the conference are contained in this compendium. The papers address the theme and key sub-themes of the conference. Specifically, the Pre-conference seminar focuses on the 'Use of Open Access Resources on the Internet'. At this time of scarce resources in libraries in Nigeria, there is the need to take advantage of open access resources on the Internet, especially those which are free, if we are to appropriate the full benefits derivable from the global information village in the 21st century.

Subsequently, we shall examine how libraries in Nigeria can share resources in the digital environment learning from best practices all over the world. A Digital Video Conference organised by the Public Affairs Section of the United States Embassy in Nigeria for conference delegates and library professionals in the United States who have participated in resource sharing programmes will be of immense value and a good platform for Nigerian libraries to launch an action plan for digital resource sharing.

We shall also have the benefit of a key resource person from the United Nations Economic Commission for Africa (UNECA), Addis Ababa, Ethiopia as we examine the key issues arising from the World Summit on the Information Society (WSIS), how the resultant plan of action can be implemented and the role that librarians in Nigeria should play in order to take this forward.

The other area that will be critically examined during the conference is the State of Information and Communication Technologies (ICTs) in Nigerian libraries. How far have our academic, public, special and school libraries deployed ICTs to make their services more effective and efficient? What is the role of the Association in ensuring that libraries in Nigeria take their rightful place as dynamic engines for the knowledge and information society?

Lastly, we shall benefit from the experiences of the Resource Person from South Africa who will take the lead in discussing Trends in Digital Library Services in Academic Libraries: Library Portals and Electronic Theses Dissertation systems. The discussion would be of immense benefit to academic libraries in Nigeria and will provide the platform for delegates to know what is going on in academic libraries in Nigeria in this regard.

I thank you all for attending this conference and wish you fruitful deliberations!

Victoria O. Okojie, FNLA, CLN
President, Nigerian Library Association
Ag. Registrar, Librarians Registration Council of Nigeria
Secretary, West African Library Association
Member, Bill and Melinda Gates Foundation Access To Learning Award Advisory Committee
Board Member, National Library of Nigeria

19th June, 2006

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1 Trends in Digital Library Services in Academic Libraries in South Africa: Library Portals and ETD system

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ABSTRACT

Digital libraries are transforming education by providing organised access to high quality resources and tools that support innovations in teaching and learning at all levels, from undergraduate through to postgraduate.

The paper identifies global digital library trends. A literature search was carried out, and the websites of selected higher education institutions in Nigeria and South Africa were examined to establish digital library activities in the institutions.

Digital library initiatives in South Africa are discussed, especially library portals and electronic theses and dissertations.

The paper observes that the higher education sector in Nigerian is privileged to have a body such as the National Universities Commission (NUC) which is charged with the responsibility of developing Nigerian universities. It commends the NUC for the significant achievement with its National Virtual Library Project. The digital library infrastructure of the eleven universities selected for the pilot scheme is grossly under-developed and efforts should be made to address this.

South Africa needs a body similar to the NUC's Department of Information and Communication Technology (DICT) or the UK Joint Information Systems Committee (JISC) which would deal with networking and specialist information services in the higher education sector. Such a body could also have a mandate of working with higher education to provide strategic guidance, advice and opportunities to use information and communication technologies (ICTs) to support teaching, learning, research and administration. JISC is reported to have had "by far the greatest impact on the development of the digital library" in the UK.

The paper suggests that institutions should establish campus-wide and interdisciplinary digital library initiatives.

While there are multi-country, multi-team projects in the developed countries which are engaged in the creation of digital libraries, there are only a few collaborative efforts in the African continent. The opportunities exist for African countries to collaborate in the creation of content-rich, multimedia, multilingual digital collections thereby adding to the pool of international digital libraries.

1. Background

The South African higher education sector is currently being transformed and restructured through a series of mergers and incorporations aimed at consolidating 36 universities and technikons (polytechnics) into 23 institutions. The new institutional bodies that have resulted from this process are referred to as universities, universities of technology, comprehensive universities, and national institutes. The rationale for the transformation is to meet the social, cultural and economic development imperatives of the new social order and to establish a single coordinated national education higher education system (Higher Education Act, 1997**).**

The goals identified as central to achieving the overall goal of the transformation of the higher education system in the country include

- the building of high-level research capacity to address the research and knowledge needs of South Africa; and
- the building of new institutional and organisational forms, and new institutional identities, through regional collaboration between institutions (South Africa, DoE, 2001).

It is envisaged that a transformed higher education system should lead to increased graduate enrolments and outputs at masters and doctoral levels.

The higher education institutions have a key role to play in national development and the enhancement of global competitiveness of the South African economy. Their mandate includes knowledge generation and human capital development.

The Departments of Education; Science and Technology; Trade and Industry require the higher education system, and especially the research institutions, to significantly increase the output of high quality graduates, particularly doctoral graduates. This is seen as crucial to the future sustainability of the higher education system itself, as well as to the ability of the national science system to enhance the global competitiveness of the South African economy. Increasing the output of doctoral graduates by a factor of seven, a figure that is seen as a target to be aimed at, can only occur if the extent and quality of the research enterprise improves significantly (South Africa, DST, 2005). This national imperative requires the higher education institutions to optimize the use of existing capacity and resources. One of these resources is the higher education libraries.

With the Internet, libraries and librarians have become even more valuable in the knowledge management process, and they have become crucial partners in learning,

nation building and development. In the higher education sector library services are among those academic support services that promote the comprehensive development of the student. These services comprise an integral part of the educational process, helping to strengthen learning outcomes and contributing to student success.

The library is still expected to provide the following:

- Provide access to information resources:
  - through online catalogs, indexes and databases including full text e-resources;
  - through connections to local, regional and global networks; and
  - by securing materials for students, academics and staff through interlibrary loan and other resource sharing arrangements.
- ICT infrastructure: state-of-the-art hardware and software, and sufficient bandwidth and responsive network management at multiple levels, from the institutional level upwards;
- Expert professional support to facilitate thorough and accurate use of all library resources;
- Access to library materials and services to the community.

Academic libraries continually seek to identify their roles in contributing to institution outcomes and objectives in the areas of research, teaching and learning. Priorities in most academic libraries include active participation in furthering the institutional objectives of producing students who are information literate and are prepared for lifelong learning. Guidance on the role of information in the research process and training in the techniques of accessing information are essential parts of the foundation for a life of learning. No course of study, especially in higher education, is adequate unless it helps to develop students' ability to deal with the vast amount of information in their fields. In South Africa, the South African Qualifications Authority (SAQA) attaches great importance to information literacy. One of the critical cross-field outcomes for all qualifications is for the learner to be able to collect, analyse, organise and critically evaluate information, that is, to be information literate.

2. The Digital Library

Terminology

In 1998 the author noted the existing confusion with terminologies such as virtual library, library without walls, electronic library and digital library. Brogan (2003) notes that there is conflicting and overlapping definitions (or lack thereof) of concepts such as digital libraries, virtual libraries, portals, gateways, archives, repositories, e-print archives, collections, digital objects, digital assets, and learning objects.

For the purpose of this paper, digital library is the 'use of digital technologies to acquire, store, preserve and provide access to information and material originally published in digital form or digitized from existing print, audio-visual or other forms' (Land, 1998, p.227).

The participants in a brainstorming workshop agreed on the following vision:

Digital libraries should enable any citizen to access all human knowledge any time and anywhere, in a friendly, multi-modal, efficient, and effective way, by overcoming barriers of distance, language, and culture and by using multiple Internet-connected devices (Delos, 2001).

As usual, Europe and North America use different terms – electronic and digital respectively.

The transition from analog information to digital is very pervasive, resulting in various forms of digital resources – websites, electronic books and journals, digital government archives, electronic sound, image and film collections, business and educational databases. Larsen (2003) observes that "our ability to generate and collect digital information continues to grow faster than our means to organize, manage, and effectively use it. This trend is likely to continue without focused research and development".

2.1 Digital Library Research and Development

Digital or electronic libraries concepts are not really new. Many of us older generation information professionals might recall that Lancaster (1978, 1982) wrote extensively on paperless society and on electronic library developments in the late 70s and early 80s. The development of digital libraries could be said to have been started by the National Library of Medicine in Bethesda, United States, with its pioneering use of computer-controlled photo composition or computer typesetting in the production of *Index Medicus* in 1964. This was a transitional phase in the evolution from print on paper to electronics. Digital resources have drastically changed the way in which libraries function as information, including full-text, can now be accessed from laboratories, offices and homes twenty-four hours a day. Traditional print collections are being transformed into versatile electronic resources.

In the early 1990s, a large number of libraries throughout the world became involved in digital library initiatives, and funding for research into "digital libraries" increased dramatically running into millions of dollars. Notable research activities included:

- the US Digital Library Initiative (DLI) (http://www.dli2.nsf.gov/) sponsored by the National Science Foundation (NSF), Defense Advanced Research Project Agency (DARPA) and the National Aeronautics and Space Administration (NASA);

- the UK Electronic Libraries (eLib) Programme (http://www.ukoln.ac.uk/services/elib/) funded by the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils;
- the Library of Congress's American Memory Programme (http://memory.loc.gov/ammem/index.html);
- the Andrew W. Mellon JSTOR - Journal Storage Project - (www.mellon.org/jstor.html); and
- the Text Encoding Initiative (http://etext.lib.virginia.edu/).

The DLI Phase 1 ran from 1994 until 1998; many of the Phase 2 projects started in 1999 and a number until 2005. The NSF, DARPA and NASA were joined by the National Library of Medicine, the Library of Congress, and the National Endowment for the Humanities as primary sponsors.

In 1998 the NSF introduced a multi-country, multi-team projects approach to addressing some of the research challenges associated with creating international digital libraries (Secker, 2004). The UK Joint Information Systems Committee (JISC), the German Research Foundation, Deutsche Forschungsgemeinschaft (DFG), and the European Union have all been involved in collaborative digital library projects. The specific objectives of the programme were to:

- assemble collections of information that are not otherwise accessible or usable because of technical barriers, distance, size, system fragmentation or other limits;
- create new technology and the understanding to make it possible for a distributed set of users to find, deliver and exploit such information; and
- evaluate the effect of this new technology and its international benefits.

This programme ran from August 1999 until July 2003.

Basically, these research efforts looked at capabilities (usable web technology) for capturing, storing, finding, transmitting, viewing, and manipulating complex information as well as for controlling access and accounting for it (Schatx et al., 1996). The various research projects explored new avenues for meeting the needs of new and old clients as well as seeking more cost-effective levels of efficiency. The investment was said to be more than libraries have experienced since the turn of the century (Benton Foundation, 1997). While the applications of these research efforts go well beyond traditional uses of libraries, some of the applications are actively utilised by libraries and library system vendors. For example, library vendors are now using the graphical user interface software or ‘WWW’ browsers to provide a level of service that would otherwise have been complex to provide. Other generic tools such as optical character recognition (OCR), are also being used in various ways.

At the turn of the century digital library research and development is increasingly focused on interoperable digital systems. The role of digital libraries in relation to the virtual learning environments is also being addressed.

These research efforts and applications are enhancing the production of stores of digital content, leading to an explosion of new information resources which is easily accessible to and usable by large segments of the world's population. It is increasingly clear that all publications will become digital, thus fulfilling Lancaster's prophesy that "whether we like it or not, print-on-paper will eventually give way, more or less completely, to electronics". With the elimination of printing and distribution of analogue products, the cost of accessing information is expected to drop. For textbooks, 45 percent of the cost is said to be on inventory, shipping, and returns.

Digital resources have the following advantages:

- the resources will never be out on loan and will be available at any time, any place, and anywhere;
- access is provided to more complete sets of journals than, in many instances, now exist on many library shelves;
- technical services cost of tracking the arrival of each journal issue, claiming, and periodical binding will be eliminated;
- the need for added library space may decline; and
- costs of retrieving and reshelving materials will be reduced.

The following purposes (modified) which were identified for a North American digital library system are universal:

- to expedite the systematic development of the means to collect, store, and organize information and knowledge in digital form; and of digital library collections;
- to promote the economical and efficient delivery of information to all sectors of the society;
- to encourage co-operative efforts which leverage the considerable investment in institutional and national research resources, computing and communications network;
- to strengthen communication and collaboration between and among the research, business, government, and educational communities;
- to take an international leadership role in the generation and dissemination of knowledge in areas of strategic importance to the nation; and
- to contribute to the lifelong learning opportunities of all citizens. (Association of Research Libraries, 1995).

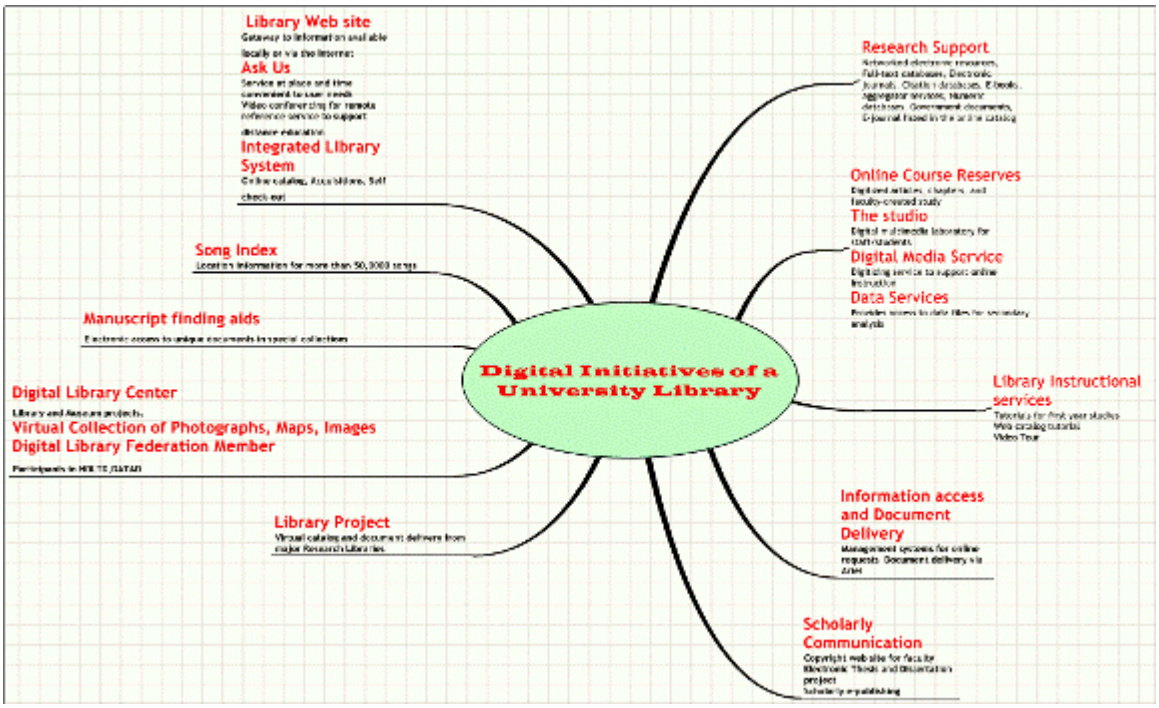
2.2 Digital Library Initiatives

The Association of Research Libraries Digital Initiatives Database has over 600 records of a wide array of digital initiatives in or involving libraries (http://www.arl.org/did/). The website of the International Federation of Library Associations and Institutions (IFLA) also provides information on collections, bibliography, periodicals, conferences, organizations, and projects – especially in the Americas and Europe (http://www.ifla.org/II/diglib.htm).

The key elements of a digital library are:

- the collection: a wide variety of materials in digital forms - books, journals, manuscripts, reference works, theses and dissertations, government documents, maps, video, images and pictorial materials, music scores;
- the provision of information about the library's services and collections to remote users;
- access tools: online library catalogues, subject gateways, portals;
- services: reference services, online tutorials, on demand publishing, electronic reserve -short loan and course packs, electronic course pack, lecture notes;
- networking and imaging technologies to support and enhance all aspects of a library's basic operational activities - Z39.50, repository software – Dspace, e-Print, etc., Open Archives Initiatives (OAI);
- networking and imaging technologies to facilitate closer cooperation with other bodies; and
- expertise within the library for the application of new technologies to library activities and bibliographical research of all kinds (Lang, 1998).

Figure 1. Digital initiatives of a university library.



Adapted from: Dewey, Barbara I. (2003). 'Digital Libraries and Portals: New Models for Collaboration'. http://www.lib.utk.edu/africa/archives/digitallibrariesuganda.ppt

3. Digital Library Initiatives in South African Universities

South African academic and research libraries began deploying information and communication technologies in the 1970s. A chronology of activities is presented below:

Table I. Brief Chronology of the use of ICTs in SA Academic Libraries

Period	Activity
1970s	Online searches – DIALOG Home made library systems, e.g SLIC. (’75)
1980s	Automated library systems – Urica, Erudite, Sabinet/Erudite CD-Rom technology Gopher Bibliographic network (Sabinet) (’83) World Wide Web (WWW), Internet (’88)
1990s	Facsimile Electronic document delivery – Ariel (’95)
1997	Automated library systems - Web (HTML) OPACs - Innopac, Aleph (’97) DISA (Digital Imaging South Africa) Electronic theses and dissertations (ETD) Projects based on the NDLTD (Networked Digital Library of Theses and Dissertations) software.
2004 to date	Digital repositories: D-Space, Eprints

A national electronic union catalogue, SACat, is hosted and maintained by Sabinet Online. The union catalogue facilitates the sharing of bibliographic records and also helps in locating materials for interlibrary lending.

Sabinet Online is an established and experienced information and service provider to all the academic libraries and more than 500 corporate (government and private) libraries actively using its services. In addition to this, Sabinet Online also has extensive experience as an electronic publisher, and currently publishes or hosts more than 31 academic journals. It also publishes the Government Gazette, the Tender Bulletin, the SA Statutes, Provincial Legislation, Daily Law Reports and a full-text electronic press clipping service. Its Academic and Library Division is dedicated to serving all academic institutions, government libraries and other library clients with value-added access to information services, cataloguing and interlibrary loan support services.

The South African Site Licensing Initiative (SASLI) provides affordable content to universities in the country by negotiating licensing conditions and access terms with publishers. The project was established by Coalition of South African Library Consortia (COSALC).

TENET (Tertiary Educational Network) acts as a service provider in negotiating affordable bandwidth on behalf of the higher education sector. It is generously supported

by a donor consortium, known as the US Donors' Bandwidth Initiative for Higher Education (Martin, 2004).

An examination of the websites of the 23 institutions of higher education revealed a number of digital library initiatives, services and systems. These include the following:

- integrated library management system (LMS);
- electronic resources – full-text databases, citation databases, e-books and e-journals, etc;
- reference service – Ask a Librarian;
- library instructional services;
- library portals – e-journal portal and subject portals;
- online course reserves;
- scholarly communication – copyright website, ETDs, digitized;
- manuscript finding aids; and
- electronic document delivery systems.

As observed by Lang, the key element in making these digital library initiatives feasible is expertise within the library for the application of new technologies to library activities and bibliographical research of all kinds.

A few South African universities have begun providing portal facilities for their communities while others are exploring using portal technologies to provide services.

Figure 2. University of the Witwatersrand Library Website

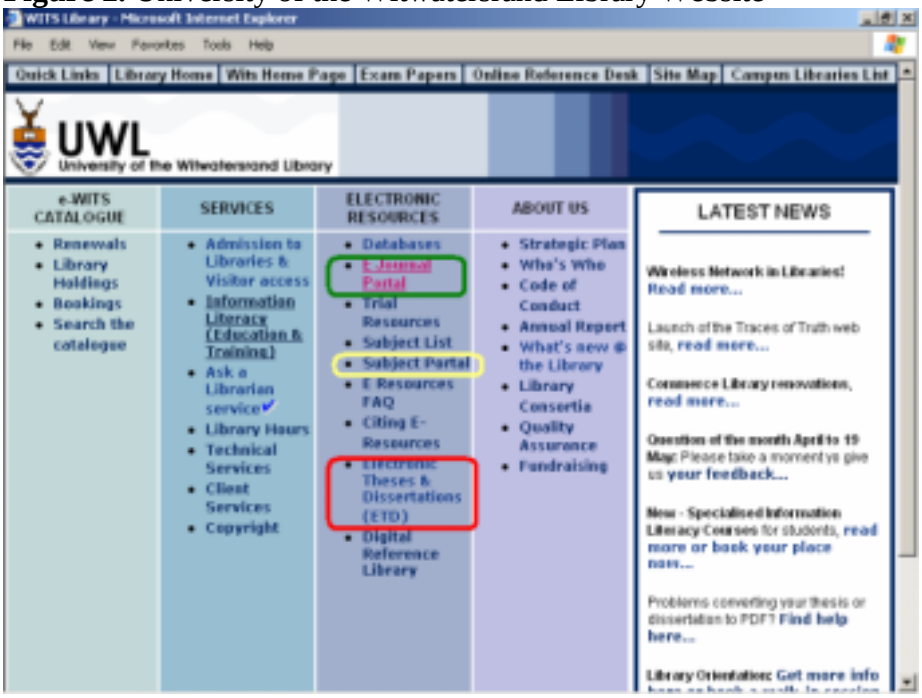


Figure 3. University of Pretoria Library Website

4. Library Portals

Universities and other research organisations are providing substantial financial support to libraries. A large proportion of this is now going into the acquisition of electronic resources which are increasingly bundled together. The previous subject-based approach of many database vendors is giving way to one in which vendors are putting together information resources that are not differentiated by subject. Any database package may contain information on topics as diverse as accounting, history, and medicine, e.g., Emerald, ScienceDirect.

This unstructured approach is compounded by the enormous number of freely available resources on the Internet. A long-standing criticism of the Internet is that, despite the ongoing development and increasing sophistication of some of the popular search engines, these are still not reliable in finding relevant items quickly (Rozmus, 2002). Van Brakel (2003) argues that "the average company Web site has reached its limitations and cannot address the modern day demands of the digitally literate employee".
The availability of 'too much' information without organisation of access, is leading academic libraries and information professionals to acquire portal software and/or develop subject portals for all the academic departments in their institutions. As observed

in the *2003 Environmental Scan* from OCLC (De Rosa, 2004), there are "increased investments in technologies and standards that allow organizations to bring structure to unstructured data".

The range of systems investment that libraries now potentially make to support their operations include:

- library management systems;
- digital object management systems;
- portal or metasearch systems;
- resolver/linker software; and
- interlibrary loan (ILL)/resource sharing systems.

The reliance on search technologies and a trend towards automated data categorisation was also acknowledged in the report which was based on discussion with 100 or so leading professionals involved in library and information work around the world.

Groenewegen and Huggard (2003) identified the problems that a portal could solve, including:

- Enabling single login for access to all an institution's resources.
- Reduction in the number of interfaces through which resources could be searched. This standard interface could also be used for searching multiple databases, thus saving the user the time otherwise spent in moving from one resource to another.
- Enhancing resource discovery through:
  - eliminating the confusion in the name of databases and their contents by giving more detailed explanations of what type of material resources contained;
  - knowing how to get to full text;
  - maximising use of print holdings.

Boss (2002) considers that one of the drawbacks of portals is that they can bring too much information to the users, though he suggests that solutions to that problem are relevancy ranking, filtering for relevancy and ranking the search results according to predetermined criteria. Such portals are becoming invaluable in supporting learning and teaching in the traditional and the online environment.

Wetzel and Jackson (2002) list some of the services or applications available through portals:

- submitting online reference questions;
- submitting ILL requests;
- requesting retrieval of local material to be held for user at a library service point;
- accessing remote, fee-based services, such as Ingenta or Ei Village;
- requesting retrieval of local material to be delivered to user;
- requesting photocopies to be made and delivered to user, via the Web;
- accessing e-mail;

- accessing institutional services; and
- accessing full-text journals and e-books.

Portal technology is changing rapidly and the list keeps growing. Gerrity *et al.* (2002) suggest that in addition to accessing the online catalogue and subscription databases, users at workstations should have access to such software clients as e-mail, word processing, PowerPoint, and provide easy access to course information and class syllabi.

In this paper, a subject portal is considered as a Web site which is an entry point to other Web sites or relevant resources by being an aggregation of subject specific links. This is the definition adopted by, for instance, the University of Canterbury in New Zealand and part of its subject portal for Antarctic Studies (http://library.canterbury.ac.nz/anst/) is shown in Figure 4.

Figure 4. Subject portal at the University of Canterbury, New Zealand

This definition is in contrast to a general portal that serves as "a single user interface for access to a wide variety of electronic resources both within and outside of the library" (Boss, 2002). The first could be called a 'sophisticated Web site' (Van Brakel, 2003) as it could be created by a Web designer while the second is a 'search engine' created mostly by library systems vendors or other software vendors. The authors realise that there is no universally accepted definition of what constitutes a portal. In an attempt to create a taxonomy of portals, terms that have been used include:

- community portal;

- consumer portal;
- corporate portal;
- enterprise portal;
- horizontal portal;
- public portal; and
- vertical portal.

Van Brakel (2003) suggests that a portal should include elements of value adding, customisation and personalisation functions, and he maintains that two broad categories of portals exist, horizontal or public portals and vertical (corporate or enterprise) portals.

4.1. Library subject portal

Some libraries have developed subject portals or subject guides that aggregate subject specific links. The information categories of some of these subject portals include the following:

1) electronic course reserves;
2) e-reference services – e.g. Ask a Librarian;
3) web resources;
4) statistics;
5) library resources - call numbers, encyclopedias and dictionaries, restricted loans, examination papers;
6) journals - print, electronic;
7) databases - full-text, citations and abstracts, data, theses and dissertations;
8) company information - local, international;
9) newspapers - newspapers held in the library (national/world), international news sources;
10) current awareness - conferences, current contents, new acquisitions;
11) other libraries - other library catalogues; and
12) writing and study guides - marketing plans/financial statements, funding proposals, citation style guides, evaluating Internet information, writing and study skills.

Figure 5 shows an example from Dublin City University in Ireland of a subject portal for Nursing (http://www.library.dcu.ie/Portals/Nursing/nursing.htm).

It would seem that the objective of these portals was largely to bring together subject databases and Web resources arranged by discipline. Many of these subject portals convey to the learners a picture of the information resources relevant to their disciplines. Information literacy tutorials and the library subject portal tended to exist as separate websites on the library homepage; exceptions were in the minority. One such successful integration is that of the agribusiness research portal of the California Polytechnic State University (http://www.lib.calpoly.edu/staff/fvuotto/agb_index.html).

Figure 5. Subject portal (for Nursing) at Dublin City University

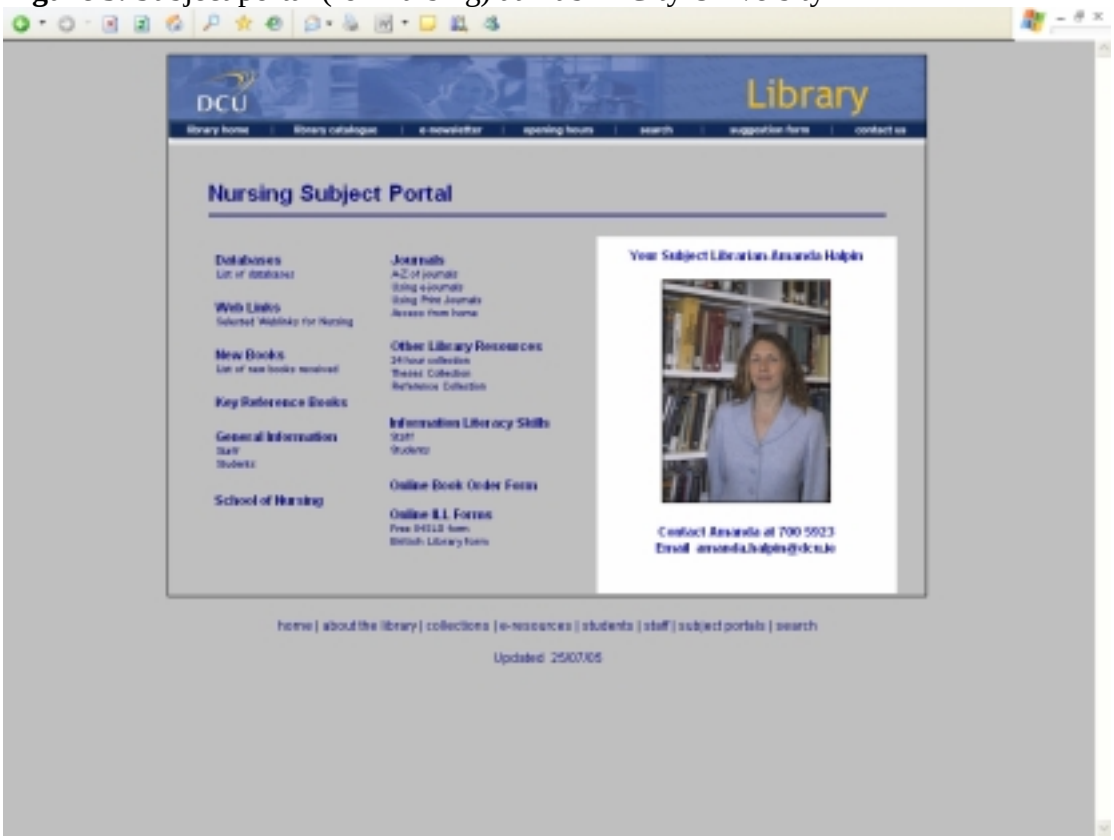
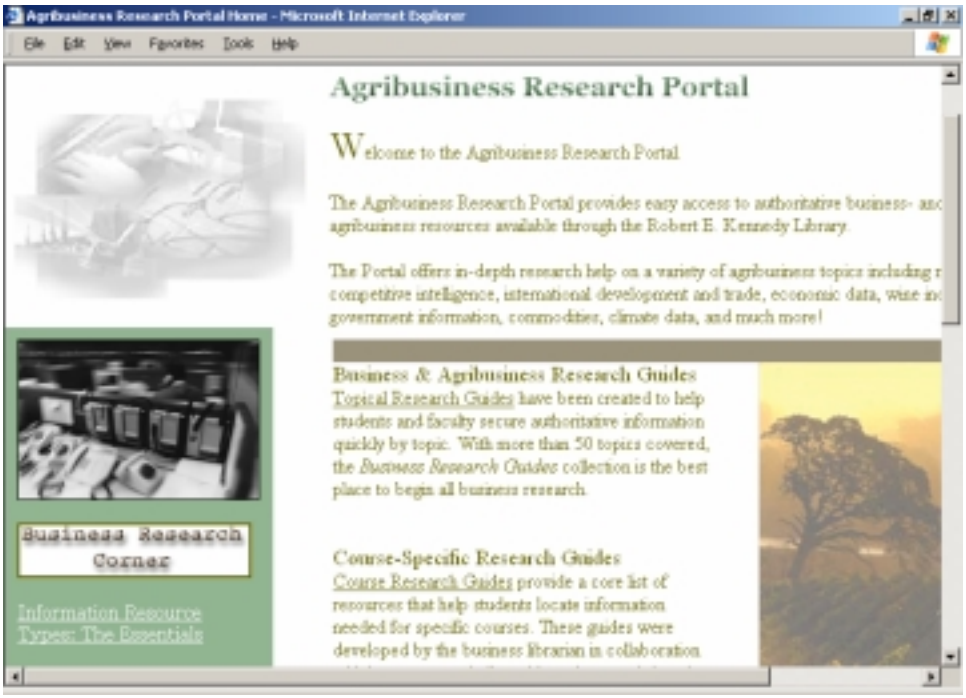


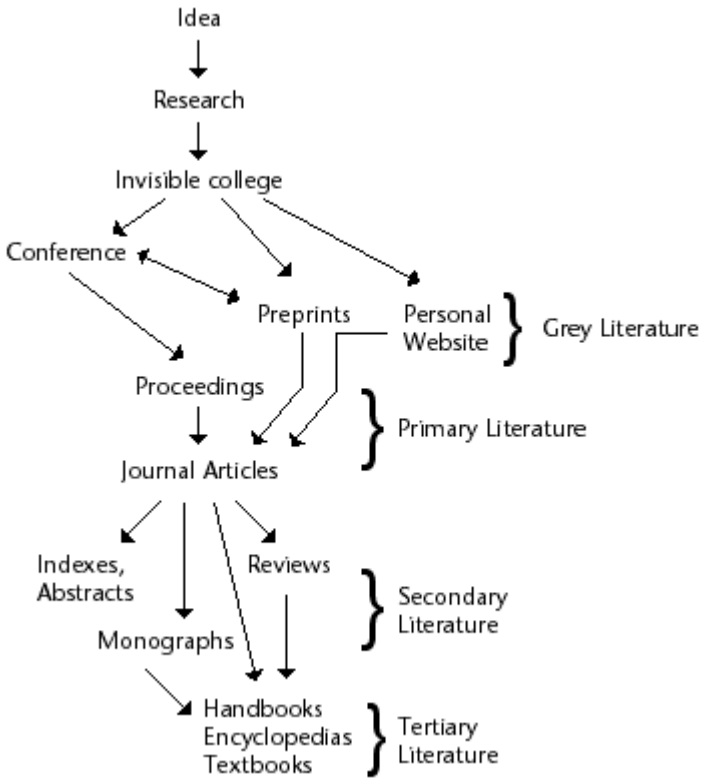
Figure 6. Agribusiness research portal at California Polytechnic State University



4.2 Subject portal pilot at Wits

Wits University Library undertook the development of subject portals based on the principles of the flow of scientific information which is diagrammatically represented in Figure 7.

Figure 7. Flow of Scientific Information (reproduced with permission)



Source: http://www.lib.uwaterloo.ca/usered/grad/researchskills/flow_of_info.html

A portal of this nature should have the information categories as shown in Table II.
The first seven rows are the most important and should be given particular attention as they incorporate the steps of the research process. Groenewegen and Huggard (2003) observe that "past experience has shown that most users don't attend library classes, so for the portal to succeed it needed to be reasonably intuitive to use". A subject portal that is structured as suggested above becomes intuitive, and therein lies its novelty. Such a portal puts the student at the centre of library services, and also enables the library to reach and engage with faculty directly in the teaching, learning, research and outreach process. It gives students an idea of the scope and breath/dept of the world-class information resources available to them.

Table II. Elements and content of an ideal portal

Elements	**Contents**
Knowledge required to complete an assignment or write on a topic	This could be a self-paced tutorial for all first-year students, as well as other subject related courses
Reference sources	Encyclopedias and dictionaries, Handbooks
Indexes/Databases *Look Here First*	Full-text, Citations and Abstracts, Data, Theses and Dissertations

Locating (*subject*) Journals	
Web Resources	
Writing and Presenting your work	Beware of Plagiarism. Citation style guide, Evaluating Internet information, Writing & Study Skills
Library Resources	Library catalogue, Call numbers, Restricted Loans, Exam Papers
Need Information/Help? Ask a Librarian	
Course Reserve	
Company Information	Local, International
Newspapers	Newspapers held in the Library (national/world), International news sources
Current Awareness	Conferences, Current contents, New acquisitions
Statistics	
Other Libraries	Other library catalogues
Guides and Tutorials	Guides and tutorials on learning how to use abstracts, etc.

Figure 8 Accounting subject portal at the University of the Witwatersrand

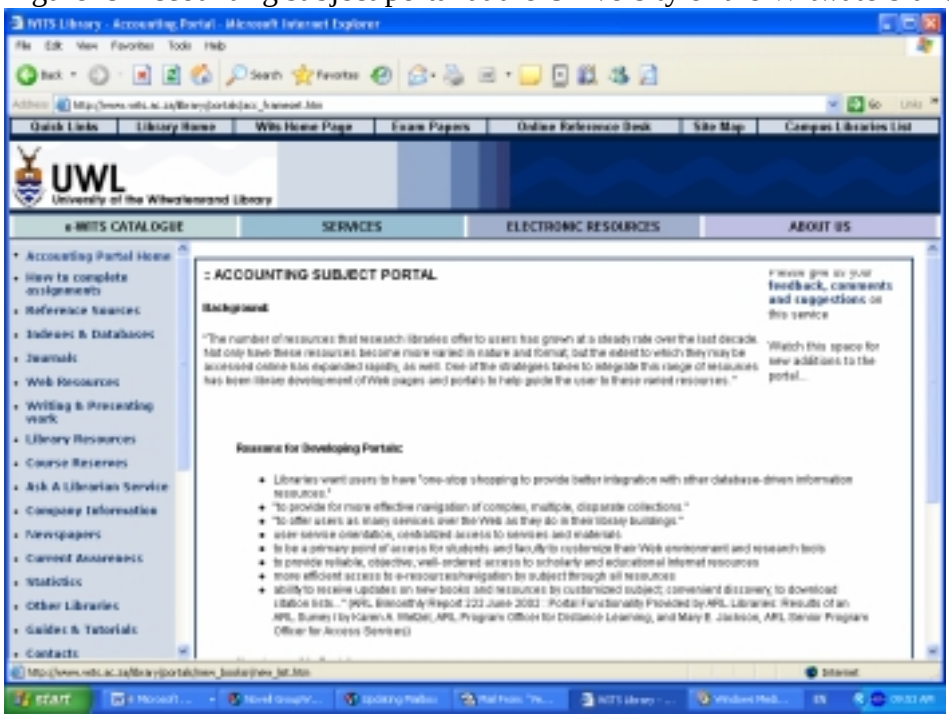
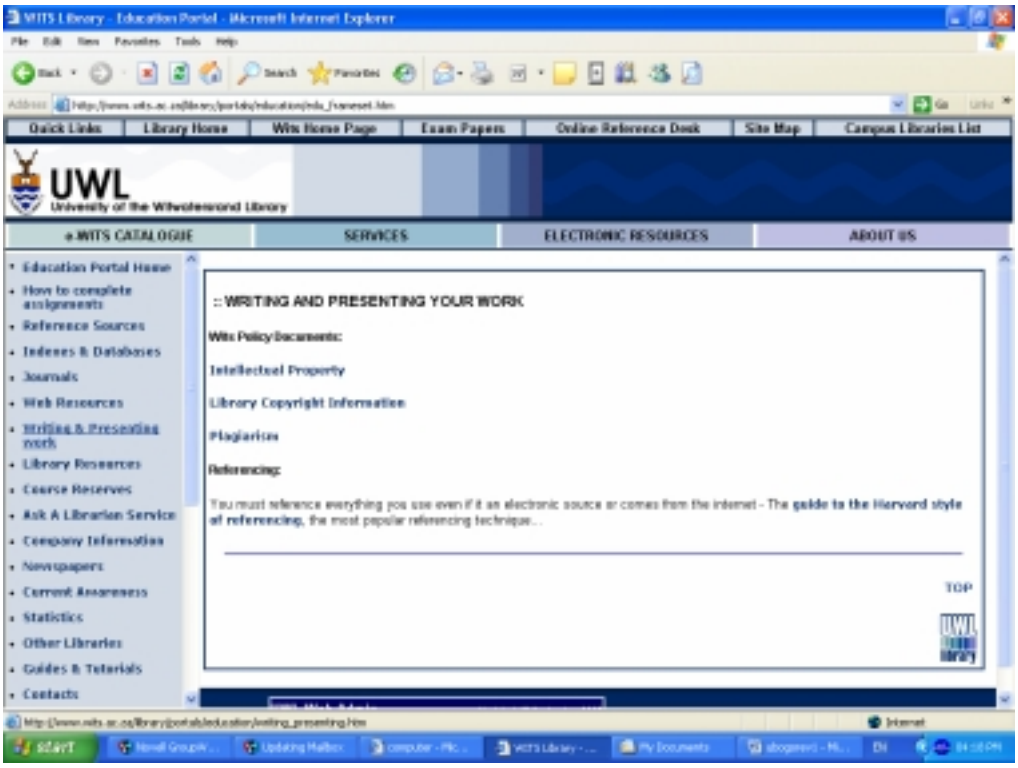


Figure 9. Education subject portal at the University of the Witwatersrand



The portals have generated some enthusiasm among the academic staff and the Library needs to capitalize on this, especially in the development of the information literacy component of the portal. Very little work has been done to develop this aspect of the portals, and it is now receiving attention. Somerville and Vuotto (2005) have suggested the following consultative stages:

1) define information and disciplinary competencies in terms relevant to the subject domain;
2) identify task related skill sets that represent subject-specific information literacy competencies;
3) designate resulting assignment-driven learning outcomes and teaching strategies;
4) factor in user-specific variables such as prerequisite course content, prior exposure to information literacy instruction and other variables associated with achievement of specified tasks;
5) establish learning outcomes and design portal evaluation and student learning methods; and
6) evaluate alignment of integrated curriculum content with college and academic department learning goals.

The Library also needs to address the challenge of integrating the portals into the University's course management system, WebCT. Many academics have set up their courses on WebCT and only students doing/registered for those courses have access to the information on the system. The Library is also exploring the use of a content management system for collaborative authoring of the portal contents.

It is important that subject portals should address the requirement for embedding information literacy skills in the portals.

Dewey (2003) is of the view that it is becoming difficult to locate the traditional library on campus web pages and wonders if we can position our portals so that users will find them. Subject portals provide us with the opportunity to do so as they can feature prominently on the web pages of teaching departments. A subject portal that has embedded information literacy and that is available through the classroom computer can assist to close the gap between the classroom and the library.

5. Electronic Theses and Dissertations (ETDs)

In South Africa, development in the ETD arena started in 1996 when Rhodes University (RU) undertook an investigation into the holding of electronic copies of theses and dissertations. The Senate of the University in April 1997 approved mixed submission of both print and digital copies of student theses and dissertations. With the support of Virginia Polytechnic Institute and State University (Virginia Tech) which donated free software to Rhodes, the University mounted its first digital thesis on the World Wide Web in 1998, and became the first institution in Africa to do so. Rhodes University joined the Networked Digital Library of Theses and Dissertations (NDLTD) Initiative, in May 1997 thus becoming the sixth institution in the world to do so. NDLTD was first funded as the National Digital Library of Theses and Dissertations.

The objectives of the NDLTD are:

- for graduate students to learn about electronic publishing and digital libraries, applying that knowledge as they engage in their research and build and submit their own ETD;
- for universities to learn about digital libraries, as they collect, catalog, archive, and make ETDs accessible to scholars worldwide;
- for universities in the Southeast and beyond to learn how to unlock the potential of their intellectual property and productions;
- for graduate education to improve through more effective sharing; and
- for technology and knowledge sharing to speed up, as graduate research results become more readily and more completely available (http://www.ndltd.org).

In order to build a digital library of theses and dissertations in South Africa as well as promote collaboration between research programmes among the universities, Rhodes University, in July 1999, invited other institutions to join the NDLTD initiative (Ubogu, 2001).

In 2003 UNESCO sponsored a national ETD workshop which was held at Wits University (http://www.witsetd.wits.ac.za/ETD-db/wits_workshop.htm). This workshop was well attended by representatives from the majority of South African universities, including Library directors and staff, Research administrators and IT staff. The purpose of the workshop was to provide a motivation for and information on how to set up ETD projects at individual institutions. Since 2003, the number of ETD projects has

approximately doubled, partly due to the discussions held at this workshop. One outcome of the workshop was the setting up of a committee to further the process of a national project through the auspices of the Committee for Higher Education Librarians of South Africa (CHELSA).

Of the 23 institutions of higher education in South Africa only 7 have embarked on ETD projects. These include Rhodes University, Universities of the Free State, Johannesburg, Pretoria, South Africa, and the Witwatersrand.

Table III: South African institutions with ETD Programmes

Institution	Software	ETDs Available	Access to ETDs
Rhodes University	E Prints	100	Restricted Access
University of the Free State	VT ETD-DB	117	Unrestricted
University of Johannesburg	VT ETD-DB	848	Unrestricted
University of Pretoria	VT ETD-DB	2020	Unrestricted
University of South Africa	VT ETD-DB	582	Unrestricted
University of the Western Cape	Library Catalogue (inhouse system to be developed within the current Enterprise Architecture framework of UWC)	50 +	Unrestricted
University of the Witwatersrand, Johannesburg	DSPACE (Migrated from VT ETD-DB)	100 +	Abstract Immediately, full text after 2 years

Figure 10. Website of Rhodes University eResearch repository

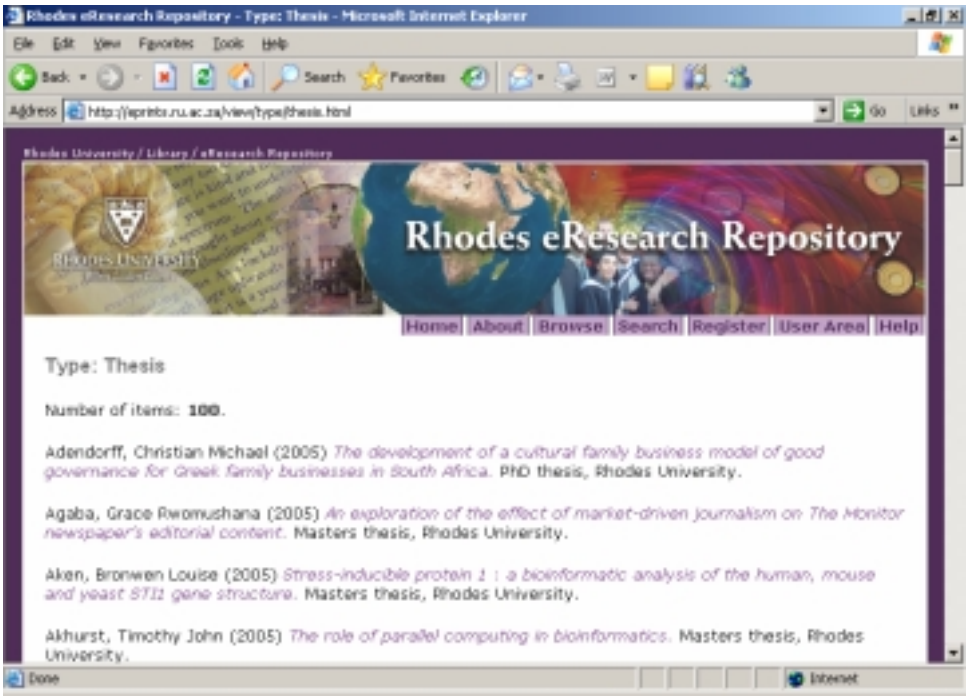


Figure 11. Website of the University of the Free State ETD collection

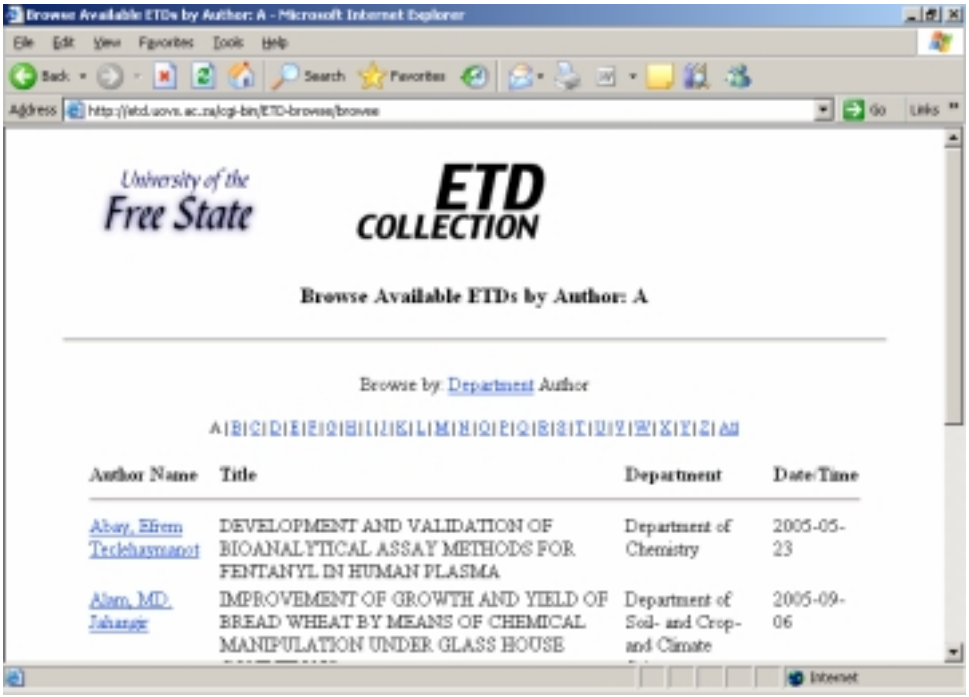


Figure 12. Website of the University of Johannesburg ETD database

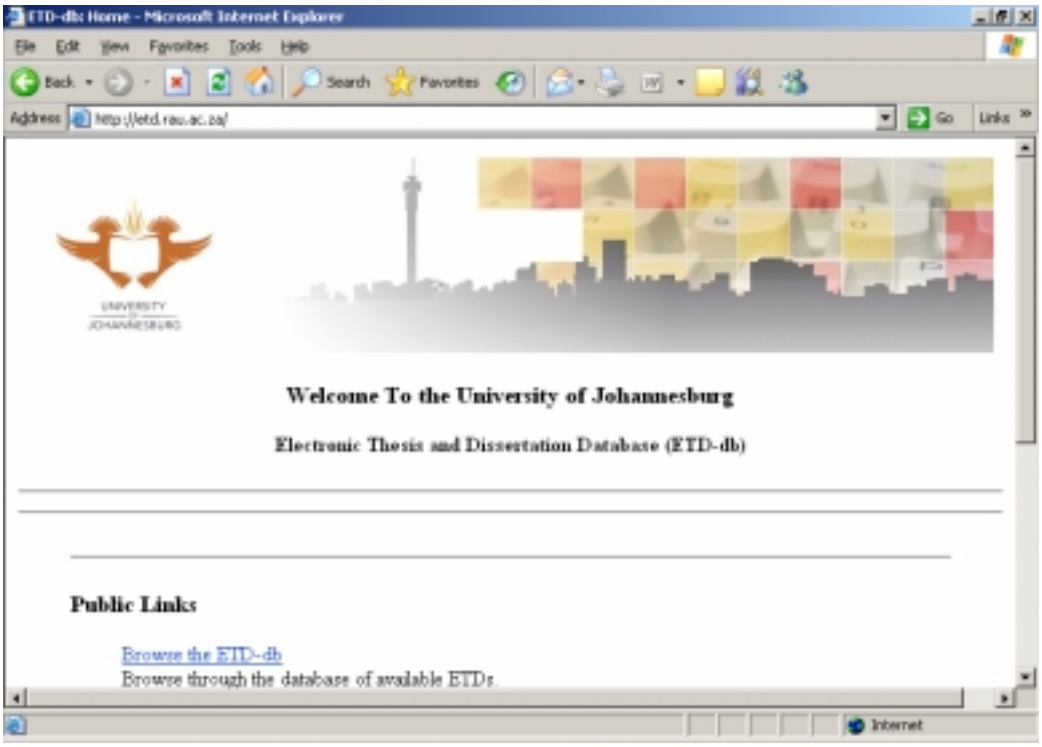


Figure 13. Website of the University of South Africa ETD database

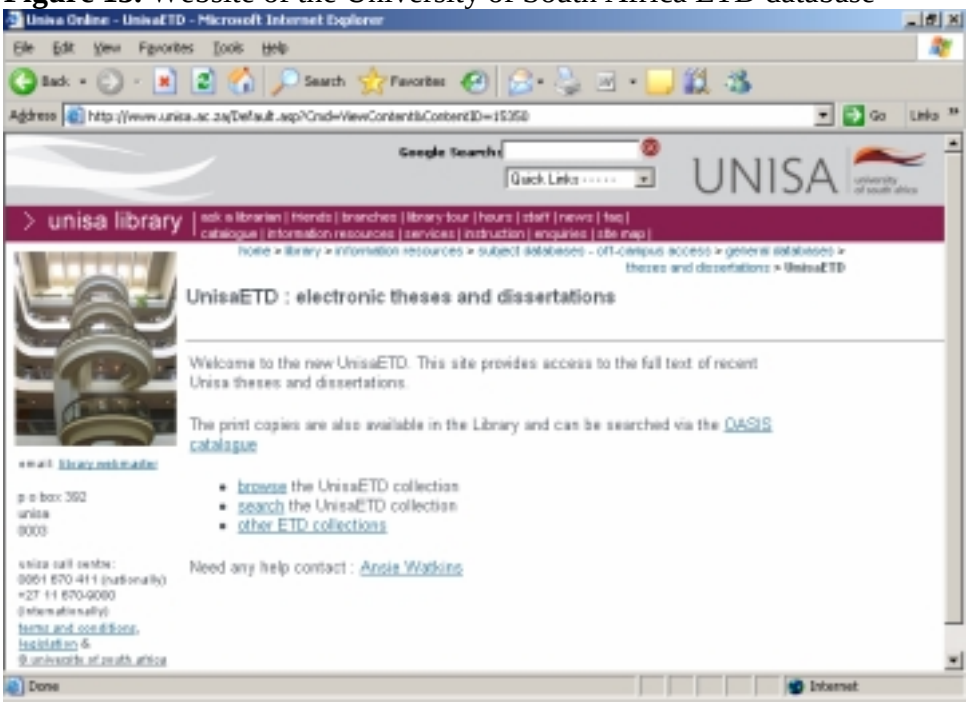
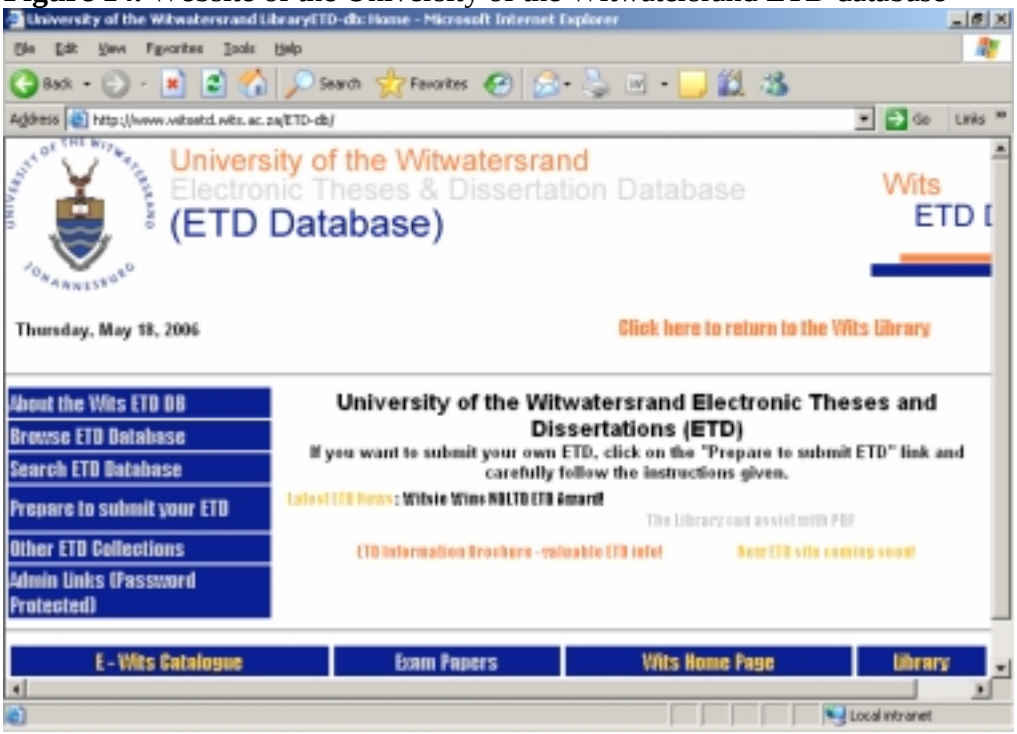


Figure 14. Website of the University of the Witwatersrand ETD database

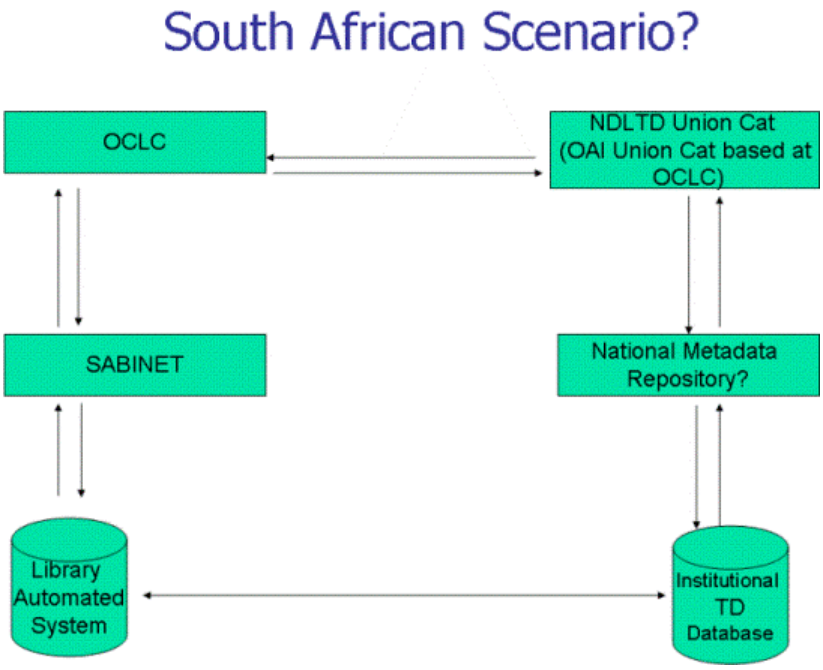


Currently, the digitisation of the content of theses and dissertations in South Africa is uncoordinated with varied approaches taken by different projects. The National Research Foundation recently approved a grant for the Committee for Higher Education Librarians of South Africa (CHELSA) to appoint a consultant to conduct a feasibility study on the requirements for establishing institutional repositories that will provide electronic access to full-text theses and dissertations for the research community in South Africa. The consultant is required to investigate the following:

- a "seamless" ETD system for all CHELSA member institutions, i.e. all South African higher education institutions;
- the staffing and financial implications, for the project, of the NRF hosting a national metadata repository;
- the staffing and financial implications, for the project, of the NRF hosting full-text ETDs of CHELSA members not able to do so;
- requirements for contributing metadata into the Networked Digital Library of Theses and Dissertations (NDLTD) union catalog;
- requirements for institutions to prepare and submit theses and dissertations electronically; and
- library staff development needs.

The author is the Chairman of the CHELSA ETD Policy Group.

It is envisaged that a national ETD repository would have the following architecture.



5.1 Key issues regarding copyright and theses

An ETD programme is located at the institutional level where stakeholders should be involved in discussing issues and concerns. Ultimately it is the students who will be required to produce ETDs. The key stakeholders in the ETD programme are the students, academic staff, senior management, and librarians. The institution:

- initiates the establishment of procedures for the submission of electronic theses and dissertations by students as part of the conditions of the award of the degree;
- provide infrastructure for institutional repository;
- oversees establishment of internal ETD management teams;
- takes responsibility for the management of their TDs and for the conversion of the theses and dissertations into appropriate archiving format;
- facilitates the development of relevant copyright procedures and regulations that will promote the protection of the intellectual property rights of the authors;
- oversees the development of intellectual property rights guidelines;
- oversees the compliance with the Freedom of Access to Information Act (South Africa);
- provides a working environment that is conducive for the project; and
- provides staff for the execution of project activities.

Students provide the content for the ETD repository, and they are also users of ETDs available worldwide. “Improved access to the work of others is helpful, but the key benefits for students relate to the promotion of their own work” (Copeland, Penman, Milne, 2005).

The "Guide to Intellectual Property Management" composed by the Center for Research Libraries (CRL) for the DATAD project and the works by Andrew and Crews between them elucidate rights, responsibilities and privileges of key stakeholders. It is the view of the author that students should be educated on the contents of this these works.
Some of the rights and responsibilities mentioned below are mostly adapted from the "Guide to Intellectual Property Management".

Institution

An institution needs to secure certain rights and licenses necessary to enable it manage and store TDs in electronic format. This includes existing TDs held by institutions in paper format and those presented by students electronically (born digital). The rights and licenses typically involve those which may need to be obtained from the author or some other third party. A comprehensive deposit and end user's license agreement should cover a number of core topics, including a depositor's declaration, the repository's rights and responsibilities and the end-user's terms and conditions.

In some instances certain of these rights are granted or assigned by the author to the sponsoring university by virtue of a "pedagogical compact" with the university.

Rights

By virtue of the author's grant or assignment of rights to the university, the university has a non-exclusive, perpetual right to permit use, display, copying, and distribution of the full-texts of TDs for purposes of study and research on the premises of the university or online. The university also retains the right to reformat the document, i.e., to reproduce said document in paper, microformat, or electronic form, when such reformatting is necessary to preserve its integrity and longevity.

The university also has the right, on behalf of the author, to distribute single-copy reproductions of the TDs on request to other parties according to the terms of the author's declaration.

The university has the right to create "derivative works" in the form of abstracts for dissertations in which no such information exists.

The university has a non-exclusive right to create, display, and distribute metadata and content originating from its own institution.

Responsibilities

The university will provide proper and adequate review and authentication of theses and dissertations produced by authors, and will maintain appropriately high standards with regard to due crediting and acknowledgment of contents of TDs that are derived from the institution or some third-party works and sources.

Certain listed TDs may be withheld from circulation for a specified reasonable period of time by agreement between the author and the university in order to protect the author's rights to exploitation or prior publication of same. At the discretion of the university and/or the author, certain listed TDs may also be withheld from circulation for a reasonable period of time in order to protect the privacy and/or reputations of human subjects of research.

The university will preserve and make available for use on a continuous basis copies of all TDs produced by authors at the sponsor university. The university must maintain the integrity of the TDs document, making them available in complete and unabridged form without revisions, as it was produced by the author and approved by the university.

The university is also responsible for taking reasonable measures to ensure that a statement of the author's copyright of the work, fully identifying the author, appears conspicuously in every republication, excerpting, and other use of the work. The university will make explicit to all approved users of the work the restrictions inherent in copyrights of unpublished works. The university is also responsible for securing from all users of the work agreements for observing limited and specific uses of the work's content.

Students (Author)

Rights

Copyright subsists in the thesis and in the abstract of the thesis, or, in the case of a PhD for Musical Composition, in the portfolio of musical compositions and in the list of compositions.

Copyright grants the author economic rights including distribution right and first sale doctrine (absent pre-existing assignments). The possession of economic rights enables the author to take revenue from the exploitation of his/her work through the exclusive rights to reproduce and communicate his/her work to the public, with or without any material embodiment. A third party attempting to do so requires prior consent from the author.

The moral rights grant the author the right to be recognised and receive credit as the creator of the work, to prevent others from falsely being named author, and to prevent use of his or her name for works he or she did not create; the right of an author to prevent mutilation of a work; and the right of an author to withdraw a work from distribution if it no longer represents his or her views.

Copies of a thesis cannot be issued to the public without the copyright owner's consent.

Responsibilities

Observe norms and standards for acknowledging and crediting fully all texts, images, and other underlying content produced and/or published by others that are used or referenced in the TD.

Secure the necessary permission for the use of the copyrighted content in the context of non-commercial scholarly research from the owners or authors of the work.

Third party (Such as industrial sponsor)

Third parties such as Research Councils may lay claim to the intellectual property arising from the research.

Repository

Responsibilities

- Remove or obscure any item which has not received permission for inclusion in a thesis. The print version should remain unaffected by this decision.
- Collection of bibliographic data relating to the deposited theses is protected against unauthorized use by third parties of this information.
- Allow metadata harvesting by any mechanical metadata harvester.
- Need for the depositor to warrant that the content of the work does not breach any laws including defamation, libel, copyright, and to accept liability for any legal action arising from any such breaches.
- Need for the depositor to grant permission for online access to the thesis.
- Safeguard against third-party copyright material being inadvertently deposited by clearly indicating that reasonable care has been taken to prevent such occurrences and that any work will be removed if it is found to violate any copyright or other rights of any person.
- Obtain permission for copying for the purposes of preservation.
- Obtain permission for future migration of content to new formats for the purposes of preservation.
- Obtain permission for emulation for the purposes of preservation.

In most institutions, libraries are one of the key role players in the management of theses and dissertations. With the growing diversity of media and technologies for the production of TDs, there are a wide range of copyright and licensing issues that need to be taken into consideration. It is therefore necessary and important that libraries comprehend the IPR issues affecting theses and dissertations. The dissemination of dissertations and other research findings on the Internet makes such an understanding all the more important.

At a recent Senate Library Committee meeting of the author's University, concern was raised that after the two-year embargo on the full PDF text, there might be a copyright

issue if certain images were included and published on the web as prohibitive copyright clearance fees would be required. This could have cost implications for students.

Andrew suggests that "Authors should have the responsibility for obtaining required permission as they are in the best position to do so. However, placing the onus on authors can be a huge burden without support. Therefore it may be necessary to provide training during the writing process to inform authors of copyright responsibilities. Such training could be incorporated into existing Thesis Workshops that many institutions run as part of their transferable skills programmes for postgraduate students."

Indeed, the Internet has brought profound changes to the production of theses and dissertations. The postgraduate student needs to understand the line between "fair use" and unlawful infringement whenever information is downloaded, printed from a website, or photocopied. Downloading images from the Web and reusing them constitutes copying and is infringing copyright law, except where permission has been obtained form copyright holder.

Secker recommends that researchers should:

- Own the rights to all the resources they wish to use by, for example, scanning their own photographs or obtaining a digital camera and taking the photographs.
- Use the digital images collection available in the institution.
- Use websites that provide free images for non-commercial purposes, e.g. freeimages.co.uk. (http://www.freeimages.co.uk/).

Traditionally academic libraries have the responsibility for the management of theses and dissertations. Consequently many ETD programmes have been initiated and run from many university libraries. The agreements between the university and the author should authorise the university library to carry out some of the following acts including:

- publishing the abstract of the thesis, and/or authorise others to do so, for scholarly purposes with proper acknowledgement of authorship;
- providing personal data and thesis data to appear in catalogue records and other alerting media;
- providing access *in situ* for consultation by registered users, either from the host institution or other academic establishments; and
- supplying copies on request to other libraries or individuals (Andrew 2004).

Where libraries have established centres or units for copyright clearance, such centres are often associated with paper course pack provision or short loan off-print collections. The roles of such units are expanding to include responsibility for both print and digital copyright clearance requests. Policies on using materials in producing TDs are rare. The copyright needs of postgraduate students need to be taken into consideration.

The following would facilitate an ETD project:

- A comprehensive web site should be developed to guide postgraduate students and supervisors on IPR issues in particular as well as other issues. This could be a national initiative where feasible.

- The website should have information that would help researchers identify when they need copyright clearances and show how to obtain them.
- Libraries should educate postgraduate students on basic copyright information such as ownership, rights, duration, protection, registration, fair use, permissions, etc. Online tutorials could be used in this regard.
- Provide information on how to apply the fair use factors.
- Help graduate students protect their own copyrights.

6. Observations and Suggestions

Nigeria

The Nigerian higher education sector is privileged to have a body such as the National Universities Commission (NUC) which is charged with the responsibilities of development of universities in Nigeria. The NUC's Department of Information and Communication Technology (DICT) vision is to enhance teaching and research, planning, management and effective evaluation through analytical decision-making packages. Its mission "is to assist the NUC to carry out its mandate in the deregulated Nigerian University System, by enabling the Universities and NUC to take advantage of Information and Communication Technology to reap from, and deliver, the benefits offered by the information revolution". The DICT has made great achievement with its National Virtual Library Project (NVLP) which was created to address the dearth of current books and journals; an impediment to quality research and teaching. The NVLP has created a basis for one complete search with one access. It confirms the remarkable irony of the adoption of technologies; the later adopters will eventually become more up-to-date in their implementation of the technology than the early adopters.

The major objectives of the first phase of the Virtual Library Project are:

- to improve the quality of teaching and research in institutions of higher learning in Nigeria through the provision of current books, journals and other library resources;
- to enhance access of academic libraries serving the education community in Nigeria to global library and information resources;
- to enhance scholarship, research and lifelong learning through the establishment of permanent access to shared digital archival collections;
- to provide guidance for academic libraries on applying appropriate technologies used in the production of digital library resources; and
- to advance the use and usability of globally distributed, networked information resources (http://www.nuc.edu.ng/DICT/about-DICT.htm).

These are admirable objectives that should be pursued vigorously. An examination of the websites of the eleven federal universities selected for the Nigerian Virtual Library pilot scheme revealed grossly under-developed digital library services. Online services have been recognised as major services in academic libraries. It is therefore crucial that urgent attention should be given to developing the capacities of these libraries to provide digital

library services. Okiy (2005) observes that "suggestions made towards improving access to information in university libraries in Nigeria through ICT include the massive injection of funds into purchase of ICT facilities for university libraries, the provision of constant power supply, a greater commitment of all university library staff to computerization efforts in libraries, and the provision of training and retraining opportunities for librarians in computer literacy".

It is observed that one of the mandates of the then Data Management Department of the National Universities Commission, which is now the Information and Communication Technology Department, is to:

- assist in conjunction with other departments in the acquisition and/or development and implementation of software such as Uniform Accounting System, Master Bill, Computerized Estimate System (CES), Audit Record System, Nigerian Universities Dissertation Abstract System etc. (http://www.nuc.edu.ng/DICT/about-DICT.htm)

A national ETD programme will be a welcome development in the continent.

South Africa

The research and development of the digital library initiatives is uncoordinated. A centralised and coordinated direction for the development of the information infrastructure and activities is desperately needed. Roy Page-Shipp observes that:

The present pattern of eResearch Services development is typical of our history, with many small – even non-viable – initiatives scattered across the system, possibly doing good work but not reaching a cost effective scale. This is not the best area for creativity and autonomy to be exercised in straitened financial circumstance. Savings achieved by joint action could be ploughed back into research activities.

An eR3SA (eResearch Support Services for SA) has been proposed to coordinated eResearch activities in South Africa. The services that would need to be developed include:

- an eResearch Portal, to enable researchers to be authenticated and given access to eResearch Services;
- common standards for Open Access repositories, to facilitate deposits and user access;
- a Digital Curation Centre, probably distributed, to manage the preservation and marketing of important data-sets for their scientific and scholarly useful life;
- eTraining for Researchers and Librarians to enable their effective participation in and support of eResearch; and
- an eServices Helpdesk to assist with the efficient use of all the services but especially those such as research data transfer that might otherwise require high technology support staff in all user groups.

It is also suggested that,

with the proviso that eR3SA access is available to all researchers in the SA system, the cost of the relevant Development and Innovation Contracts could be funded by donors or government, while user charges would fund Service Delivery activities. External/National funding for the setting up of eR3SA should also be available.

While the proposal is laudable, a concern among information professionals is that this will be one more body on the national scene and that its cost could spiral with time. The structure that is proposed is similar to the TENET structure.

One view is that the role of TENET could be expanded to accommodate the services envisaged by eR3SA.

There is a National Research Foundation (NRF) which is a national agency responsible for promoting and supporting basic and applied research as well as innovation.
The National Research Foundation Act, No. 1998 stipulates under the heading "Functions, powers and duties" section 4. (1)(n) promote the provision of an information infrastructure linking research institutions to facilitate co-operation and sharing of research information and knowledge (http://www.nrf.ac.za/news/act23.pdf).

The NRF supports and promotes research through funding, human resource development and the provision of the necessary research facilities, in order to facilitate the creation of knowledge, innovation and development in all fields of the natural and social sciences, humanities and technology. Information and Communication Technology (ICT) and the Information Society in South Africa is one of the focus areas for funding.

A search of the NRF's database, Nexus NRF Funded Project Database, revealed that from 2000-2005 the NRF has funded the following academic research topics:

- Flexible and simple digital libraries based on open architectures.
- The design, testing, implementation, population and maintenance of a digital library.
- The design and development of a digital information literacy programme for academic libraries.
- Contemporary copyright fair dealing management issues and their impact on freedom of access to information sources and services: South African academic libraries in the transition to the digital environment.
- Digital libraries and web design.
- A digital library component assembly environment.

These are largely theoretical works with no real-life testbeds for the concepts put forward from the research. There is a need to speed up the transfer of research results into practical applications and product innovations. This can be done through cooperation among computer scientists and librarians, so that librarians would transmit their

requirements to researchers, and researchers would be provided with real-life testbeds for their solution concepts (Brahms, 2001).

The NRF recognizes the importance of providing information for excellent research. It recently allocated funds to the Committee for Higher Education Librarians of South Africa (CHELSA) to appoint a consultant to conduct a feasibility study on the requirements for establishing institutional repositories that will provide electronic access to full-text theses and dissertations for the research community in South Africa.

The NRF should pay particular attention to the development of digital libraries in South Africa and in the sub continent. This should be seen as being within the NRF's mission of promoting and supporting research, and as part of the process of building South Africa's Information Society.

South Africa needs a body similar to the NUC's DICT or JISC which would deal with networking and specialist information services in the higher education sector. Such a body could also have a mandate of working with further and higher education to provide strategic guidance, advice and opportunities to use ICT to support teaching, learning, research and administration. JISC is reported to have had "by far the greatest impact on the development of the digital library" in the UK.

Given the absence of a body similar to the Joint Information Systems Committee in United Kingdom, which formally systematically funds and supports academic libraries and archives, the NRF should set up an ICT committee, consisting of representatives from various types of libraries and archives, scholars, and scientists. The committee should play an essential role in the planning, coordination, expert appraisal and control of national digital libraries programs and projects.

The NRF should establish a specific funding programme aimed at the improvement of the information infrastructures at South African universities and research institutions by supporting a 'system of special subject libraries, digital library projects, and initiatives to improve and extend innovative library services'. This programme should initiate and support national, regional, intra-continental and international cooperation.

While there are multi-country, multi-team projects in the developed countries which are engaged in the creation of digital libraries, there are few, if any, collaborative efforts in the African continent. The opportunities exist for African countries to collaborate in the creation of content-rich, multimedia, multilingual digital collections thereby adding to the pool of international digital libraries.

There is a marked absence of digital library centres in higher education unstitutions in South Africa and Nigeria. Such a centre is necessary if an institution is to engage in a coordinated digital library programme. When such centres were established in universities in Europe and America, the positions of digital librarians and executive directors of their digital library projects, reported to the heads of the institutions (Presidents/Vice-Chancellors) and not to the library directors. Maybe this was in order

that the occupants of the post do not "bolt new technology, programs and services onto existing library functions" (Rusbridge, 1998).

Academic libraries and librarians play critical roles in the management of one of the key intellectual output of the university. Knowledge of intellectual property rights has become crucial for librarians as the carry out this responsibility of advising students, academic and other support staff about the appropriate and legal use of information resources and the rights and privileges of various stakeholders. The internet makes it imperative to know an awful lot more than we know presently about intellectual property rights.

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2 Library Portals and ETDs

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Introduction

Generally, ETDs are postgraduate theses and dissertations that are originally produced only in electronic format and never in print, or in combination with the print forms. In this regard, ETDs could also be referred to those theses and dissertations that were originally in print, but are later converted to electronic format, such as through scanning. There are two main types of ETDs. These are:

One type: It involves encouraging postgraduate students to develop their Theses or Dissertations (TDs) as electronic documents, that is, as electronic theses or dissertations (ETDs). Since students learn (by doing) as they create them, these types of ETDs are therefore essentially *author-created* and *submitted* works. In other words, as library materials, these are documents that are prepared by the "student- author "as is typical in almost all cases using electronic tools (e.g., Microsoft Word), and then submitted in their approved and final electronic form (to a university or PG School Board).

Type two: It is typically an electronic file that is created (by the university library or ICT or service company staff) through scanning of pages of a printed thesis or dissertation. The resulting ETDs are much less attractive than the above mentioned type: they require much more storage space, they do not easily support full text searching, and they cannot be flexibly manipulated (e.g., cannot be zoomed in on by those with poor vision). Also, they don't lead to the student authors learning about electronic publishing, which would have imparted to them skills needed for electronic submission of papers and proposals in their future lives. Nevertheless, such scanned page images can be made accessible at low cost so that users afar can print or read facsimiles of the original print pages. Usually, this type of ETDs is applicable to backsets of TDs that have been submitted originally only in printed formats, and have to be entirely converted to electronic.[3]

Whichever approach it adopts, a university that establishes an ETD program is assisted to automatically move into the digital library era. This is so because software is freely available from National Digital Library for Theses and Dissertations (NDLTD) or its associates that allows a university to develop its own digital library and not just ETDs. Setting up such a digital library also helps the university build the necessary personnel, infrastructure and gain experience required for other digital library projects. Though the demands for electronic TDs are typically small, the digital library that emerges out of the ETD experiment will force consideration of almost all of the key concerns of those who

work with digital libraries. Also, since various sponsors interested in digital library technology help out in many ETD projects, there will be a continued enhancement of the digital library services that relate to improving local infrastructure.

Benefits Of ETDs

The first benefit is that new, better types of TDs may emerge as ETDs develop as a genre. Rather than being bound by the limits of old-style typewriters, students may be freed to include in their theses color diagrams and images, dynamic constructs like spreadsheets, interactive forms such as animations, and multimedia resources including audio and video. To ensure preservation of the raw data underlying their work, promote learning from their experience, and facilitate verification of their findings, they may enhance their ETDs by including the key datasets (raw data) that they have assembled.

As the new genre of ETDs emerges from this growing community of scholars, it is likely to build upon earlier forms. Simplest, and commonest in Nigeria today, are documents that can be thought of as "electronic paper" where the underlying authoring goal is to produce a print form, perhaps with color used in diagrams and images. Slightly richer are documents that have links, as in hypertext, at least from tables of contents, tables of figures, tables of tables, and indexes – all pointing to target locations in the body of the document. To facilitate preservation, some documents may be organized in onion-fashion, with a core mostly containing text (that thus may be printable), appendices including multimedia content following international standards, and supplemental files including data and interactive or dynamic forms that may be harder to migrate as the years pass by. Programs, applets, simulations, virtual environments, and other constructs yet to be discovered may be shared by students who aim to communicate their findings using the most suitable objects and representations.

To function as effective knowledge workers, students must go beyond word processing skills that lead only to print documents. They must learn to work with others, to share their findings by transmitting their results to others. This teamwork makes it feasible to collaborate, to co-author works, and thus to participate in research groups or teams, which are common throughout the research world (at the very least involving an academic supervisor and postgraduate student author). It also makes it pertinent for students to participate in common activities of modern researchers. Thus, they can be trained to submit a proposal electronically (e.g., as is required by the US's National Science Foundation) and to submit a paper to a conference (where papers are uploaded by authors, and downloaded by editors/reviewers, as part of the collection and selection activities).

Other Benefits of ETDs include:

- Originality – where the researcher/student is empowered, using the new media to conduct research ands be really original in colours using the new media.
- Encouragement of networking whereby the research report is published and access timely and without limitation to location

- Increased readership. This is possible as the research report will be included in the digital project of the library for easy access
- Communicating research results. The researcher/student is empowered to communicate more effective to friends, college far and wide the research result in its original colour rather than in the traditional black and while printed format
- Access to university research. It serves as a veritable means for populating research works of the university as the ETDs are networked and Internetted.
- Enhancing search – ETDs facilitate easy access as they are networked and can be searched on-line irrespective of the location of the searcher
- Enhancing collaboration and sharing. With ETDs, students/researchers can collaborate and share information and research results for further advancement of collaborative researchers.

Concluding Remarks

With thousands of students each year preparing ETDs, the creativity of the newest generation of scholars is being continuously expressed as they work to present their research results using the most appropriate form, structure, and content. While conforming, as needed, to the requirements of their institution, department, and discipline, students should develop and apply skills that will best prepare them for their future careers and lead to the most expressive rendering possible of their discoveries and ideas. Thus, ETDs are a new genre of documents, continuously re-defined as technology and student knowledge evolves.

The quality of a university is reflected by the quality of its students' intellectual products. Theses and dissertations reflect an institution's ability to lead students into and support for, original work. In time, as digital libraries of ETDs become more commonplace, students and academics will make judgments regarding the quality of a university by reviewing its digital library. Universities that incorporate new literacy tools, such as streaming multimedia, will attract students who look forward to producing innovative work.

Starting an ETD program is like starting any other project: a need for the results must exist. Therefore, all those involved need to be motivated and committed throughout all the steps to the end, which is that moment when ETD's would have become a regular and consolidated activity in the Postgraduate programs of our universities.
ETD's are based on the joint work of postgraduate students, mentors, postgraduate deans, administrative staff, library staff and the IT team. The success of the implementation of the ETD program requires the commitment of all these players plus that of the university's higher administrative officers.

As a first step, Nigerian universities must recognise that majority of theses and dissertations are today produced with the help of computer programs. Therefore what is required is for librarians to sponsor requests through their PG School Boards and Senate mandating graduands to submit soft copies of TDs along with the traditional print versions. These could be easily turned into the premier building blocks of a future ETD

program for the country. Older print versions would have to be scanned, best done with the help of established data processing companies, such as the Nigerian Stock Exchange's subsidiary data corporation in Lagos. Newer universities or those just beginning their PG programmes would find it easier to manage backsets of TDs.
Eventually, it would be required of an umbrella body such as the NUC in Abuja to spearhead the setting up of a central clearing and coordinating centre for all Nigerian university ETDs as we progress. Meantime, it would of course not be out of place for any university that is prepared and already implementing ETDs to get into the kind of partnership described in this paper with the US NDLTD. Issues of copyright, author and institutional rights, advanced planning about appropriate ETD server, software, administrative policy and task force, training, technical support, access and fees, and recruiting a dedicated and caring implementation team, etc would have to be thoroughly addressed before reaching that stage though.

Finally, the Nigerian university libraries should not only be the initiators of a Nigerian ETD program, but they must be its managers. They should incorporate it as part of their ICT policies as well as strategic plans.

NOTES

Note: NDLTD runs the Web site http://www.theses.org/ (also under the alias http://www.dissertations.org/) as a central clearinghouse for access to ETDs.
Other corporations as well as local, regional, national, and international groups associated with NDLTD have Web sites too, such as http://www.cybertheses.org/[1] for the International Francophone project or http://www.dissonline.org/ for the German Dissertation online project. In addition, a number of WWW search engines have indexed some of the ETD collections available so this genre is included in general Web searches.
Note: OCLC's WorldCat service, with over 20 million catalog records, has an estimated 3.5 million entries for TDs. Perhaps most promising is that the global as well as regional and local metadata information about ETDs may become widely accessible through the Open Archives Initiative (http://www.openarchives.org/).
Note: The German "Dissertation Online" project was undertaken by the Initiative of Information and Communication of the German Learned Societies (http://www.iuk-initiative.org/index.shtml.en).

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3 The World Summit on the Information Society: Issues and the Way Forward for Nigerian Libraries

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Abstract

This paper explains the place of WSIS, the World Summit on the Information Society, in global development strategies, and explores the implications of the major library and knowledge-related issues discussed at the summit for the development of national public policy related to the information society, especially as they touch on access to knowledge and information, as well as ICT as international public goods. In particular, emphasis is placed on the role of libraries as catalysts for development. The paper indicates how library stakeholders can contribute to the realization of the goals of building the information Society in Nigeria through sustained advocacy, policy leadership and mission-oriented service delivery underpinned by action research in the broad knowledge for development sphere. The main recommendations are on policy and strategic framework and programming for the development of a knowledge-centric Nigeria.

1. Introduction: the genesis and format of the Summit

The proposal to hold a global summit on the information society was first made by the Member States of the International Telecommunications Union (ITU) at their Plenipotentiary Conference in Minneapolis in 1998 (ITU, 1998). This was a sequel to a motion by Tunisia. Subsequently this proposal was presented to the United Nations General Assembly, which used its resolution 183 of 2002 to ask its Secretary-General to collaborate with ITU to organize the World Summit on the Information Society (WSIS), given "the urgent need to harness the potential of knowledge and technology for promoting the goals of the United Nations Millennium Declaration, and to find effective and innovative ways to put this potential at the service of development for all" (United Nations, 2002).

WSIS took place in two phases – the first was in Geneva, Switzerland from 10-12 December 2003; and the second in Tunis, Tunisia from 16-18 November 2005. Each phase started with preparatory conferences, first at the continental levels and then at the global level. The preparatory conferences elaborated the main issues and objectives, and were platforms for the negotiation of outcome documents.

As a multilateral forum WSIS is unique in the following ways:

a) It is the first UN-backed summit where non-governmental entities attended as delegates. Representatives from government, civil society, the private sector, and international organizations participated as contributing stakeholders in a new form of public-private-people partnership;
b) WSIS was conceived as a continuing process, and not just an event. In this vein, international organizations and governments are expected to continue to focus on the identified as well as related emerging issues and challenges on an ongoing basis with the aim of hitting the targets set at the various political levels;
c) It is the only one that has mandated various multilateral institutions to set up task forces to continue to monitor and facilitate implementation programmes in their various areas of competence;
d) It recognized and expanded the membership of a global civil society family to include the media, NGOs, people with disabilities, youth, gender, volunteers, cities and local authorities, trade unions, professional groups, indigenous peoples, education, academia and research, science and technology community, creators and promoters of culture, networks and coalitions, multi-stakeholder partnerships, philanthropic organizations, and think tanks.

The Geneva Phase resulted in bold declaration of political will and elaboration of plan of action by world leaders to build an inclusive information society. It is noteworthy that the President of the Federal Republic of Nigeria, Chief Olusegun Obasanjo, was among the leaders who set the tone of the process.

Four outcome documents came out of the two phases, *viz*:

a) Geneva Declaration of Principles
(http://www.itu.int/wsis/docs/geneva/official/dop.html).

b) Geneva Plan of Action (http://www.itu.int/wsis/docs/geneva/official/poa.html).

a) Tunis Commitment (http://www.itu.int/wsis/docs2/tunis/off/7.html); and

b) Tunis Agenda for the Information Society
(http://www.itu.int/wsis/docs2/tunis/off/6rev1.html).

An international library coalition under the leadership of the International Federation of Library Associations and Institutions (IFLA) used the window opened to civil society to contribute effectively to the outcome, as evidenced by inclusion of over 70 paragraphs and sub-paragraphs on library related concerns in the documents.

2. Conceptual and strategic framework

The WSIS Process underlines the global public good aspect of knowledge and information, and of the infrastructure designed to transmit them. Stiglitz (1999)

illustrated why knowledge is not simply a public good, but a global public good. Global public goods may be defined as entities or conditions having non-excludable, non-rival benefits that cut across borders, generations and populations - present or future. This concept offers a firm and virtuous framework for dealing with many of today's international public policy issues and challenges. Among commonly cited global public goods are equity and justice, efficient markets, the environment, standards and norms, health, knowledge and information, transport and communications infrastructure, peace and security, and cultural heritage (Kaul et al, 1999).

Knowledge and information, and communications infrastructure that are used to share them, such as the Internet are referred to as human-made commons. For this set of public goods, the main challenge is under-use. For knowledge for example, under-use can result in development failures such as low human development, and income poverty (Cook and Sachs, 1999). Sy (1999) forcefully argues that equity issues permeate access to information and knowledge and the technologies used to appropriate them, and emphasizes the fact that publicness cannot be guaranteed unless users have low-cost access. He further argues that privatization of telecommunications carriers will not guarantee low-cost access, but may actually impede it, as this reduces the opportunity of the average person to use it optimally. Therefore one of the most important item that should be on every global information policy agenda is to ensure that developing countries obtain adequate physical infrastructure to reap the benefits of the Internet, and that the economically disadvantaged who should benefit the most from it, are not deterred by high prices.

The fledging information society is creating the classic tragedy of the commons as well as several adverse externalities that are borderless in their effect, and therefore calls for concerted efforts at the international level to manage them. Hence, WSIS was a systemic response to the stimuli provided by the challenges and opportunities of the global public goods driving the information society. The outcome consists of broad-based principles and action plans for harnessing the relevant public goods in ways that would lead to the development of an inclusive information society.

WSIS principles and action plans are designed to ensure coherence and complementarity with the major global development strategies, the apex of which is the Millennium Declaration made by world leaders in September 2000 (United Nations, 2000). The declaration provides a framework for the vision, activities and goals of the UN system to 2015 and beyond. The objective of the Declaration is to promote "a comprehensive approach and a coordinated strategy, for tackling many global problems simultaneously across a broad front". The eight goals - the Millennium Development Goals (MDGs) with specific targets geared towards poverty reduction - are to be met by 2015. They form the blueprint for development activities by governments and the leading development institutions.

The goals and associated targets are:

Goal 1: Eradicate extreme hunger and poverty.

Target 1: Reduce by half, between 1990 and 2015, the proportion of people whose income is less than $1 a day.

Target 2: Reduce by half, between 1990 and 2015, the proportion of people who suffer from hunger.

Goal 2: Achieve universal primary education.

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.

Goal 3: Promote gender equality and empower women.

Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015.

Goal 4: Reduce child mortality.

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.

Goal 5: Improve maternal health.

Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio.

Goal 6: Combat HIV/AIDS, malaria and other diseases.

Target 7: Halt and begin to reverse the spread of HIV/AIDS by 2015.

Target 8: Halt and begin to reverse the incidence of malaria and other major diseases by 2015.

Goal 7: Ensure environmental sustainability.

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources.

Target 10: Reduce by half, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation .

Target 11: Achieve by 2020 a significant improvement in the lives of at least 100 million slum dwellers.

Goal 8: Develop a global partnership for development

Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system (includes a commitment to good governance, development, and poverty reduction, both nationally and internationally).

Target 13: Address the special needs of the Least Developed Countries.

Target 14: Address the special needs of landlocked developing countries and small island developing states.

Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term

Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth.

Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.

Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications technologies.

Recognizing that "access to information and knowledge" enhances individual and group capacity to make positive changes, the global community has taken the widespread application ICT to harness information, knowledge and communication as an essential element in its strategy for accelerating the achievement of MDGs. Azubuike (2006a), posits that the achievement of MDGs must necessarily precede the arrival of the information society in every country, as the citizens of a country pledged by poverty and unsustainable development model cannot enjoy the high connectedness and access envisaged in the information society.

3. The Major Issues Related to Libraries and Access to Knowledge

The following 12 issues are related to access to information and knowledge and libraries:

a) Creation of enabling environment through appropriate policies, strategies and legislation.
b) Adequate support for libraries to enable them perform their educational role, including life-long learning, and e-literacy.
c) The role of libraries in poverty reduction and attainment of development
d) Rights-based access to information, knowledge and ICT as public goods through the provision of community access points.
e) Creation of digital public library and archive services, digitization, and long-term preservation of intellectual and cultural goods and artifacts.
f) Freedom of information.
g) Rights to privacy, cyber security and safety.

h) The need for inclusiveness and diversity in the information society.
i) The need for international cooperation and dialogue among cultures and civilizations in the development of the information society.
j) Intellectual property rights and open source technology.
k) Capacity Building.
l) Information and communication infrastructure as an essential foundation for the information society.

3.1. The Creation of enabling environment through policies, strategies and legislation

The issue of how best to create the enabling environment for development of the information society is a crosscutting one that applies to all dimensions of the information society including the development of infrastructure, content, services, international cooperation, and security. This calls for a broad-based policy and strategic regime. In most cases, taking a portfolio approach would work better than having one omnibus policy for information society issues. In developing countries, national and local policies and laws that ensure financial and political support to information and cultural institutions are either non-existent or poorly implemented, even though they are the basis for the success of other interventions

3.2. Adequate support for libraries to enable them perform their educational role, including support for life-long learning and e-literacy

Imparting knowledge and the development of the capacity to learn are the main goals of education. Libraries are especially important now when emphasis is being place more and more on independent, life-long learning, including e-literacy. It is clear that without good reading habit, which invariably goes with the ability to use libraries effectively, a person cannot retain the capacity of an educated person. In places where schools have no libraries, students graduate without acquiring the basic skills required for gainful employment.

3.3. The role of libraries in poverty reduction and attainment of development

The right to access is premised on the right to development. Hence the WSIS provision in the Geneva Declaration that: "access to information is a major factor in "determining development and competitiveness…we are resolute to empower the poor, particularly those living in remote, rural and marginalized urban areas, to access information and to use ICTs as a tool to support their efforts to lift themselves out of poverty." This role has also been elaborated in *The Value of Library Services in Development* (ECA, 2003). Recent analysis of four African development strategies dating from 1980's to 2005, attributed the serial failures of these strategies to lack of emphasis on access to information and knowledge as the main source of the capacity for development (Azubuike, 2006b).

3.4. Rights-based access to information, knowledge and ICT as public goods through the provision of community access points

The Tunis Agenda defines the "public service role" of libraries as "providing free and equitable access to information" and "improving ICT literacy and community connectivity, particularly to underserved communities." This role ensures the right of every member of the community to free and open access to information, knowledge and ICT as public goods. Many WSIS provisions deal with this issue as the basis of building an inclusive information society. The existence and effectiveness of public service information and cultural institutions like libraries and archives are vital for availability of the minimum level of consumption of knowledge and cultural goods necessary to ensure the effective performance and participation of individuals and groups in the social, economic and political affairs of the community. In the information society, dependence on these institutions is even more critical for decent existence due to increased dynamism of knowledge. It should be noted that this is hardly an issue in developed countries where almost every resident has free access to learning materials, computer equipment and Internet through public libraries. Recognizing this, world leaders at WSIS affirmed and reaffirmed their commitment to providing equitable access to information and knowledge for all.

3.5. Creation of digital public library and archive services, digitization, long-term preservation of intellectual and cultural goods and artifacts

The capacity to discover and innovate is dependent on access to prior knowledge and experience. Therefore, harnessing and preserving of information and cultural heritage through the creation and development of digital public library and archive services, including "hybrid libraries," for future use is of paramount importance. Hence, the need for initiatives to facilitate free and affordable access to open access journals and books. However, the challenge of designing and implementing strategies and systems to ensure the effective digitization and continued access to archived digital information and multimedia content in digital repositories is an emerging issue of great concern.

3.6. Freedom of information

Freedom of access to public information guaranteed by law, along with freedom of expression, forms part of the basic principles of the information society. WSIS Geneva Declaration of Principles envisions an information society based on Universal Principles of human rights and fundamental freedoms, right to sustainable development, democracy and good governance at all levels, the rule of law in international as in national affairs, right to freedom of opinion and expression; and right to seek, receive and impart information and ideas (freedom of information).

3.7. Rights to privacy, and assurance of security and safety

This issue has several dimensions, including: the need for librarians to maintain the confidentiality of what their clients read and access; the right to the privacy of personal

data held by government and non-governmental entities; the need for children to be protected from obscene and violent materials; and the increasing importance of combating cyber crime which threaten the security of digital properties, and infrastructure. These set of challenges have social, political and economic ramifications, and impacts on the ability of information institutions to operate effectively.

3.8. The need for inclusiveness and diversity in the information society

Inclusive access to ICT and information services is a political as well as a moral issue. Since knowledge is power, providing everyone and every section of the society equal opportunity of access is a basic political act of resource allocation, as well as a moral act of doing the right thing. The development gain is also straightforward: whether inclusiveness is pursued as a political or moral aim, its achievement is expected to result in aggregate improvement of human and economic development. On this issue, President Olusegun Obasanjo will attending the Summit declared that: "Unless those that are now excluded from the benefits of the information revolution are brought on board, our efforts to achieve sustainable development as outlined in the Millennium Development Goals, will continue to elude us".

WSIS inclusiveness issues have several dimensions, including demographic: gender, age, family status, etc; economic: income level, employment status, occupational roles, etc; geographic: rural, urban, etc; cultural: oral, written, religion, tradition, etc; as well as linguistic differences.

Pertinent to this issue is the need for “policies and mechanisms to stimulate and support local content development, multilingualism, translation and adaptation, in diverse forms of digital and traditional media to strengthen local and indigenous communities as participants in the information society.”

The establishment of ICT public access points in public places such as post offices, schools, libraries and archives, is seen as having the potential to provide effective means for ensuring universal access to the infrastructure and services. And where these institutions are lacking, to establish community multipurpose access centres.

3.9. International cooperation and dialogue among cultures and civilizations in the development of the information society

The need for multinational infrastructure development and use, and the tendency for knowledge to spread across national and cultural boundaries, warrants appropriate modes of international cooperation and continuous dialogue among the world’s diverse cultures on how best the related transactions and interactions should be conducted in the information society to avoid conflicts. “International cooperation among all stakeholders is vital” due to the international nature of the information society, hence the need for international approaches for its development.

3.10. Intellectual property rights and open source technology

The need to ensure efficient knowledge-based development through maintenance of optimum balance between private appropriation of innovation, and assurance that fundamental knowledge is made available freely for further innovation and discovery, is an important issue highlighted at WSIS. This issue includes the recognition of the value of open source technology in bridging the technology gap, and the need to approach intellectual property rights with due diligence.

3.11. Capacity Building

Library-related capacity building for the information society has two dimensions:
a) The need for libraries and educational institutions to have sufficient capacity to provide assistance to users and more specifically to provide training in ICT and e-literacy skills, for example by designing and offering courses for public administrations, taking advantage of existing facilities such as libraries, multipurpose community centres, public access points and by establishing local ICT training centres with the cooperation of all stakeholders.

a) Designing of specific training programmes in the use of ICT for information professionals, such as archivists, librarians, museum professionals, scientists, teachers, journalists, postal workers and other relevant professional groups. Training of information professionals should focus not only on new methods and techniques for the development and provision of information and communication services, but also on relevant management skills to ensure the best use of technologies. Training of teachers should focus on the technical aspects of ICT, on development of content, and on the potential possibilities and challenges of ICT.

3.12. Information and communication infrastructure as an essential foundation for the information society

The dependence of modern society on electrical energy, transport and communications infrastructure for exchange of information and trade on goods and services makes this set of infrastructure the backbone of the information society. This is why bridging the gaps between countries, institutions and groups in the access to infrastructure is a core WSIS issue. The Plan of Action recommends that: "In the context of national e-strategies, provide and improve ICT connectivity for all schools, universities, health institutions, libraries, post offices, community centres, museums and other institutions accessible to the public, in line with the indicative targets," which are:

a) to connect villages with ICTs and establish community access points
b) to connect universities, colleges, secondary schools and primary schools with ICTs
c) to connect scientific and research centres with ICTs

d) to connect public libraries, cultural centres, museums, post offices and archives with ICTs

e) to connect health centres and hospitals with ICTs

f) to connect all local and central government departments and establish websites and email addresses

g) to adapt all primary and secondary school curricula to meet the challenges of the Information Society, taking into account national circumstances

h) to ensure that all of the world's population have access to television and radio services

i) to encourage the development of content and to put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet

j) to ensure that more than half the world's inhabitants have access to ICTs within their reach.

These targets meant to be achieved by 2015, may be taken into account in the establishment of the national targets.

4. Access to information, knowledge and ICT infrastructure in Nigeria

Currently the majority of libraries in Africa cannot effectively play their role in the information society due to the so-called "great African library decline", which started in the early 1980s, at the onset of structural adjustment programmes. This decline is characterized by: very poor funding; total lack of, or inadequate application of information technology; unavailability of, or unreliable access to the Internet; rusty professional skills and outlook due to inadequate resources for training and development; demoralized management; dusty shelves with old and irrelevant books; and inadequate or no physical development; and near absence of library activism and advocacy (ECA, 2003; 2005).

Unfortunately, the majority of Nigerian libraries share the same conditions as the average African library. Hence all library-related issues raised at WSIS are relevant to Nigeria.

The state of Nigerian libraries clearly indicates where Nigeria is on its road to the information society. The effect of this condition is magnified by the fact that public library development in Nigeria was still in its infancy when this rapid decline started. Today:

- the greater part of the Nigerian population has no access to public libraries, as most communities have none.
- the typical Nigerian elementary school has neither a library nor a teacher-librarian. Hence the opportunity for a Nigerian child to form the reading habit early in life is missed.
- most academic people, researchers and professionals do not have desk-top access to the Internet and to appropriate core collections of quality databases, electronic

journals and books – facilities taken for granted in modestly developed economies.

- the intellectual property rights for the greater part of the published research output of Nigerian universities and research centres belong to foreign publishers due to weak publishing industry and knowledge-negligent public policy environment. Hence locally funded research is not easily available to citizens, business and public institutions.
- libraries, where they exist, cannot meet the needs of their clientele for want of adequate resources and services. Hence most Nigerians live their lives with many unmet information needs - lacking the right knowledge of the basic nature of the objective phenomena they grapple with.
- the vast majority of library buildings in Nigeria, are not Internet ready - and lack modern amenities; and
- virtually no Nigerian has free access to Internet workstations in a public library. A highly insignificant number has Internet access at home. Only one in 140 has any access to the Internet anywhere.

The state of affairs outlined above, and the table of data below demonstrates the long journey the country has to undertake before reaching the information society.

Status of Access to Information Infrastructure in Nigeria

	Nigeria		Low-income Group	Sub-Saharan Africa Region
	2000	2004	2004	2004
Economic and Social Context				
Population, total (millions)	127	140	2338	719
Urban population (% total population)	44	47	31	37
Poverty (% population below US$1 per day)	70.2	..	..	46.4
GNI per capita, Atlas method (current US$)	260	390	510	600
GDP growth, 1995-2000-4 (%)	2.6	4.9	5.4	3.9
Adult literacy rate (%ages 15 and over)	..	67	61	59
Primary, Secondary, tertiary school enrollment (%gross)	..	64	55	52
ICT Sector Structure				
Separate telecommunications regulator	Yes	Yes		
Status of main fixed-line operator	Public	Public		
Level of competition: international long distance	M	P		
Level of competition: mobile	..	P		
Level of competition: Internet service provider	C	C		
Government prioritization of ICT (scale 1-7)	..	3.9	..	4.4
ICT sector performance				
Access				
Telephone main lines (per 1,000 people)	4	8	33	17
International voice traffic (minutes per person)	2	..	4	..
Mobile subscribers (per 1,000 people)	0	66	48	86
Population covered by mobile telephony (%)	..	58	43	..

Internet users (per 1,000 people)	1	7	20	15
Personal computers (per 1,000 people)	6	6	8	12
Households with television (%)	26	26	16	15
Quality				
Broadband subscribers (per 1,000 people)	0.0	0.0	0.2	0.1
International Internet bandwidth (bits per person)	0	1	3	4
Affordability				
Price basket for fixed line (US$ per month, residential)	12.8	13.7	6.6	8.5
Price basket for mobile (US$ per month)	..	11.2	11.6	13.5
Price basket for internet (US$ per month)	..	85.5	45.5	54.8
Price of call to United States (US$ per 3 minutes)	7.15	1.49	1.95	2.43
Institutional efficiency and sustainability				
Total telecommunications revenue (% GDP)	0.8	4.4	2.3	5.0
Total telephone subscribers per employee	50	192	89	144
Total telecommunications investment (% revenue)	37.2	164.2	27.8	27.8
ICT applications				
ICT expenditure (%GDP)	..	..	4.1	..
E-government readiness index (scale 0-1)	..	0.14	0.12	0.11
Secure Internet servers (per 1 million people)	0.0	0.1	0.3	1.9
Schools connected to the Internet (%)	..	..	..	..

Notes: Figures in italics are for years other than those specified. .. indicates data are not available. C=competition; GDP= gross domestic product; GNI= gross national income; ICT=information and communication technology; M=monopoly; MDG=Millennium Development Goal; P=partial competition; and PCs=personal computers.

Sources: The World Bank (2006).

5. Recommendations on the way forward

5.1. Implications for Nigerian libraries

The challenges of building the information society are mainly public goods issues, therefore governments have major role to play – along with other stakeholders, including libraries and development agencies. In order for libraries to play their rightful role in the information society, the sector would need to be revamped, based on forward-looking policies, programmes and leadership. First, library issues should be made core components of national information and communications policies. Funding should be increased for libraries across the board, driven by a changed view that funding of libraries represents a profitable investment in development and public goods. This move would best be justified by the library community through communicating and demonstrating the economic and human development mission of libraries to their publics. Another important implication is that the state of libraries will determine how much wider access to ICT and specialized information networks can be extended.

5.2. Recommended policy and strategic framework for libraries

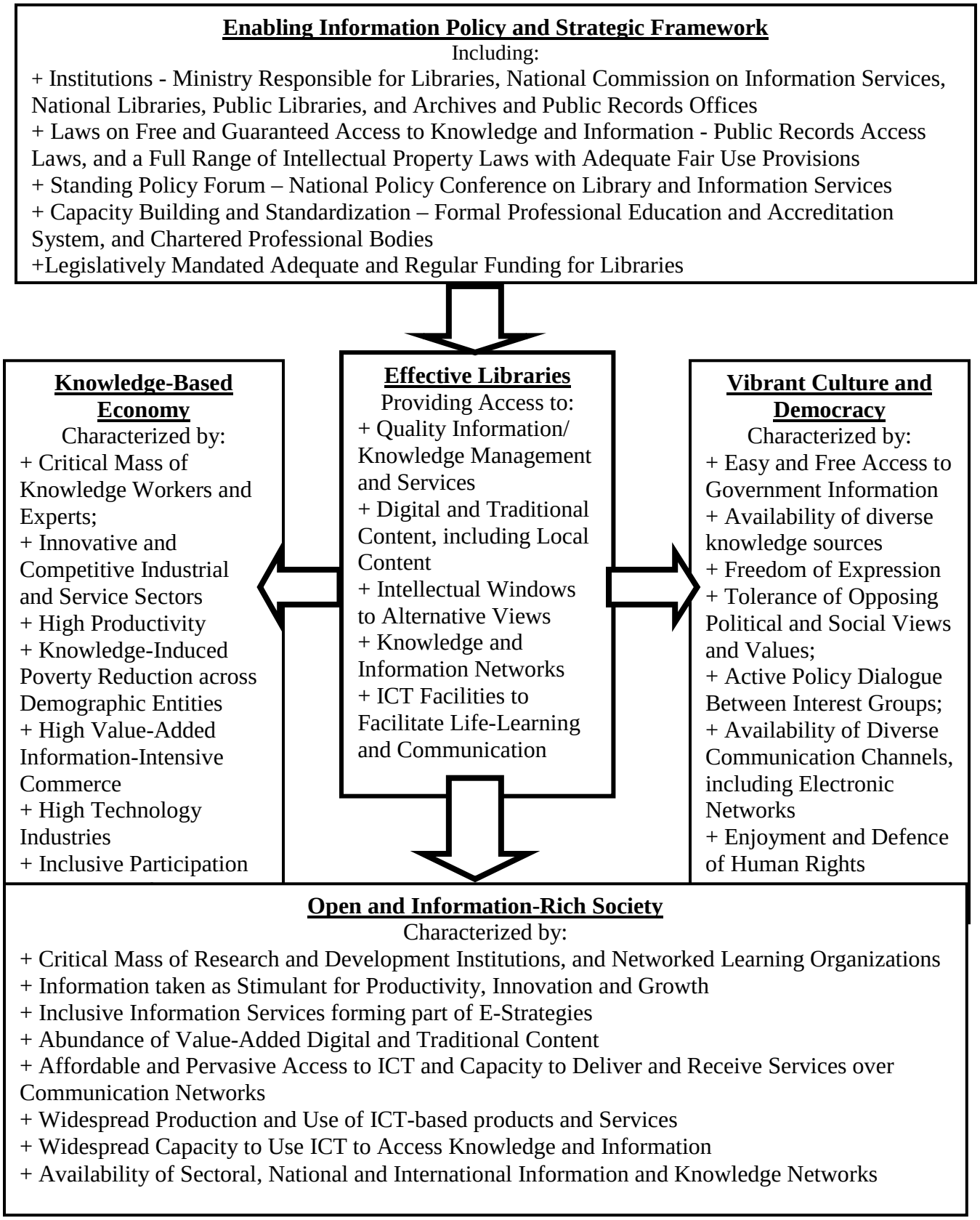
It must be emphasized that though the *National Policy for Information Technology (NITDA, 2000)* is a very comprehensive document, it represents no more than a step along the way to creating an enabling environment for the development of information society in Nigeria. A range of policy and strategy documents on the whole spectrum of information and knowledge issues would necessarily be produced and implemented.

An effective national policy and strategic information framework covering infrastructure, funding, human resources, intellectual property, information sources, services and governance, etc., should include the following library and information services dimensions:

a) Existence of ministerial level organization with responsibility for policy, resource allocation, strategic inspections, and the introduction and administration of relevant laws.
b) Formation of national commission on libraries to provide strategic leadership and cross-ministerial advocacy and coordination on library issues.
c) The establishment by legislation and adequate funding of a national library to perform a full range of functions.
d) A system of public libraries and resource centers, supporting communities of all sizes and recognized as vital component of the national strategic information management framework.
e) A public records access legislation that establishes archives and public records management functions, and other structures for selecting, conserving, processing and giving access to records and documents, in all formats, emanating from the various levels and branches of government.
f) Enactment of a full range of intellectual property laws, with proper provisions for fair use of published materials.
g) Creation of a professional body or bodies chartered to promote good practices and standards.
h) Existence of a professional education and accreditation system of international standards.
i) Initiating and running of a standing national conference on library services to discuss policy issues.

The model below illustrates the impact of library-related information policy environment on economy and society.

Libraries and the Information Society in Africa: The Policy Input-Impact Framework (From Amonoo and Azubuike, 2005)



A key recommendation on from the framework is the formation National Commission on Knowledge and Information Services. The equivalent organization is UK 's Council for Museums, Archives and Libraries, which is very instrumental in bringing about several key digital inclusion initiatives in the UK. Among its initiatives are the creation of ICT learning centres in 4,300 public libraries throughout the UK, and facilitating the creation of online resources through the New Opportunities Fund Digitization Programme. A similar influential council exists in the United States. Alternatively, this facilitation organization could be set up at local, state and federal government levels and could be named The Information Society Commission.

5.3. Intensify policy advocacy and dialogue

Policy advocacy should be intensified at all levels of governance. The Nigerian Library Association and the National Library of Nigeria should lead on this. The Nigerian Library Association (NLA) should develop a working alliance with civil society organizations in the information management and ICT sectors to advocate for the implementation of WSIS outcomes on libraries and access to information. By doing so, libraries will be taking their rightful place as they naturally straddle the people s, government and business sectors, as they operate as agencies within all the three. In this position, libraries as a group could use their social capital to influence positive change. NLA should also participate in the activities of the leading international CSOs such as the Association for Progressive Communications (APC), and The Global Knowledge Partnership, to gain more diverse experience in information society programming.

5.4. NLA take the lead in the developing new national vision of Nigeria as a knowledge society

The NLA should expand its public service role by taking up strategic advocacy for a vision of Nigeria as a knowledge society and e-democracy. By claiming this high ground of working for a Nigeria in which knowledge is the main development resource, and in which innovation and value creation are the cornerstones of national development, libraries would be gaining the relevance they deserve. In defining the scope and priorities of a knowledge society, the role and place of the libraries could be defined as the core pillar of such a society - the institutions that imbue the citizen with the power to learn, to collaborate, and to make informed decisions for the building an affluent and democratic society. E-democracy is seen as an emergent phenomenon that is closely associated with the capacity of people to make effective use of ICT for knowledge sharing and communication (Schauter et al, 2003).

5.5. Nigerian libraries should develop MDGs-related programmes for their communities

Nigerian libraries of all types should develop community programmes that are mission-oriented in addressing the MDG dimensions, including poverty reduction, maternal health, child health and employment of the youth. No library should be too small, too big or too specialized to be of value to its immediate or wider community. Programmes to

bridge the many divides that affect the youth and the elderly, people with disabilities, as well as rural people, should be initiated.

5. 6. Revamp research programmes in Nigerian library schools

Recently, heated debates were concluded on the relevance of research conducted in Nigerian library schools. In as much as I would not like to reopen the debate or take sides on the issue, I recommend that our library schools initiate a coordinated participatory action research programme on all issues related to the development of the information society in Nigeria. This could take the form of "in-library research" whereby a research team is embedded in an active professional situation and collaborating with practitioners and library clients to cause change in practice and clientele perception and capacity to access knowledge and information. Information society research could be organized according to centres of competence across the country, and may take a consortium approach to facilitate fundraising.

5.7. Conduct a National Curriculum Review if Library Schools

A related recommendation is for a complete a national review of library school curricula. We face entirely new realities. We must therefore change very resolutely. A highly skilled library workforce to meet the new information and knowledge needs of Nigerians is called for. NLA should get the responsible government department to initiate this, or seek own funding to lead the change.

5.8. Information literacy, including e-literacy and e-learning should be part of every library's activity.

This scheme rather than being added burden could attract funding and equipment to libraries. Work with small-scale enterprises and women businesses to build necessary capabilities, networks, and ability to use ICT tools, could contribute visibly to the local economy. To make this happen NLA should explore the possibility of stimulating a scheme to strengthen the ability of Nigerian libraries to help library users acquire basic literacy and information literacy skills in their communities.

5.9. Create a Nigerian Virtual Library Network to Pool Resources for E-programmes

Libraries should create a Nigerian Virtual Library Network, as a consortium, to be directed by a board consisting of participant libraries and managed in a cooperative manner to deliver high-quality and reliable digital information to library clientele. This could help libraries to confidently tap into national digital library projects as well as international programmes offering free and low-cost access to electronic resources. Such international programmes include PERI, HINARI, AGORA, TEAL and efl. The existence of a consortium can also stimulate investment in broadband infrastructure, capacity building, information security, standardization and interoperability.

5.10. A "campaign for school libraries" should be initiated

A "campaign for school libraries" should be initiated to ensure that all Nigerian students are information literate by the time they school by providing them effective school library programmes that include appropriately qualified professional staff, adequate resources, and technology.

5.11. Adopt the American-Style Library Districts Model to Create a Public library Network

Nigeria cannot become the information society it envisages without a network of public libraries. Local public library services to all Nigerians is an absolute necessity. It is also important to improve local support for the few public libraries that exist. One system I see that has produced marvelous results in the United States is the system of Library Districts. These knowledge districts, which may consist of a mix of school and public libraries, are cooperatively organized but funded from public and private sources, have achieved great successes in public library construction, expansion, and renovation, and provided access to information and ICT to all who care to use libraries.

5.12. Create an Annual National Leadership Institute

Lastly I would like to call on the NLA to start a leadership institute to propagate a new culture of entrepreneurship and accountability for library leadership. Nigeria is struggling not because it lacks resources. It is because it needs a critical mass of accountable leaders to blaze the way in all spheres. I do not think the library sector is the rare exception.

6. Conclusion

As the main repositories and purveyors of accumulated knowledge, effective libraries are very critical in ensuring the achievement of regional and global development strategies such as the Millennium Development Goals (MDGs), but the quality of library service available to the Nigerian citizens is grossly inadequate, ranging from barely adequate in research libraries to woefully deficient in educational institutions.

The recommendations of WSIS provide a clear blueprint for future steps to be taken to revamp the library sector to enable it provide effective access to information and knowledge for development. To achieve this goal, NLA and the National Library should take the lead to advocate for the implementation of the key aspects of WSIS action plans in Nigeria.

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4

Nigerian Libraries and The World Summit On The Information Society: Issues, Imperatives, And Implications

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ABSTRACT

The paper investigates the status of Information and Communication Technology as the enabling infrastructure in the evolutionary process of an inclusive Information Society It provides an overview of the Geneva 2003 –Tunis 2005 of the World Summit on the Information Society. The purpose was to identify key issues for Nigeria and Nigerian libraries and point the way forward in the march to the Information Society.

INTRODUCTION

The library institution is traditionally and historically the custodian of knowledge and information. But, the paradigm shift from traditional information handling methodologies to technological platforms seems to transfer the information and knowledge custodian roles of libraries to other institutions and professions like the computer, communication and information technology groups. However, when it comes to information and knowledge, libraries of all categories and classifications remain the dynamic engines for the knowledge and information society. Developments in the information technology field pose serious professional challenge to all libraries and related information institutions. These technological advances must be exploited in their applicable forms to oil the engines that process, produce and provide knowledge and information. The challenges of the 2 World Summits on the Information Society {WSIS} Geneva 2003-Tunis 2005. Recognized the critical role of Information and Communication Technology (ICT) in the evolution and emergence of an inclusive Information Society .If the libraries are to become ***dynamic engines*** for the knowledge and Information Society, then it is the approximate time to explore how ICT tools are redefining the professional practice.

Any human society is a labyrinth of complex individuals and institutions connected in a web of relationships .This relationships may be economic, social, religious, educational, governmental, national, regional or international. These relationships may be physically situated or isolated .To be truly human and humane, law and order are the regulatory imperatives. But even in this situation, information is the vehicle that carries the law and orders the society .Information in the last five decades has become a vital societal resource in the productive process. Investment consultants are already writing about infopreneurs and informercials (Allen,2004).Omekwu (2005) has indicated that the

increasing prime of place given to information through technological development and deployment evolves into an Information Society. Information demand, use and dissemination are critical elements that determine information structuring and services. The globalization of information exchange creates new frontiers for interaction in the economic, educational, legal and information sectors.

The new frontiers for information exchange are premised on developments in the ICTs domain. But, ICTs facilities are unevenly distributed between developed and developing countries. Anan (2000) and Banigo (2001) have all highlighted these digital discrepancies. The result or problem is the emergence of an Information Society that is becoming exclusive rather than inclusive. WSIS Geneva 2003-Tunis 2005 are initiatives that are designed to pursue the evolution of an inclusive Information Society.

Major watersheds to the evolving Information Society could be traced to the invention of printing press in 1450. From the evolution of the printing press to about 1950 the domain of information management was in paperwork management. But progress in computer technology shifted the paradigm to the management of automated technology between 1960 and 1970. The application of automated systems to information management created new resources necessitating an emphasis on information resources management including management of information technology. The rising recognition of information as a resource just as capital and labour, created a new management focus in the 1980s-analysis and use of information and associated technology for competitive advantage. There followed the concept of strategic information management involving the integration of information in the organizational structures and strategies (see, Soledad Ferreiro's (1994) adaptations from Donald, 1985 and Lewis and Martins 1989). Information Management in historical and in the context of technological development is contained in Table I below.

Table 1: Historical and Technological Trends in Information Management

Stages	**Period**	**Information Management Paradigm**	**Major Technology Development**
1	1850 – 1950	Paperwork Management	Printing Press
2	1960 - 1970	Management of Automated Technology	Computer
3	1970 - 1980	Information Resource(s) Management, Including the Management of Information technology	IT
4	1980s	Analysis and use of information and associated technologies for competitive advantage	Information Management Systems
5	Early 1990s	Strategic Information Management: Integration of Information Management in organizations structures and strategies	Database and Knowledge management systems

6	Mid 1990 – 2000	Globalisation of information sources, resources and systems	ICT
7	2000-2002	Crisis in Cyberspace	New Regulatory Frameworks
8	2003-2005	WSIS	Digital Divide

Source: Omekwu 2005 with adaptations from Soledad (1999, Donald (1985 and Lewis & Martins (1989)

The goals and ICTs provision of WSI:

Document WSIS-03/GENEVA/DOC/5-E provides the goals and general ICTs direction for WSIS as follows:

> The objectives of the Plan of Action are to build an inclusive Information Society; to put the potential of knowledge and ICTs at the service of development; to promote the use of information and knowledge for the achievement of internationally agreed development goals, including those contained in the Millennium Declaration; and to address new challenges of the Information Society, at the national, regional and international levels.

The Plan of Action encourages the creation of an enabling environment through the development of a framework for the secure, storage and archival of documents and other electronic records of information. The crux of the argument is that:

ICT applications can support sustainable development, in the fields of public administration, business, education and training, health, employment, environment, agriculture and science within the framework of national e-strategies. This would include actions in the following sectors; e- government, e- business, e- learning, e- health, e-employment, e- environment, e- agriculture, and e- science.

The critical recommendations for libraries and related institutions in the WSIS

The most conspicuous and ambitious provisions for libraries and related institutions appear under ***Cultural diversity and identity, linguistic diversity and local content are***

- Cultural and linguistic diversity as critical variables for the evolution of the Information Society;.
- Creation of policies that support the respect, preservation, promotion and enhancement of cultural and linguistic diversity and cultural heritage within the Information Society;
- Development of national policies and laws to ensure that libraries, archives, museums and other cultural institutions can play their full role in the Information Society;
- Support of efforts to develop and use ICTS for the preservation of natural and cultural heritage, keeping it accessible as a living part of today's culture;.
- Develop and implement policies that preserve, affirm, respect and promote diversity of cultural expression and indigenous knowledge and traditions through the creation of varied information content and the use of different methods, including the digitization of the educational, scientific and cultural heritage;

- ❖ Support local content development, translation and adaptation, digital archives and diverse forms of digital and traditional media by local authorities. These activities can also strengthen local and indigenous communities;
- ❖ Provision of content that is relevant to the cultures and languages of individuals in the Information Society;
- ❖ Through public-private partnerships, foster the creation of varied local and national content, including that available in the language of users, and give recognition and support to ICT-based work in all artistic fields;
- ❖ Strengthen programmes based on gender-sensitive curricula in formal and non-formal education for all and enhancing communication and media literacy for women with a view to building the capacity of girls and women to understand and to develop ICT content;
- ❖ Nurturing of the local capacity for the creation and distribution of software in local languages, as well as contents that is relevant to different segments of population, including non-literate, persons with disabilities, disadvantaged and vulnerable groups especially in developing countries and countries with economies in transition;
- ❖ Give support to media based in local communities and support projects combining the use of traditional media and new technologies for their role in facilitating the use of local languages, for documenting and preserving local heritage, including landscape and biological diversity, and as a means to reach rural and isolated and nomadic communities;
- ❖ Enhance the capacity of indigenous peoples to develop content in their own local languages.
- ❖ Cooperate with indigenous peoples and traditional communities to enable them to more effectively use and benefit from the use of their traditional knowledge in the Information Society;
- ❖ Exchange knowledge, experiences and best practices on policies and tools designed to promote cultural and linguistic diversity at regional and sub-regional levels.
- ❖ Assess at the regional level the contribution of ICT to cultural exchange and interaction, and based on the outcome of this assessment, design relevant programmes;
- ❖ Governments, through public/private partnerships , should promote technologies and R&D programmes in such areas as translation, iconographies, voice-assisted services and the development of necessary hardware and a variety of software models;

Actions taken in Nigeria to Actualize WSIS Agenda:

His Excellence President Olusegun Obasanjo pointed out the following as actions already taken by Nigeria

- National ICT policy and National Telecommunication net that liberalizes ICT sector thereby

creating the necessary enabling environment for public –private partnerships for ICT development.

* Launching of a satellite.
- Plans to launch Nigeria's communication satellite in 2006 at advanced stage.
- In collaboration with ECOWAS secretariat, Nigeria hosted stakeholders from the west African Sub- region to a conference to develop the best strategies for implementing the declaration of Principles and Plan of action in the sub-region.(Obasanjo, 2005)

ICT CONDTIONS IN DEVELOPING COUNTRIES

Despite advances in ICT, a wide digital disparity exists between developing and developed nations. Annan (2001) puts this disparity graphically:

> Today there are almost as many hosts in France as in all of Latin America and the Caribbean, and there are more hosts in Australia, Japan and New Zealand than in all the other countries in the Asian Pacific Region combined. Perhaps most telling, there are more hosts in New York than in all of Africa.

Although the Internet usage growth for Africa at December 3, 2004 was remarkable (186.6%) (Internet world State 2004), that represents only 1.4% population penetrations and 1.6% of the users in world. This means that 98.4% of the entire global Internet users are outside African. Table 2 indicates that North African countries have 40.6% of the entire Internet usage in Africa. Egypt (20%) represents more than 50% of the entire Internet users in North Africa. Data in Table 3 shows that Nigeria has the largest number of Internet users in the West African Sub-region. The upsurge in Nigeria's Internet usage statistic can be attributed to the 1998 liberalization when the Nigerian Communication Commission licensed over 50 Internet service providers to market services. Even at that, the Nigerian figure is also usually small when it is considered against the fact that Nigeria represents 20% of the entire Sub-Saharan Africa.

Table 2 below provides an overall world picture of Internet usage and population statistics

TABLE 2: WORLD INTERNET USAGE AND POPULATION STATISTICS

World Regions	Population (2004 Est.)	Population % of World	Internet Usage, Latest Data	Usage Growth 2000-2004	Penetration (% Population)	World Users %
Africa	893,197,200	14.0 %	**12,937,100**	186.6 %	1.4 %	1.6 %
Asia	3,607,499,800	56.5 %	**257,898,314**	125.6 %	7.1 %	31.7 %
Europe	730,894,078	11.4 %	**230,886,424**	124.0 %	31.6 %	28.4 %
Middle East	258,993,600	4.1 %	**17,325,900**	227.8 %	6.7 %	2.1 %
North America	325,246,100	5.1 %	**222,165,659**	105.5 %	68.3 %	27.3 %
Latin America/Caribbean	541,775,800	8.5 %	**55,930,974**	209.5 %	10.3 %	6.9 %
Oceania / Australia	32,540,909	0.5 %	**15,787,221**	107.2 %	48.5 %	1.9 %
WORLD TOTAL	**6,390,147,487**	**100.0 %**	**812,931,592**	**125.2 %**	**12.7 %**	**100.0 %**

NOTES: Data in the Tables 2-7 adapted from www.internetworldstats.com.

Perhaps, it is also vital to compare Internet use patterns in Africa with other ICT facilities in the continent. This is provided in table 3 below.

TABLE 3: ICT STATUS IN AFRICA

S/N	ICT	Usage (in Million)	% of Population	Rate
1	Radio	250,000,000		1:4
2	Television	62,000,000		1:13
3	Mobile phone	24,000,000		1:35
4	Fix phone lines	20,000,000		1:40
5	Personal Computers	5, 900,000		1:130
6	Internet Use	5,000,000		1:160
7	Pay-Television	2,000,000		1:400

Source: The African Internet - A Status Report @ http://www3.sn.apc.org/africa/afstat.htm

Table 3 above shows that radio (1:4) is the most used communication system with one out of every four using this medium. This is followed by television (1:13) mobile phones (1:35) and fixed phones (1:40). Only one out of every 130 Africans has access to personal computers. Internet usage (1:116) and pay television (1:400) rank as the two least ICT platforms. Africa

The ICTs status in Nigeria:

In his presentation at the WSIS, Ernest Ndukwe – Chief Executive of Nigerian Communication Commission provided authoritative information on the status of ICT infrastructure in Nigeria as contained in table 4 below

Table 4: Status of ICT Infrastructure in Nigeria

ICT facility	Dec.'00	Dec.'02	June'03	Dec.'03	Mar.'04
No of connected fixed lines	450,000	702,000	724,790	850,000	888,854
No of connected Digital mobile lines	None	1.6m	2.05m	3.1m	3.8m
No of national carriers	1	2	2	2	2
No of operating ISPs	18	30	30	35	35
No of Active Licensed fixed line operators	9	16	19	30	30
No of licensed Mobile operators	1	4	4	4	4

From the above table, it could be said that it is evident that ICT facilities in Nigeria experienced radical growths between 2000 and 2004. The most pronounced sector of growth was in mobile communication with digital mobile lines growing from zero in December.2000 to 3.8 million in March 2004. (Ndukwe, 2005). Other growth indices include:

- Telephone subscribers' growth from 450,000 in December 1999 to over 4,700,000 by March 2004.
- Zero private investment in ICT in December 1999 to estimated 4million by December 2003
- Teledensity of 0.4 lines per 100 inhabitants in 1999: 1.96 in 2002; 3.33 in 2003 and 3.92 per 100 inhabitants in 2004.
- Several towns and cities estimated at 48% of the population and 18% of land mass have potential access.
- Geographic penetration of fixed lines as at March 2000 has reached all states of the federation; over 200 towns and cities; 9% of estimated land mass; and; estimated population of 20% (Ndukwe, 2005)

Table 5 below reveals the state of ICTs deficiencies when compared with the population statistics

Table 5: ICT STATUS IN NIGERIA IN TERMS OF USER POPULATION

Population (millions)	132.8
Literacy rate	66.8

Gross national income per capita	290
TVs per 1000 people	68
Radios per 1000 people	200
Telephone mainlines per 1000 people	5
Mobile phones per 1000 people	4
Personal computers per 1000 people	6.8
Internet users (thousands)	115

Source: The Africa ICT Policy Monitor is an initiative of the Association for Progressive Communications (APC)

WSIS: KEY ISSUES FOR NIGERIA AND NIGERIAN LIBRARIES

Both the Geneva and Tunis Summits represent a conscientisation of the global community on the need to address the digital disparity between the developed and developing countries. They emphasized the need to evolve an inclousive Information Society driven on ICTS platforms. The ICT conditions and Internet connectivity in Africa and other developing nations are still at low level phase.

Oruame (2005) of IT Edge, Nigeria discusses ***"Africa's long road to WSIS***. He contends that;

> For West African countries and particularly Nigeria, it is still a long road plugging into the emerging Information Society. Other countries outside the continent have since the first phase of WSIS at Geneva about two years ago made considerable progress at opening ICT access to a larger number at their population, particularly the rural areas. While China and India for instance have been able to improve on building both human policy capacities to contend with the challenge of the new knowledge economy, there appears to be very little in place to show that African countries are ready for the IS.

With specific reference to Nigeria, he contends thus:

> In Nigeria, government has made several policy statements on the WSIS agenda, but there is still poor understanding of the IS and its global implications for well over 98% of the population in the country of more than 130 Million people.

It is in attempt to identify key issues that are germane to the evolution of an inclusive Information Society in Nigeria Nigerian libraries must address the following emerging issues in order to be appropriately repositioned for the Information Society.

(i) Awareness of WSIS and IS

If according to Oruame (cited above) well over 98% of the Nigerian population are not aware of the implications of the emerging Information

Society, if follows therefore that a critical gap of ignorance exists in the awareness level of Nigerians about the whole concept of the Information Society. It follows further that a fundamental error of omission or inaction can be posted at the doorstep of the WSIS National Implementation Agency – The National Information Technology Development Agency – NITDA.

(ii) Urban – Rural Digital Divide

The wide digital divide between the developed and developing countries was the vital motivation for WSIS. The concentration of ICTS in urban Nigeria has created a new form of digital divide – the urban – rural digital divide (DD). To connect villages with ICTs and establish community access points are vital issues that will create "rural inclusive" IS.

(iii) Sociological Issues

It is understandable that digital or ICTs infrastructural framework are vital to the emergence of the Information Society. But ICTs must be perceived for what they are – means to the Information Society and the IS itself. Three concepts must be clarified here – ICTs are technological tools that impact the evolution of the Information Society. The sociology of information pertains to the vital role of information in connecting and establishing relationships between individuals and institutions or people and places. Instrumental information describes the information that has utility value. It is argued here that the whole essence of the Information Society is to enable people to have access to information that could empower them.

(iv) Involving the Critical Stakeholders

It is argued further here that librarians and other information professionals are best trained and positioned to manage the sociological and instrumental properties of information. Through intensive web research, it seems to this investigator that one of the most critical institutions in the whole process of national information management has not been adequately involved in post-Geneva 2003 – Tunis 2005 of WSIS. The Information Society, it must be re-emphasized is all abut enabling the citizens to have access to information that would empower their lives.

(v) Content Development

What is the essence of ICTs infrastructure that conveys information of no real value to members of the public? It seems that the current emphasis is all about ICTs development. It is a critical issue to begin to address the development of the information and knowledge content of the ICT systems If this is not done, then alien contents will dominant local/national IS.

(vi) Content Management

Content management is a follow-up to content development. It is submitted here that while content development should be a multi-disciplinary initiative, content management is the professional domain of librarians and other information professionals. Do we have agenda for managing information in the digital frontier of the ICT- driven Information Society?

(vii) Vital Connections

It has been discussed earlier that bridging the urban – rural digital divide is vital to rural inclusiveness or integration. The Geneva 2003 of WSIS

identified in its plan of action other vital institutions that should be connected with ICTs. Targets to be achieved by 2005 include:

To connect universities, colleges, secondary schools and primary schools, scientific and research centres , public libraries, cultural centres, museums, post offices and archives, health centres and hospitals, all local and central governments with ICTs, and establish websites and email addresses. Other vital goals include to adapt all primary and secondary school curricula to meet the challenges of the Information Society, taking into account national circumstances; to ensure that all of the world's population have access to television and radio services; to encourage the development of content and to put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet; and to ensure that more than half the world's inhabitants have access to ICTs within their reach.

Can we say that these target connections for 2005 have been achieved? How many of Nigerian public libraries have Net access? The issue of web access in public primary and secondary schools seems not be of any policy concern to educational managers? It is disappointing that web access in the nation tertiary institutions is still nothing to write home about. Even the very unsatisfactory Internet services in Nigeria's higher institutions are provided by commercial operators. It is an issue of serious concern that 27 years after the development of the Internet in 1979, the nation's primary information institutions are virtually, if not practically, left behind.

(viii) Legal and Policy Framework

The crux of the matter really is the absence of legal and policy frameworks for the development of all types of library systems. Anaeme (20006) observed that in most of the laws/acts setting up the parent bodies where most law libraries operate, the place of the libraries was vaguely mentioned. There must be explicit legal and policy frameworks for libraries development as vital allies in match to the information society.

(ix) Education

The Geneva planning action recommends the adaptation of all primary and secondary school curricula to meet the challenges of the Information Society. The idea behind this recommendation is to ensure that children and youth people acquires ICT skill early in life. It is also an issue for education to develop ICT training programmes for the adult members of the society. The education issue would define the training needs, programme, goals and the training institutions.

(x) Indigenous Knowledge Systems

Under section C8 (k, i), the Geneva Plan of Action recommends the need to:

(a) Enhance the capacity of indigenous peoples and traditional communities to develop content in their own languages.

(b) Cooperate with indigenous peoples and traditional communities to enable them to more effectively use and benefit from the use of their traditional knowledge in the Information Society

These recommendations recognize the value of the indigenous knowledge as an essential aspect of the Information Society. Has the information professionals develop a

reliable system for the documentation of the nation's rich indigenous knowledge and cultural heritage? These issues challenge the profession to reinvent and rediscover the essence and practice of librarianship. Information remains the tool of our trade. Providing it most effectively is the practice domain of the profession. As new technology evolves and the information variable migrates to the electronic frontiers, innovative ways must be developed to handle both the technology and the new frontiers.

The Required Innovations to Bridge Digital Divide:

The following questions are related to innovations that the profession must begin to address:

- **(i)** Are traditional or conventional skills sufficient to cope with relevance in the Information Society?
- **(ii)** How knowledgeable are librarians in IT and ICT handling?
- **(iii)** How familiar are the professionals with the electronic and digital frontiers?
- **(iv)** Should information professionals stay on the fence of indecision and inertia while it is being sidetracked in WSIS national programme?
- **(v)** What are the critical intervention points for libraries, museums, archives and information centres in advancing the evolution of the Information Society?
- **(vi)** What advocacy role must the leadership of the Nigerian Library Association play to ensure the formulation of a library development policy for the nation?
- **(vii)** What are the professional imperatives for individuals and institutions as the Information Society evolves?

The Imperatives for Library and Information Professionals in WSIS Agenda?

Somewhere else Omekwu (2005) observed that

> Librarians in all types of libraries are already at the cross road of management imperatives induced by the changing information environment. Academic libraries will be challenged to adopt new management styles to support learning, research, and recreation in an environment where scholarship is increasingly migrating to digital frontiers. Special libraries managers will require specialized skills to navigate the ocean of information in order to address the specific information needs of their often sophisticated clientele system. Scholl libraries are already designated multimedia resources centres. Management of multimedia systems, services and staff implies the acquisition of new managerial arts and skills. Astute managerial skills are even more compelling for the expanding roles of public libraries as institutions for the development of the mind, literacy in developing countries and cultural repositories

But the imperatives for relevance in the Information Society are not only managerial but can be viewed from individual and institutional perspectives.

A. INSTITUTIONAL IMPERATIVES

Imperative I: Computer Technology.

Computer technology is inevitable for all kinds of libraries. It is no longer an exclusive luxury meant for libraries in developed nations. To operate Nigerian

libraries without computer technology is to be more three decades behind advances in technology.

Imperative 2: Automation

Library automation is the goal of acquiring computer technology. Manual librarianship is not the emphasis in the Information Society. The Geneva plan of action mentions the creation and development of a digital public library and archive services, adapted to the information society, including reviewing of national library strategies and legislation, developing a global understanding of the need for "hybrid libraries, and fostering worldwide cooperation between libraries.

Imperative 3: Local Area Network (LAN)

It is an imperative for libraries or their institutions to operate a LAN. First, it facilitates internal communication among staff. Secondly, it maximizes network facilities like printers. Thirdly, it improves work flow as data entry into a single database can go on from various workstations. And finally, it lays the groundwork for external communication via Internet connectivity.

Imperative 4: Web Access

Web access will become increasingly an imperative for all libraries in the emerging Information Society. Without it, library users will be denied a round-the-clock access to global information. The whole essence of the emphasis on ICTs infrastructural facilities development is to build the platform for real time, non-stop easy access to information that transcends national boundaries and barriers.

Imperative 5: Websites

To operate without a website is to be non-existent in the virtual environment. As institutions develop their websites, their libraries must ensure that the library's bibliographic records/database are uploaded to become part of the global resources.

Imperative 6: On-line Libraries/Databases

Virtual, electronic or Internet librarianship will increasingly become the dominant features of the Information Society. Skills in managing online library resources will become a compelling imperative in that society. And the digitization of library, archival and cultural repositories will become inevitable.

Imperative 7: Hybridization

It is obvious that library and information centres can neither become virtual overnight or irrelevant in the next few years. A hybrid of manual and machine systems must of necessity co-exist. The ability to manage a hybrid library is a challenge that must be addressed

B. INDIVIDUAL IMPERATIVES

Librarians and information professionals have a choice either sit on the fence of professional indecision and traditionalism or move with the times. To lead in the emerging Information Society, librarians must adapt their skills to the challenges of an ICT-driven Information Society. The individual imperatives include:

Imperative 8: Computer Skills

What can modern librarians do in the Information Society without the ability to operate the computer system? The answer will range from nothing to little. The emphasis of WSIS is on ICT-propelled Information Society. Librarians will do themselves a professional duty to acquire skills that will enable them to use computers effectively.

Imperative 9: IT Literacy

Information technology is essentially the deployment of computer and related technologies like telephone, Fax, and reprographic tools to information management. It is imperative that librarians as custodians of information management facilities should know how use these systems in isolated and integrated platforms.

Imperative 10: ICT Competency

As the Information Society operates on ICT platforms, librarians must be competent users of ICT facilities. The ICTs are basically the scientific integration of information technology and communication systems for the transmission of information in multimedia formats. The cutting edge in ICT development is in its ability to create information systems in vastly global proportions

Imperative 11: Internet Proficiency

Librarians must become active users of the Internet it is only then that they can help and the library users how to navigate the web in the information society.

Imperative 12: Network Issues

What has happened to NUNET? Why should the Nigerian Association of Law Libraries operate as isolated mountain? Nigerian libraries must use emerging technology to network their resources for the common good of all categories of library users.

Imperative 13: Initiatives and Proactiveness

Librarians must become active managers of change. Library services must move to the proactive platform. Librarians must take the initiatives in the evolutionary process of the Information Society. This is imperative because information is the librarians' tool of trade. An inclusive Information can hardly evolve without the active involvement of library institutions and information professionals. Any meaningful post- Geneva 2003-Tunis 2005 programme leading to an inclusive Information Society must carry libraries along.

Having identified the key issues and the innovations and imperatives, what is the way forward for Nigeria?

The Way Forward for Nigeria in WSIS Agenda

The WSIS Plan of Action and Tunis Commitments are all clear about national goals and targets in the evolution an Information Society that is truly global and inclusive. The way forward for Nigeria and Nigerian libraries include:

(1) The formulation of a policy and legal framework that would domesticate WSIS national goals, targets and plan of action.

(2) An intensive sensitization of the Nigerian civil society process of the information society groups on their involvement in the evolutionary process of the Information Society..

(3) Identification and involvement of the critical institutions and professions in the implementation WSIS national targets and goals. Such critical institutions and professions include libraries, archives, museums, universities, and other tertiary institutions, librarians, computer scientists and engineers, the Nigerian Internet Group, Computer Association of Nigeria, publishers, educationist, sociologists and medical doctors. Other includes the Nigeria Bar Association, Nigerian Society of Engineers and the Institute of Chartered Accounts of Nigeria.

(4) A deliberate effort to bridge the urban – rural digital divide in Nigeria. The launching of a satellite programme that could enable a wireless communication platform is a vital step towards effective rural integration into an inclusive Information Society.

(5) The repositioning of Nigerian libraries and related information institutions as the primary agencies of information service provision. It is submitted here that the most critical way forward for Nigeria is to comprehensively connect all categories of libraries with ICTs.

(6) The recreation of the nation's public libraries as agencies for the development of the mind, enlightenment of the people, and cultural preservation. A detailed study on the metamorphosis of Nigerian public libraries into digital public libraries is long overdue. Nigeria will move toward the Information Society if our public libraries are revamped and revived in the model of the famous New York Public Library.

(7) Lessons from the experience of nations like China and India can provide Nigeria with pitfalls to avoid and pathways to adopt. If these countries have made remarkable progress since WSIS Geneva 2003 – Tunis 2005, Nigeria can benefit from their experience to move forward into an inclusive Information Society.

CONCLUSION

Nigeria and Nigerian libraries are critically situated at the cross road of global proposals on the essentials for the evolution of an inclusive Information Society. The WSIS Geneva 2003 – Tunis 2005 are clarion calls on nations to wake up to the challenges of the Information Society. In Nigeria, developments since 2003 and 2005 of WSIS have been more of statements and less focus on actions. Critical stakeholders vital to the emergence of the kind of Information Society envisaged by WSIS seem not to be fully involved in post – Geneva and Tunis Summits activities in Nigeria. The ICTs infrastructural facilities are yet to provide for over 100 million people. Nigerian libraries are mainly without functional web access. The connecting ICT platforms to libraries, archives, museums, rural areas and educational institutions are virtually unavailable. It is a really long journey getting to the Information Society. It must be submitted that there could never be a truly inclusive Information Society with libraries, librarians and other knowledge workers and institutions.

The library as the major information institution will remain the most critical nexus between the society and the information that are instrumental to societal growth and development. This is the reason why librarians must reinvent themselves as dynamic

engines for the knowledge and information society. The professional rediscovery of librarians is premised on the maxim that only the people who hold the key are best qualified to open the door. Every profession is critically situated at three edges of the development paradigms. These are the trailing edge, the cutting edge and the leading edge. As ICT systems impact the evolution of the information society, it seems that Nigerian libraries have been relegated to the back door of the trailing edge. The ICT systems are merely cutting edge tools that mainstream people, places and professions into the Information Society. And when that society eventually arrives, information professionals would be there to provide the leading edge.

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5 Towards Implementing The WSIS Agenda In Nigeria

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ABSTRACT
This paper discusses the world summit on the information society (WSIS). It made an overview of the first and the second phases of the WSIS and the documents generated from these meetings. The key issues around which the WSIS revolved were discussed and their implementations in and implications for Nigeria were elaborately highlighted.
Some recommendations on how Nigeria can derive meaningful gains from the WSIS Agenda were provided.

INTRODUCTION

Recognizing the importance of the revolution in ICTs as a means of shaping the future of the world and in achieving the development goals outlined in the Millennium declaration, world leaders decided that a global vision and a global dialogue were needed to build the framework of an all – inclusive and equitable information society. The Information society is an evolving concept that has reached different level across the world, reflecting the different stages of development. Technological and other change is rapidly transforming the environment in which the information society is developed. The unique two-phase structure of the World Summit on the Information Society (WSIS) provided an opportunity to take this evolution into account. (Childs, 2005)

The first United Nation resolution on World Summit on Information Society (WSIS) called for a partnership between governments, UN bodies, international/intergovernmental organizations, non-governmental organizations, civil society and the private sector to contribute to, and actively participate in, the intergovernmental preparatory process of the summit and the summit itself. (UN/ITU. 2005).

The World Summit on the Information Society (WSIS) is an initiative of the International Telecommunication Union (ITU), a United Nations specialized agency. The summit was organized in two phases. The first phase took place in Geneva. It was hosted by the government of Switzerland from the 10th to 12th of December, 2003. The second phase was held in Tunis from the 16th to 18th of November, 2005 and hosted by the Tunisian government. (ITU, 2005). The WSIS was organized on the premises of the desire and commitment to build a people-centre inclusive and development oriented information society, where everyone can create, access, utilize, and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in

promoting their sustainable development and improving their quality of life (UN/ITU, 2005).

THE KEY ISSUES

A detailed examination and analysis of the documents generated around the WSIS will reveal the key principles as stated in Section B, paragraphs 19-64 of the "Declaration of Principles" which was later translated and enlarged as "action lines" in Section C, paragraphs 8-26 of the "Plan of Action", as the key issues around which the summit revolved.

The key issues are the following eleven (11) points raised in the WSIS agenda. These are:

1. **The role of governments** and all stakeholders (private/business sector, civil society, the U.N, other international/intergovernmental organizations and non-governmental organizations) in the promotion of ICTs for development which requires cooperation among these stakeholders.
2. **The provision of information and communication infrastructure and services** adapted to regional, national and local conditions and made possible by policies that create favourable climate for stability, predictability and fair competition at all levels. The challenge here is the provision of an equitable and affordable access to ICTs.
3. **Access to information and knowledge** – The ability for all to access, contribute and disseminate information, ideas and knowledge via easily accessible, enriched and protected information made available in the public domain and an increasing awareness of the possibilities offered by different software models and licences to encourage diversity of choice.
4. **Capacity building** – Each person (including people outside the formal educational structure) should have the opportunity to acquire, the necessary skill and knowledge in order to understand, participate actively in, and benefit fully from the information society and the knowledge economy. Attention should be paid to lifelong learning and improving professional skills. Given the wide range of ICT and the information specialist required at all levels, building institutional capacity deserve special attention. Also, national capability in ICT research and development should be enhanced. Furthermore, partnership, between developed sand developing countries in R and D, technology transfer, manufacturing and utilization of ICT products and services should be encouraged.
5. **Building confidence and security in the use of ICT -** strengthening the trust framework, including information security and network security, authentication, privacy and consumer protection while enhancing access and trade. Also, it is necessary to prevent the use information resources and technologies for criminal and terrorist purpose, while respecting human rights.
6. **An enabling environment** – At national and international levels. At national level, it can be achieved through government intervention in correcting market failures, maintains fair competition, attracting investments, creating a secure, safe and healthy working environments, appropriate for the utilization of ICTs; and to

serve national priorities. Also, at international level, a dynamic and enabling international environment can be created supportive of foreign direct investment and international cooperation in the areas of finance, debt and trade, and a full and effective participation of developing countries in global decision making. Furthermore, the development, adoption and respecting of international standards and norms that take into account the needs of users and a worldwide consumer access to service regardless of underlying technology, are of paramount importance.

7. **ICT applications benefits in all aspects of life -** ICT applications are potentially important in all area of life, hence, applications should be user – friendly, accessible to all, affordable, adapted to local needs in languages and culture and supportive of sustainable development.
8. **Cultural diversity and identity, linguistic diversity and local content** – cultural diversity are the common heritage of humankind. The information society should be founded on and stimulate respect for cultural identity, cultural and linguistic diversity, traditions and religions and foster dialogue among cultures and civilization. Also, the creation, dissemination and preservation of content in diverse languages and formats must be accorded high priority in building an inclusive information society, paying particular attention to the diversity of supply of creative work and due recognition of the rights of authors and artists. The development of local content suited to domestic or regional needs will encourage social and economic development and will stimulate participation of all stake holders, including people living in rural, remote and marginal areas.
9. **Media** – There should be freedom to seek, receive, impart and use information for the creation, accumulation and dissemination of knowledge and the responsible use and treatment of information by the media in accordance with the highest ethical and professional standards. Also, traditional media in all their forms have an important role in the information society and ICTs should play a supportive role in this regard. Diversity of media ownership should be encouraged, in conformity with national law and taking into account relevant international conventions. In addition, international imbalances affecting the media, particularly as regards infrastructure, technical resources and the development of human skills should be reduced.
10. **Ethical dimensions of the information society**- The information society should respect peace and uphold the fundamental values of freedom, equality, solidarity, tolerance, shared responsibility and respect for nature. Justice, the dignity and worth of human person should be fostered.

    Also, the widest possible protection should be accorded to the family, to enable it pay its crucial role in society. Furthermore, there should be respect for the fundamental freedoms of others.
11. International and regional cooperation- The information society is intrinsically global in nature and national efforts need to be supported by an effective international and regional cooperation among government, the private sector, civil society, and other stakeholders, including the international financial institutions in areas such as finance and technical assistance (UN / ITU, 2005).

Having seen the key issues in the WSIS Agenda, how then do we appropriate and implement these action lines in our country; Nigeria?

THE WAY FORWARD FOR NIGERIA

The implementation of the ideals of WSIS in Nigeria should be a collective responsibility of the following:

1. They need to initiate a structured dialogue with all relevant stakeholders via at least one functioning Public / Private Partnership (PPP) or Multi – Sector Partnership (MSP) to promote technologies and R & D programmes in areas such as translations, iconographies, voice assisted services and the development of necessary hardware and a variety of software models including proprietary, open source software, and free software, such as standard character sets, language codes, electronic dictionaries, terminology and thesauri, multilingual search engines, machine translation tools, Internationalized domain names, content referencing as well as general and application software and in making available adequate and affordable ICT equipments for end users.
2. Encourage research on the information society including on innovative forms of networking, adaptation of ICT infrastructure, tools and application that facilitate accessibility of ICTs for all, and disadvantaged groups in particular.
3. Encourage initiatives to facilitate access, including free and affordable access to open access journals and books, and open archives for scientific information.
4. Support the creation and development of a digital public library and archives services, adapted to the information societies, including reviewing national library strategies and legislation, developing a global understanding of the need for "hybrid libraries" and fostering national cooperation between libraries.
5. Develop national policies and laws to ensure that libraries, archives, museums and other cultural institutions can play their full role of content – including traditional knowledge – providers, in the information society, more particularly by providing continued access to record information.
6. Support efforts to develop and use ICTs for the presentation of natural and, cultural heritage, keeping it accessible as a living part of today's culture. This includes developing systems for ensuring continued access to archived digital information and multimedia content in digital repositories, and support archives, culture collections and libraries as the memory of humankind.
7. Develop of framework for the security of the e – archives and other electronic records of information.
8. Design specific training programme in the use of ICTs in order to meet the educational needs of information professionals such as archivists, librarians, museum professional, scientists, teachers, journalists, postal workers and other relevant professional groups. Training of information professional should not focus only on new methods and techniques for the development and provision of information and communication services, but also on relevant management skills to ensure the best use of technologies while the training of teachers should focus

on the technical aspects of ICTs, on development of content, and on the potential possibilities and challenges of ICTs.

9. Provide affordable or free of charge access for citizens to the various communication resources, notably the Internet, by establishing sustainable multi – purpose community public access points. These access points, should to the extent possible, have sufficient capacity to provide assistance to users, in libraries, educational institutions, public administrations, post offices and local ICT training centers, with special emphasis on rural and underserved areas, empowering local communities in ICT use and promote the production of useful and socially meaningful content (traditional knowledge) and nurturing local capacity for the creation and distribution of software in local language.
10. Promote affordable and reliable high speed internet connection for all universities and research institutions to support their critical role in information and knowledge production, education and training, and to support the establishment of partnerships, cooperation and networking between these institutions.
11. Promote electronic publishing, differential pricing and open access initiatives to make scientific information affordable and accessible in all countries on an equitable basis.
12. Promote the use of peer – to – peer technology to share scientific knowledge and pre – prints and reprints written by scientific authors who have waived their right to payment.
13. Promote the long – term systematic and efficient collection, dissemination and preservation of essential scientific digital data, for example, population and meteorological data.
14. Give support to media based in local communities and support projects combining the use of traditional media and new technologies for their role in facilitating the use of local languages, for documenting and preserving local heritage, including landscape and biological diversity and as a means to reach rural and isolated and nomadic communities.

The Nigerian Private Sector

The sector should aim at developing and diffusing information, for infrastructure, content and applications. The private sector is not only a market player but also plays a role in a wider sustainable development context when encouraged by series of related programmes, including, among other things: incubator schemes, venture capital investments (national and international opportunities) government investment funds (including micro finance for Small, Medium-sized and Micro Enterprises (SMMEs), investment promotion strategies, software export / import support activities (trade counseling), support of Research and Development Networks and Software Parks.

THE NIGERIAN CIVIL SOCIETY

Civil society organizations are where people come together and work collectively to further their common interests. Civil society occupies the “social space” between the state and the individual. The civil society is made up of the media, non – governmental

organizations, youth groups, gender groups, volunteers, cities and local authorities, trade unions, indigenous people, education academia and research, science and technology community, creators and promoters of cultures, networks and coalitions, multi-stakeholders, partnerships, philanthropic institutions, think tanks, and people with disabilities. The mobilization, involvement and the commitment of this group is equally important in creating an equitable information society, and in implementing ICT related initiatives for development.

D. INTERNATIONAL AND REGIONAL INSTITUTION INCLUDING INTERNATIONAL FINANCE INSTITUTIONS

These institutions have a key role in integrating the use if ICTs in the development process and making available necessary researches for building the information society and for the evaluation of the progress made.

Nigerian government should raise the relative priority of ICT projects in the various request made for international cooperation and assistance on infrastructure development projects from developed countries and international finance organizations.

Finally, international and regional organizations should develop and launch a website on best practices and success stories, based on a compilation of contributions from all stakeholders, in a concise, accessible and compelling format, following the internationally recognized web accessibility standards. The website could be periodically updated and turned into a permanent experience sharing exercise.

Concluding Remarks

Since ICTs are merely a tool for development, social and economic development is not possible without meaningful and sustained involvement of the people who are most affected by developmental changes. Hence, the challenge is to engage the people as central players in issues concerning their own development.

A Working Group on ICT or ICT Task Force should be established to supervise, advice, monitor and reports developments and issues pertaining to ICT to relevant authorities for necessary actions. Such group may be made up of members of Nigeria Society of Engineers, Nigerian Computer Society, Nigerian Institute for Development Policy and Management; Museums, Libraries and Archives Councils and members of the Nigerian Civil Society. The body should be charged with the responsibility of analyzing policies, developing capacity, promoting research, innovation and change, and providing strategic leadership on ICT issues.

A Nigerian version of the Voluntary Digital Solidarity Fund should be established as this will serve as a depository for subventions (from the federal or state governments), donations (from international, regional and intergovernmental organizations), from Official Development Assistance (ODA) accruing from developed countries, and from

other form of assistance (coming both from internal and international financial, and other organizations), meant for financing ICT for development.

Finally, there should be a Nigerian Internet Institute aimed at becoming a multi-disciplinary academic centre with a focus on furthering institutional, scientific, legal and other social factors shaping the Internet and its implications for the society.

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6 Resource Sharing In The Digital Age

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Information is the only form of wealth that that can be shared without dilution.[1]

Resource sharing has always been essential to the existence of libraries. Educating and entertaining patrons through the dissemination of the library's resources is what libraries are all about and part of the reason why most of us have been hired. At the most basic level, resource sharing means opening the library doors to patrons who walk in the doors and are given the privilege of reading the items inside. In some cases these users also have the privilege of borrowing items for a period of time.

Extending this sharing responsibility farther than the library building involves sharing library resources with the patrons of other libraries. Even though some libraries let the fear of having their resources be stolen or misused influence their sharing responsibilities, interlibrary loan has had a long history in many countries.

> "*Interlibrary loan is conceptualized in terms of borrowing and lending. In some instances, one librarian is in charge of borrowing and another is in charge of lending; this varies by institution. If an item is rare or difficult to find, this may be the easiest way to gain access to it. However, if an item is rare or difficult to find, interlibrary loan does not guarantee that the lending library will send the item to you through your local library. Some collections and volumes may be non-circulating. Urgent requests are placed if the item is needed urgently. These requests should be prioritised and supplied quickly. Books may be posted by courier and photocopies may be faxed or scanned and sent electronically..*"[2]

Various consortia arose in response to the increasing calls for the establishment of interlibrary loan programs. Some of these involved many small libraries which wanted to increase their base of available resources without increasing their budgets but many of them also evolved as a response to government sponsored initiatives. The groups of libraries who cooperated in this way of interlibrary lending were often similar types of libraries as the shared holdings would therefore have appeal to the similar types of patrons from these libraries. For instance, a group of university libraries could arrange to share their resources and therefore reduce the necessity of holding all of the titles on a particular subject area while at the same time their students and faculty members would have access to them. Public library consortia that use interlibrary loans extensively are very common in the United States

[1] Barnes, Steven. "The Impossible Dream". Information Technology and Libraries. Dec. 1995.
[2] Interlibrary Loan Wikipedia article. http://en.wikipedia.org/wiki/Interlibrary_loan

with many having the books and other items transported between the libraries on a daily or even more frequent basis. The Cape Libraries Automated Material Sharing (CLAMS) http://www.clamsnet.org/ a consortium of 30+ libraries on Cape Cod, Martha's Vineyard and Nantucket Island in Massachusetts is a pioneering example of interlibrary loan and frequent delivery which works well to server the patrons in the area.

The shift from ownership to access began with this type of interlibrary cooperation. One no longer had to buy and hold ownership of information in order to access and use it so the focus began to change from ownership to access.

However, the question still arose of how to know what was available to one even if he or she were a member of a consortium.

> *Traditionally, library users discovered potentially useful titles from book advertisements, through word-of-mouth from a friend or an authority on the subject, consulting the bibliographies found at the back of books or published as a separate book, or a printed union catalog of all the books in a group of libraries. Since the mid-1980s, searching for books located at other libraries has become easier, as many libraries have allowed library users to search their online catalogs at the library or over the internet"*[3]

It soon became clear that users needed some sort of finding aid for remote documents and texts and this is when union listing became even more sophisticated. A union list is an index which can lead the researcher or librarian to the needed documents held by a lender. Some of the largest of these in the world are the National Union Catalog (NUC) of the Library of Congress or the large catalogs of OCLC or RLIN. Some of these types of lists began as hard copies consisting of many bound volumes but now most of them have evolved into digital databases. One can search the databases to find where a document is located and if they have the eligibility they can borrow either the original hard copy or perhaps even a scanned version of the original.

Closer to home, several projects have been initiated here in Nigeria which have as their goal the sharing of information. Some of these are:

- Nigerian Periodical Index **(NPI)** A resource sharing project of the Committee of University Libraries of Nigerian Universities **(CULNU)** All Nigerian Universities are expected to participate with each being responsible for indexing serial titles in a given field.

- National Documentation and Library Centre for Science and Technology **(NADICEST**) The project aims at providing access to current and retrospective information on science and technology to facilitate research. Academic and research libraries are expected to be members. It is made up of eight Nodal Centres to which special subject areas were allocated for development.

[3] Ibid.

However, no matter how effective these types of resource sharing projects are, they depend on the movement of paper documents across space. When this happens there are potential problems of damage or loss to the original item. One way around this is for the documents to be transferred into digital documents which can be transmitted and copied without the fear of losing the original.

Librarians know that the digital age has profoundly changed their place in the world. The shift from print on paper to electronic documents is only one part of it. The repercussions of this shift have broad implications for all of us, but especially for the information providers.

Electronic documents are experiencing exponential growth, shifting the focus away from hard copy. Over forty years ago in 1964 Marshall McLuhan stated, "We have extended our central nervous system itself in a global embrace.…In the electric age when our central nervous system is technologically extended to involve us in the whole of mankind and to incorporate the whole of mankind in us, we necessarily participate, in depth, in the consequences of our every action".[4] This statement was made long before many of the changes that are now evident in electronic and digital space were present.

In the 21st century networked structures are taking over the command and control structures of the last century and consequently we need to work with others not only in our own institution, but with those who share common goals in order to enable knowledge and information to flow across spaces and borders. Digital libraries are generally viewed as extensions of the library-as-institution—a tool for "revitalizing their mission of accessing and disseminating information and knowledge

If Librarians are truly charged with creating, finding, evaluating, managing and disseminating information, reaching out and exchanging information with others is essential if we are to keep up. We can no longer stand alone and guard our information resources without sharing them if we are to provide comprehensive services to our patrons. They are smarter than that. They are aware of the glut of information available via Google and they will use this without guidance if we aren't there to provide the guidance. It is no longer possible for a Library to survive only as a passive repository. Partnership and strategy are key to making this ownership-to-access transition work effectively. Strategic approaches can be applied even to fairly conventional library services.

This shift from having to actually own an item to having access to information located in nearby libraries began the revolution towards the virtual availability which we see today in electronic documents. Today the access of free information available via the World Wide Web has changed the concept of having to go to the neighborhood library and turn the pages of a book with paper pages. This is not to say that some of our best information and our most entertaining texts are not to be found in hard copy. The challenge here is to transmit even these hard copy texts to a patron who might not be standing in front of you. The digitization revolution is moving ahead and we have probably all heard of the project that Google has undertaken with 5 large libraries in order to scan and digitize many of their

[4] McLuhan, Marshall. Understanding Media. Boston, MIT Press 1994 p.3,4.

holdings, a scanning project that will bring millions of volumes of printed books into the Google Print database for open public use. Once this is accomplished, however, there is still the problem of connectivity and storage capability to deal with.

A low cost method of transmitting documents is to send them as an e-mail attachment, preferably in a format such as PDF. This only requires that the library have e-mail and a hard drive where they can store the material and print it out for researchers if that is necessary.

Many Nigerian libraries are finding that they have a difficult and expensive problem acquiring access to this virtual world as Internet access and connectivity as well as bandwidth can be very expensive. A work-around solution to this is the use of storing digital resources on local hard drives. A project like e-Granary offers access to digitized documents on site and has seen wide acceptance here in Nigeria.

So, it seems clear that aside from sharing the print collections in our libraries when possible as well as developing consortia for purchasing and distributing hard copies, there is a lot that can be done for the sharing of information that is available electronically. Cooperative developments including the following initiatives offer options towards making progress:

- Libraries must cooperate in the purchase or leasing of library materials such as electronic products with other libraries, and make other library cooperative arrangements when possible. We must develop consortia which can negotiate the purchase of electronic databases and other electronic sources of information. CULNU is an excellent example of this.

- Combine forces to negotiate Internet connectivity and wider bandwidth. Sharing information on funding sources could be a part or this initiative.

- Develop regional repositories of scanned and other electronic documents which can be shared with other members of a consortium, or can be open to all. Examples of this are the Nigerian Digital Library or the African Digital Library.

- Share knowledge of valuable free Internet resources which have been evaluated for their worth. Set up a clearing house for information on these open access resources. A resource such as South of the Sahara http://library.stanford.edu/africa/ can serve as an example of this sort of subject indexed resource collection.

- Copyright becomes a very important concern as we begin to deal with electronic documents as they do not have the same restrictions as print documents and the

rules can be confusing. I have not dealt with this issue in this paper but it does need to be the topic of further investigation and also a future paper.

In an age of developing information technologies, resource sharing activities are not set in stone but will need to be reviewed on a continuing basis. This is also true of these initiatives for future projects as changes occur in available technologies and funding restraints or opportunities.

In conclusion, I would like to quote Nelson Mandela who once said, "If we cannot ensure that this global revolution creates a world-wide information society in which everyone has a stake and can play a part, then it will not have been a revolution at all."[5] (Mandela 1)

In order to help those who would like to join in this information revolution, I would like to help by sharing some electronic resources that I am currently aware of. The following programs offer free or very low cost electronic resources to libraries specifically in Nigeria:

JSTOR
www.jstor.org
In a new decision this excellent and sophisticated database has offered access to any library located in Africa. Contact JSTOR for more information on this development.

eIFL
http://www.eifl.net
eIFL.net (Electronic Information for Libraries) is an independent foundation supported by OSI the Open Society Institute that strives to lead, negotiate, support and advocate for the wide availability of electronic resources by library users in transition and developing countries. Its main focus is on negotiating affordable subscriptions on a multi-country consortial basis, while supporting the enhancement of emerging national library consortia in member countries. Nigerian membership is Nigerian University Libraries Consortium (NULIB CONSULTS NIG. LTD) formerly CULNU

e-Granary
www.widernet.org/digitallibrary/
The eGranary Digital Library provides millions of digital educational resources to institutions lacking adequate Internet access. Through a process of garnering permissions, copying Web sites, and delivering them to intranet Web servers inside our partner institutions in developing countries, we deliver millions of multimedia documents that can be instantly accessed by patrons over their local area networks at no cost

INASP

[5] Mandela, Nelson. TELECOMM Opening Ceremony. Geneva Arena. April 29, 2002.

www.inasp.info
The mission of INASP is to enable worldwide access to information and knowledge with particular emphasis on the needs of developing and transitional countries. INASP's Programme for the Enhancement of Research Information (PERI) offers the free (AJOL) the African Journals Online database as well as other valuable resources.

Information on more free and low cost electronic resources will be available at the NLA Conference.

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7

ICT Availability and Resource Sharing In some Academic Libraries In Nigeria

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ABSTRACT
The study discusses the availability of ICT facilities and resource sharing co-operatives engaged by some Nigerian university libraries. Questionnaire was used for data collection. The university librarians were the respondents. Eight (8) Government owned universities in the South-South and South-East of the country were studied. The findings show that ICT facilities were inadequate and no effective resource sharing initiative among the libraries. The libraries are not ICT compliant. Suggestions for digitization and resource sharing have been provided Keywords. Digital age, digital library, electronic library, resource sharing among the libraries.

Introduction

In the present digital age, resource sharing according to Amigos Library Services (1995) "is comprised of transactions which a library makes its materials or copies of its materials available to the clientele of another library upon request." The purpose is to obtain, upon request of a library's primary user, materials not available in the local library. Furthermore, resource sharing does not relieve any library of the responsibility for providing collections necessary for its primary clientele, unless libraries have enter into special agreements.

Resource sharing ensures cooperative spirit between libraries to follow state network protocols, or in the absence of state protocols, exhaust local resources before requesting materials from other members. Libraries must be willing to lend if they wish to borrow. In other words, they must be supplying libraries as well as requesting from them.

Resource sharing is made possible and practically easier with an operational digital library. Magara (2002) opined that "a digital library is an automated or electronic library." This is known to be an information center without a physical location for the end user, and accessible from anywhere since the information is held anywhere.

Literature Review

Resource sharing is can be said to be "library co-operation". It involves effort at sharing facilities as well as commitments, and in extending and improving things without proportionate increase in cost of processing facilities including books, journals, equipment, etc). This digital age, library resource sharing is enhanced according to

Rahman and Kumar (2000) by "the technological development in the field of information technology and telecommunication which have paved the way to form local, regional and international networking of libraries to share their resources."

Funding for academic libraries in Nigeria had been very inadequate. This has drastically affected library services and provision of information and materials. Mohammed (1999), asserts that some academic and research libraries have engaged in some co-operative ventures within and outside the country, to pool resources together for general use by participating libraries. These initiatives include inter-library loan, exchange and compilation of Union lists of serials. It was further revealed that these cooperatives were not all that successful because they were done with the traditional manual tools, and faced with other problems such as poor communication and information infrastructure, and negative human/organizational attitudes. Those failed resource sharing co-operatives would have succeeded but for the manual systems used and other constraints. Investment in IT infrastructure is the answer.

Chisenga (2000) asserts that "unfortunately, there is a general absence of viable National Information Infrastructures (NII) in most countries of sub-Saharan Africa. He also reiterated that "many libraries in sub-Saharan Africa, especially academic, school and public libraries, depend entirely on government funding for their operations." Funding from the government is no longer adequate. Almost all library materials are purchased from Europe and America. Due to shortage of foreign currency, acquisition of library books, in some cases and completely stopped.

Library budgets are now mainly supporting staff salaries. Even the use of microcomputers is said to be slow, starting in the 1980s and 1990s achieving different levels of computerization and results. It is low in Ghana and Sierra Leone (Adeyemi, 1988), Nigeria (Edem, 1993), Abifaran (1993) and Odi (1994). However, studies of Idowu and Mabawonku (1999),Faniran, Eguavoen and Adeyemi (2002) have painted rays of hope and signs of progress in the application of IT in Nigerian academic libraries.

Digital or electronic information with the use of telecommunications has paved the way for local and global resource sharing, and library/information networks. Akintunde (2002) corroborate this fact in his work, that, it is the only way to make available library resources in the format of the digital age. This technologies according to O'Brien (1998), provide the following variably technicalities for resource sharing.

1. Significantly higher transmission speeds
2. The movement of larger amounts of information
3. Greater economy, and
4. Much lower error rates than analog systems.

Resource sharing is beneficial to participating libraries in the following ways:-

1. Access to information, freedom of expression and opinion and universal library and life long learning (Thapisa 2000)

2. Efficiency of library services, easy acquisition of information with low cost and improvement on in-house operations of libraries.
3. To advance the use and usability of globally distributed, networked information resources (Okebukola, 2002).

Methodology

The questionnaire method was used to collect data from twelve (12) Government owned university libraries in the South-South and South-East geo-political zones of Nigeria. Eight (8) university libraries constitute the respondents. All the respondents completed and returned the questionnaires administered. There is a return success rate of 72%. The list of the eight (8) university libraries studied are provided in Table 1 below:

TABLE 1: LIST OF THE EIGT STUDIED UNIVERSITY LIBRARY WITH USED ACRONYMS

S/NO	NAME OF UNIVERSITY	ACRONYM
1.	Abia State University, Uturu	ABSU
2.	Delta State University, Abraka	DELSU
3.	Federal University of Technology, Owerri	FUTO
4.	Imo State University University, Owerri IMSU	IMSU
5.	Rivers State University of Science and Technology, Port Harcourt.	RSUST
6.	University of Calabar, Calabar.	UNCIAL
7.	University of Port Harcourt, Port Harcourt.	UNIPORT
8.	University of Uyo, Uyo	UYO

Table 2.1: Available and used in University Libraries

S/N		ABSU	DELSU	FUTO	IMSU	RSUST	UNIPORT	UNICAL	UYO
1.	Computer	1	23	5	2	23	3	4	16
2.	UPS	1	23	-	1	23	3	1	16
3.	Scanner	1	-	-	-	-	-	-	1
4.	Satellite Dish	-	1	-	-	-	-	-	1
5.	Antenna/Mast	-	-	-	-	-	-	-	1
6.	CD-ROM	-	-	95	-	-	-	-	-
7.	Internet Connectivity	-	-	-	-	-	-	1	1
8.	Website	-	-	-	-	-	-	-	1
9.	Automated LAN	-	-	-	-	-	-	-	1
10.	AUTOMATED WAN	-	-	-	-	-	-	-	1
11.	Telephone	-	-	-	-	-	1	-	1

	(GSM)								
12.	Printer	1	9	2	2	6	-	-	2
13.	Software/Program	-	-	-	-	-	-	-	-
14.	E-mail	-	-	-	-	-	-	-	-
15.	VSAT Main Server	-	-	-	-	-	-	-	-
16.	VSAT Main Server	-	-	-	-	-	-	-	-
17.	Modem	-	-	-	-	-	-	-	-
18.	Telephone landline	-	-	-	-	-	-	-	-
19.	Telephone Network	-	-	-	-	-	-	-	-
20.	Telex	-	-	-	-	-	-	-	-
21.	Fax	-	-	-	-	-	-	-	-

Table 2.1 is the data provided by the responding university librarians on their ICT equipment/tools status available in their libraries. Findings on Availability of ICT Equipment/Tools

Furthermore, Table 2.1 reveals that eight (8) tools were not available and used by the responding librarians in their libraries. These are; computer software/programs, VSAT proxy server, VSAT main server, modem, telephone landline, telephone network, telex, and fax machines.

TABLE 3: Library Resource sharing/cooperation Among Libraries

S/N	Name of University	TYPE OF LIBRARY RESOURCE SHARING/COOPERATION			
		Inter library loan (local cooperation)	Open Society Initiative for West Africa (OSIWA)	Nigerian Virtual Library Project	Others Specify
1	Abia State University, Uturu	X	-	-	-
2	Delta State University, Abraka	X	-	-	-
3	Federal University of Technology, Owerri	-	-	-	-
4	Imo State University, Owerri	-	X	-	-
5	Rivers State University of Science and Technology, Port Harcourt.	-	-	-	-

6	University of Port Harcourt, Port Harcourt	-	-	-	-
7	University of Calabar, Calabar	-	-	X	-
8	University of Uyo, Uyo.	-	-	-	-

From the above table the claim by 50% of the responding university libraries to be involved in library resource sharing and cooperative initiatives is a welcomed developed. Even in economically prosperous times no library can be self-sufficient. Resource sharing is advantageous to, as it helps to meet the needs for provision of information and materials to the clientele. It has been discovered that the libraries operate resource sharing cooperation only in terms of contributing library information on paper based formats. They do not have adequate ICT facilities for an electronic and telecommunications transformation, and transmission of information systems or network system.

Concluding Remarks

The study shows that the available ICT facilities in the libraries studied are not adequate in number and for digital or electronic library operations needed as backbone for digital age resource sharing. The government should provide separate and specific policies and guidelines for the acquisition and use of ICT facilities in Nigerian academic libraries. Resource sharing cooperative/initiatives should be put in place and funded by the government to enrich service and resource base of the libraries in each of the six geo-political zones of the country.

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8 New Approaches in Library Resource Sharing in The Digital Age

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ABSTRACT:
This paper discusses the new activities, methods and technology used in resources sharing. Libraries have shared resources for many decades through both formal and informal agreements. These agreements have usually been predicated on the use of structured union catalog and inter-library loan protocols, requiring regular and continuing intervention between the libraries and the libraries' users. With the advent of the electronic catalogs, the development of the Internet, the contractual access to resources provided by the commercial vendors, such as the On-line Computer Library Catalog (OCLC) Emerald, and the formation of the Digital Library Software, like the Greenstone Digital Library Software, the entire nature of the resources sharing and the library network is changing radically.

INTRODUCTION

Most Librarians and Information workers would define resources sharing as the information resources typically collected by the libraries and made available under certain conditions to the users in order to disseminate information properly. Resources sharing, according to Kent (1978), denote a mode of operation whereby the library functions are shared in common by a number of libraries. The goals are to provide a positive net effect on: (a) the library users in terms of access to more materials or services and/or (b) the library budget in terms of cost, or much more services at less cost than if undertaken individually.

The American Library Association (ALA) Glossary of Library and Information Science (1983) provides a useful definition by saying that Resources sharing is a term covering a variety of organizations and activities by a group of libraries, jointly engaged for the purposes of improving services and/ or cutting costs. Resources sharing may be established by informal or formal agreements or by contract, and it may operate locally, regionally, nationally, or internationally. The resources shared may be collections, bibliographic data, personnel, planning activities, etc. This explanation implies formal activities, usually the projects or the institutionalized services such as the inter-library loan. A written agreement is a common feature of collaboration between the two or more libraries, especially when the geographic and political borders separate the participants.

As an important means of improving the services to the information users, the libraries have formed the networks since the late 1960s. A central aim of such networks has been the resource sharing; and in order to achieve this, the Libraries and Information Centers have focused largely on three approaches:

1. Bibliographic Access. That is knowledge of what is available for sharing from the other sites through such means as National Union Catalog (NUC) or Bibliographic utilities. For example, the National Bibliography of Nigeria (NBN), that lists all the books published by the Nigerians and about Nigeria. Also, there is a National Union Catalog that lists the holdings of the participating libraries within Nigeria. National Library of Nigeria publishes one of these two publications.
2. Inter-Library Loan (ILL). A system for making request and providing delivery of information, chiefly through the Inter-Library Loan (ILL) process, is often conducted through the agreements among the members of a consortium to provide service to members and
3. Co-operative Acquisition. It is a joint venture by a group of libraries for the purposes of collection development. It is intended to ensure that the libraries built comprehensive collections of resources on which to draw upon.

However, many of the networks formed have made significant contributions to the realization of the electronic libraries, both through the continuing evolution of library management systems and the creation of large shared bibliographic databases, which have contributed to the reduction in original cataloguing.

Reasons for Resource Sharing

Grosch (1995) identifies the following reasons as the characteristics of the library resources sharing in the digital environment: broadening access to materials, lowering the per unit cost of cataloguing, document delivery, bibliographic utilities and their role, co-operative acquisitions, copyright, governance and other development based ventures.

Graves (1990) observes that increasing costs of information and stagnating budgets of institutions of higher education have made it obvious that no library can provide all the resources required by its users. Maigari (1991), highlighted the benefits accrued to institutions with networks of resources sharing as follows:

1. There would be better and wider knowledge and effective use of their resources.
2. The resources of the participating institutions supplement each other.
3. Some services, which could not be undertaken by one library, due to some limitations like finance, personnel etc., could be better attended to or provided by the co-operative network.
4. Information retrieval to users is done faster.
5. Such an arrangement facilitates global information and data flow.
6. It adds to the general improvement and development of personnel of participating libraries.

Moreover, the need for the resources sharing stems from three underlying trends of a modern society: the growth of all forms of literature, the increasing reliance on information to enable society function effectively, the inflation in the cost of materials coupled with the

increasing availability of technology. These trends have made it economically imperative to consider the sharing of resources.

EVOLUTION OF ELECTRONIC RESOURCES SHARING

Historically, libraries have had a long tradition of resources sharing and networking. These have been greatly expanded by the rapid development of computers, telecommunication, networking and digital technologies. It is common now for the libraries to be members of several consortia at the same time for various types of co-operative work and resources sharing. The best example of this is the On-line Computer Library Catalog (OCLC).

Wang (1996) considers the On-line Computer Library Catalog (OCLC) as a model in the evolution of resources sharing in the digital age. According to him…it grew from a regional co-operative network in the State of Ohio, United State of America to a national network in the USA, and further grew to what it is now an International network of over 23,000. Libraries and Information Centers in sixty three (63) countries and territories. The On-line Computer Library Catalog (OCLC) maintains, not only the largest computer and telecommunication Center in the world, but also the world's largest database of bibliographic records and location of information. The OCLC database, known as the OCLC On-line Union Catalog, currently consists of over 35 million bibliographic records, covering all the subjects areas in 370 languages and in the following nine formats: books, serials, sound recording, visual materials, maps archives, music scores, manuscripts and computers files.

Moreover, with the development of the Digital Library Software, like the Greenstone Digital Library software by the New Zealand Digital Library; the Academic Research in the Netherlands On-line (ARND), the Tilburg University, the Netherlands, the CDSware, the CERN Document server software, Geneva, Switzerland; the D-space, the MIT Libraries, Cambridge, MA United State of America etc., the possibilities of sharing resources has become much easier.

Similarly, in Nigeria one can remember the growth of the resources sharing in electronic environment or digital age from 1990, when the World Bank intervened with a loan to improve the institutional capacities of the Nigerian Universities. Before then, the 1987 conference, jointly organized by the National Universities Commission and the British Council, it was recommended that the Management Information Systems (MIS) be introduced into Nigerian University system (Abdulkadiri 1995).

The Management Information System (MIS) project commenced with a workshop in 1989 for the academic Planners and Bursars of the Nigerian Universities, followed, in 1990, by the setting up of a technical Committee to design the hardware and software prototypes for the project. These initiatives, along with the World Bank intervention, eventually led to the introduction and development of the University database through the Nigerian Universities Management Information System (NUMIS) and the electronic connectivity through the Nigerian Universities Network (NUnet).

A significant change in the resources sharing approach came through the advancement of the Internet using the popular World Wide Web (WWW). Research has shown that, in the current digital and networked knowledge age, the size of information resources on the web is growing exponentially. No one really knows exactly the number of web pages that are added every second. The latest statistics of the Internet hosts numbered is close to two billion, and is growing fast at the speed of 25% (available at www.sc.org/index.pl?/ops/ds/host-count-history.php)

Most of the frequently used Internet Search Engines have also expanded their index sizes and bounds. For example, according to the November 11, 2004 report of the *Search Engine Watch,* Google claimed to have indexed 8.1 billion web pages, Yahoo 4.2 billion web pages and MSN 5.0 billion web pages. While the immediacy of information provision has certainly improved in the digital age, many approaches have re-surfaced in the digital environment different from the traditional approach of resource sharing.

MODERN APPROACHES OF RESOUCRE SHARING

The dramatic growth in the capabilities of computers and communication technology networks has not only radically revolutionized the process of resource sharing, but has also brought about a fundamental transformation from the traditional approach to a modern approach. These modern approaches of resource sharing include:

i. Internet.

The Internet has been regarded as the most important way of communication. The Internet is a global network connecting millions of computers and databases. The Internet has opened up numerous possibilities for doing resource sharing at the local and global levels of libraries' environments. It enables the libraries and the librarians to interact with each other. Information on latest journals, books, articles and discussions on library routines can be exchanged directly through the Internet. Because of the continual developments and their diffusion into the society at large, the Internet is no longer viewed as another technology amongst many; it has become an invaluable and integral part of library. The main uses of the Internet are information dissemination, e-mail, file transfer, education research activities and sharing of ideas and resources.

ii. Electronic Mail.

Electronic Mail (e-mail) is the most pervasive and successful form of person-to-person resource sharing approach. Anyone who has an e-mail address can send electronic mails to another with e-mail address on any computer in the world connected to a computer network. E-mail software, such as Eudora pro, can create and send electronic messages and attachments. The attachment function is used to send any type of document such as text, spreadsheets, images, database files etc.

iii. Digital Library Approach.

Digital libraries are being created for resource sharing today for diverse communities and in different fields e.g. education, science, culture, development, health, governance and so on. With the availability of several

free digital Library software packages at the recent time, the creation and sharing of information through the digital library collections have become an attractive and feasible proposition for the library and information professionals around the world.

Digital libraries bring significant benefits to the users through the improved access, wider access, improved information sharing and availability. Many digital libraries are on the Internet or produced in Compact Disc Read-Only-Memory (CD-ROM).

iv. Teleconferencing and Video Conferencing

These are the extensions of the conventional one to one telephone conversations. These systems allow numerous people to be simultaneously connected so that discussion can take place, even though they do not meet. This can take place either within the organization, or externally and even on an international basis. Professional librarians can exchange ideas on new approaches in library management.

v. Office Automation.

Office automation is now used for the information processing tasks in the offices and libraries. They enable people to perform their work, such as research findings, storing and processing of data through databases and communicating through the e-mail. The office automation technology includes a wide array of software application tools. These technologies enable the members of a group to interact with each other and organize their work. The technology has improved the communication and the sharing of information across the globe.

ACTIVITIES OF RESOURCES SHARING IN A DIGITAL AGE

The key to the successful library and information services in this digital age has changed from ownership to shared access, especially the sharing of electronic resources. No single library can be self-sufficient any longer, and no longer can the libraries afford to build up huge collections in anticipation of the users' demands. The new technology has provided the profession with the new playing ground of resource sharing co-operation. As computer applications continue to improve, the issue of ownership and specific document location will eventually fade into irrelevancy. Shared access to information resources will allow the large libraries to focus their acquisitions' budget on specialized resources, while the smaller libraries will gain an enhanced information access that could not have otherwise been afforded. In the modern approach of resource sharing, the following activities take the center stage:

i. Shared Library Management Information System (MIS)

The development of Shared Library Management Information System has been a priority among the academics and research libraries around the globe. This system has brought full support for resource sharing, including shared database, co- operative acquisitions and a circulation database among the networking libraries. Unlike the traditional approach of using the printed catalog, this

system allows the participating libraries to access the holdings of a sister library through the use of a software called Aleph 500 which was developed in the United State of America and is Z39. 50 compatible.

ii. Creation of cross-database and abstracting and indexing databases

Article citation (abstracting and indexing or A&I) databases and other secondary information resources like reviews are now common services offered to the library's clientele in the developed countries by both the libraries and the publishing houses. Through the advent of Z39.50 standard libraries and their users gain an easy access to the resources for their research activities.

iii. Document Delivery

The electronic document delivery is regarded as the new approach that enhances the traditional inter-library loan system. Two methods are now being used to provide this service in the library.

a. Through the use of Ariel, a document scanning technology developed in the USA. The goal of using this approach is that all the requested documents would be delivered within two working days to the user's desktop.
b. Enabled by the technologies of the Internet, by the Document Delivery standards like Z39. 50 and by the more user-friendly interface patrons, initiates direct and unmediated requests for materials from other libraries.
c. Through the formation of digital libraries, the patrons can now have unhindered access to the full text materials.

iv. Formation of Library Consortium

As discussed earlier on, both the budget restraints and the currency fluctuations have compelled particularly the academic libraries to start looking for ways to reduce their expenditure in terms of journal subscriptions. The objective of this consortium is to expand access for students to develop a model to analyze journal pricing and to effect a substantial degree of cost containment through collaboration.

CONCLUSION

Resource sharing in the past has been on scarcity of fiscal resources that resulted to reductions in the range and depth of information the individual libraries could make available. These reductions have been tackled through various initiatives, such as the union catalog, the inter-library lending services and the preparation of bibliography. Nevertheless, with the dramatic growth in the capabilities of computers and communication technology networks the process of resource sharing has radically been revolutionized, and it has brought about a fundamental transformation from the traditional approach to a modern approach. It is hoped that the Librarians would adopt the new approaches and forge ahead in the dissemination of information.

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9

State of ICTs in Tertiary Institutions in Nigeria: Window on The Universities

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Introduction

The trend in Librarianship today bears every mark of a future yet unknown. The digital age has been succinctly captured by Hilda Kruger (2005:123) in her provocative question: "Will flesh-and-bone librarians be relevant in fifty years time? Of course – the status of information professionals will grow in the information economy – surely we have established that. But will they be flesh and bone?" The question of 'flesh-and-bone' is pertinent. It requires an answer from every librarian today. Simply, the concept being addressed by Kruger is that of natural mutation; the survival of the fittest. In other words: "Can librarians continue to look at, and practice librarianship the way they are used to and still be relevant? Can we continue to render services as in the traditional pattern that we've always done and still be current? Doing things in the 'normal' way, can we last in the new information and communications technology era? What then is the more appropriate approach to librarianship that we benefit us all, especially in Nigeria; and, more especially, Nigerian higher education?

Librarianship continues to hold a central place in higher education worldwide. It has remained the strength of the best traditions in academics world-wide. University Libraries marked out Oxford University, Cambridge University, Harvard University, University of Illinois at Urbana-Champaign, University of Ibadan and the then University of Ife (now Obafemi Awolowo University) as centres of academic research. That was when librarianship was practiced the traditional way (as we now describe it). Today, very many of these 'traditional' libraries and previously unknown academic libraries have come into limelight because of their adoption of, or, plan for the application of the new technology in the provision of library services. The library of the future is certainly an

unlimited one in imagination and possibilities. This is clearly illustrated in the present library concept and project of the Molesworth Institute of the Ezra Beesley University (EBU), in Baxter, United States of America. According to Norman D. Stevens (2006:6), the Library Director, the new institute, a paradigm shift in delivering higher education, will:

> *"emphasize cost effective applications of computer and information technology in all aspects of the institution's operations with a view to significantly reducing costs, especially to students, while substantially improving their education. No textbooks will be used in the instructional program".*

On the other hand, the library will:

> *"contain no printed books or other printed materials of any kind. Those constraints will apply to book substitutes (for example, microform) and other information formats that require specialized mechanical equipment (for example, films, sound recordings, and videos). No one, including staff, will be allowed to bring any of those materials into the library. . . . All information resources will be available only in digital formats and accessible only electronically. Paper will not be allowed within the library. The library will have no photocopy machines, no computer printers, no provision for the receipt of mail (the library will not have a mailing address), and no wastebaskets or recycling bins. Neither staff nor users will be allowed to bring notebooks or any other form of paper into the library. Only personal data assistants, computers, and other paper-free electronic devices may be used to bring information into, or, take information out of, the building'' (Stevens, 2006:8).*

The description above is an ongoing library project that stands the risk of out datedness in the next few years because of the rapid rate of innovation and change in the global Information and Communications Technology (ICT) revolution.

In Africa and, particularly, Nigeria, adoption and adaptation of technology is more of the case. Nonetheless, significant progress will have to be made for Nigerian higher education libraries to be in the main stream of the digital revolution. This is because library services today require more global networking in delivering services. Cost of technological infrastructure and services, dwindling financial resources, all contribute to this. But, what is the true situation of libraries in higher education (tertiary) institutions in Nigeria? Higher education institutions include the Polytechnics, Colleges of Education,

and Universities. The situation of university libraries will be used to capture the scenario in other tertiary education libraries in the country.

Methodology

The methodology used for gathering data for this presentation include site visits to University Libraries in Nigeria, Europe (The Netherlands – Technical University of Delft, and Norway – University of Oslo) and the United States of America (Illinois and Ohio States), and Online Computer Library Centre (OCLC). Library staff and students in Nigerian Federal and Private universities were interviewed using an unstructured questionnaire. Insights were also gained from colleagues from University of Ghana Legon, Ghana, University of Winneba Ghana, Makerere University Uganda and University of Dar es Salaam Tanzania.

Academic Libraries in Nigeria

Libraries of tertiary institutions in Nigeria naturally display different stages of development. The relevance of the libraries in meeting the need of their target audiences is our concern.

Higher Education Patron Need:

From a heuristic insight it is evident that the library need of tertiary education patrons - staff and students, are for teaching, learning, and research. The teaching need of library patrons include textbooks, journals, bibliographies, indexes, abstracts, and dictionaries, and inter-library loan services. Electronic equivalents of these are also required in order to make teaching curricula current, deep, and very effective in higher education.

Lecturers have, also, increasingly requested electronic communication services from their libraries. Such services include: registration for professional memberships, access to other libraries across the globe real-time online, electronic mails, group lists, video conferencing, etc.

Students need texts for assignments and further reading. Their other need from the library include: past examination papers, reserved books (by lecturers), past final-year research projects and theses/dissertations, journals, government and non-governmental publications, local history collections, encyclopedias, dictionaries, and other reference resources. In the last couple of years, students in Nigerian tertiary institutions have demanded access to the Internet from their respective libraries. Internet access is used for electronic mailing services, electronic on-line chats, and group activities.

Research needs from library patrons in tertiary institutions in Nigeria include: inter-library loan of books and journals, access to on-line databases, and subscription to particular journals by individual lecturers and graduate students.

How Libraries Have Attended to the Needs of their Patrons

Librarians in Nigerian tertiary institutions have devised several methods for meeting the need of their patrons and developing their collection. The commonest way in Nigerian universities is consultation with lecturers. The Subject librarianship practiced by institutions such as Ibadan and Jos make it necessary for librarians to liaise with lecturers before booklists are generated for ordering. The University of Jos Library (http://www.unijos.edu.ng/Lib/know_your_library.pdf: 1), for instance, has the following cardinal points in its practice of Subject Librarianship:

- **a.** ensure a high degree of relevance of its collections to the needs of the University community;
- **b.** ensure that maximum use is made of the resources and facilities it provides;
- **c.** give qualitative reference and information services to its clients;
- **d.** join its staff with their teaching colleagues in making the use of its resources an integral part of the educational process.

The University of Ibadan has faculty libraries with librarians resident in the respective faculties. In institutions such as Benin, librarians who have first degree backgrounds in particular subject areas are made to catalogue materials in their

disciplines. In the University of Jos, librarians with background in particular subject areas are made Subject Librarians for their disciplines, but they reside within the main library in the cluster of their collections – textbooks and journals. The Subject Librarians are also responsible for the development of electronic databases for their subject areas. They create portals for the electronic resources found in the world wide web and the University's Intranet.

Many academic libraries in Nigeria still operate in the traditional service pattern where librarians are in charge of main service points of Circulation, Reference, Serials, Acquisitions, Cataloguing, and Documents, without any emphasis on academic disciplines.

Factors Affecting Deployment of ICTs in Libraries

The application of ICTs in Nigerian Tertiary Institutions shows that there is some consciousness of the significant role that ICT can play in delivering library services, even though ICT is not fully embraced by most of the higher education libraries in the country. The factors responsible for this development in the libraries vary - both in identity and strength. Generally, identifiable factors are: appreciation of ICT by the institution's Librarian, the Library Management, the University Management, Library Staff Mindset, relationship between the library and campus ICT units, Funding, Building, and Training for Librarianship.

Appreciation of ICT by Librarian

Libraries like those of the Universities of Benin, Jos, Ife, Ahmadu Bello, Bayero University, and Abeokuta where their librarians had over the years shown some appreciation of ICT through their commitment to the deployment of ICTs in their libraries, are in the forefront. In such libraries, there is some moderate but significant progress in applying ICT to library services. The main application is in the area of cataloguing. Ife and Jos are digitizing. They have used internally accrued income/allocations and external grants to prosecute their projects.

Nevertheless, it is important to state here that there are other librarians in other institutions, who, though appreciating ICTs, could not match this with visible outcomes

because they either did not receive equal cooperation from their institutional managements, or could not muster sufficient external funds for this.

Library Management

Some Library Managements have supported their Librarians in making significant progress with ICT. The opposite is the case in some other institutions where the management has not lent support to their librarians because they are either phobic of ICT or, less willing to change.

Mindset of Library Staff

Librarians and most other staff in Nigerian university libraries appear to appreciate the important role that ICT plays in today's academic endeavour. However, not all seem prepared to be part of the change. While some younger librarians are ready to explore and exploit ICT if given the opportunity and facilities, there is still some phobia of ICT by many librarians. It is necessary for library staff to prepare their mind for this inevitable change that has swept over us. It is inevitability. We can either adjust or fall off.

Relationship between Library and Campus ICT

The new information and communications technology requires mutual cooperation and collaboration for it to be successfully deployed in any organization. Technicians need the users of applications, and vice-versa. This relationship include advise on specifications and type of technology to be deployed as experienced by Benin, Ife, and Jos. In some cases where libraries have no technically trained ICT staff, they may have to rely on deployment of such staff to the library by the Campus ICT. The University of Jos went through this process from 1993 to 1998 where a Computer Centre staff was deployed to the library to manage the library computer systems, and to be understudied by librarians.

Libraries like that of Lagos, Ife, Bayero, Jos, and Ahmadu Bello, have very good working relationships with their campus ICTs, thereby enabling good progress in their deployment of ICT. Institutions like Ibadan and Port-Harcourt are still finding ways of

integrating with campus ICT for a smoother relationship. In Universities like Lagos, Ibadan, Bayero, Ife and Jos, librarians drive the deployment of technology as they head their Systems Units and have been able to make some knowledgeable progress. Both Ahmadu Bello University and Jos, also have technically trained staff in their Systems Units. Apart from the University of Jos where there are five staff in the Systems Unit, all other university libraries have an average of two staff in their Systems Unit. The Systems Unit of most University Libraries (where there is at all) is therefore very understaffed when considered in the background of active application of ICTs by libraries to support learning and research.

Funding

Funding is critical to any library initiative, especially automation. Automation is very costly in terms of hard and soft ware. Personnel are also very scarce and costly. The rate of adaptation and/or adoption of ICT to library services has, so far, been largely defined by the supply of funds in most of Nigerian universities, for instance. Apart from the attitudes of Librarians and management teams, funding has been a major factor of stunted growth in the libraries. Libraries that are about making some significant changes from the manual to a fully automated library system are funded by external grants. The libraries are: Ahmadu Bello, Bayero, Ibadan, Ife, Jos, and Port-Harcourt.

The University of Lagos has a 120-seater complete computer laboratory fully furnished and donated by a mobile telephone company in the country. The laboratory is an electronic reference library, and the type that should be a model for all academic libraries in Nigeria.

It is imperative therefore that Nigerian academic libraries must seek for alternative funding if significant progress will be made in deploying ICTs in Nigerian academic libraries. Funding by government (Federal and State) which has been the sponsor of 75 per cent of the libraries has been dwindling and quite unreliable in the last few years. However, for private universities, there appears to be some stability as some good attention is yet given to libraries. Babcock University, Bowen University, and Covenant University have begun in little ways to commit fund to the deployment of ICTs

in their libraries. Covenant has a functioning Online Public Library; Bowen has a computer laboratory for use by patrons in the library.

Building

Academic libraries worldwide are 'custom' built for their respective institutions, with space and appropriate facilities as listed in the design brief. This has been the case for many academic libraries in Nigeria. Many of them were designed between the last fifteen to thirty years when ICT as deployed today, was not of significant interest. There was therefore no consideration for provision of space and outlets for ICT facilities. The implication of this is that all Nigerian academic libraries – including the newer ones, have no ICT customized structures. Re-design, reconstruction, and modifications are happening in the libraries that are deploying ICT today. In many cases, network and electrical cables are lined up as if a trap were set to trip over. Indeed, many times, people have tripped over these cables and caused damage to computer systems and network links.

The imperative of this is for libraries that are yet to complete their structures, or move into their structures, to ensure that necessary adjustments and modifications are made before they move into the buildings. Lines for electrical and network cables should be provided. Space for servers and switches must be observed. There should be provision for purely electronic mail services, teaching laboratories, as well as laboratories for library patrons to browse and do their research and learning. Space for electronic mail service and Online Public Access Catalogue should be clearly marked out, as well as space for seminars, (video) conferencing, and gaming. Gaming is assuming a more intellectual status in forward-looking academic institutions today. Nigerian libraries need to take cognizance of this. Sufficient space should be provided for students to pursue group learning as this is necessary for electronic learning system that is fast becoming the mode of learning worldwide. Moreover, students today combine multiple electronic resources - such as email, on-line chat, mobile telephony, ipod music, and gaming – all at the same time - for their studies and personal space.

The furniture of libraries should suit patron needs to work both independently and in groups. There should be space, for instance on the readers' tables for computer power

cables and network cables to be plugged in. Easy chairs for patron relaxed study should occur more than the present where it is the exception. In many of the older libraries, easy chairs are available only at the Serials or Newspaper sections. The walls of the libraries should be provided with network outlets and sockets for plugging in of computer power cables.

Significantly, our libraries need to start making provisions for the physically challenged (disabled). This should be in the form of physical access, media formats, service and communication (Forrest, 2006). In all our academic libraries, little consideration has been given to this particular set of library patrons. In modifying our library buildings, the physically challenged should be taken into consideration.

Training for Librarianship

The quality of practice can almost always be linked to the quality of training received in the library school. Nigerian Library Schools in the past had produced highly competent and relevant librarians. However, today, the schools have a lot of room to catch up with global trend in the practice of librarianship. None of Nigeria's Library Schools has a standard and up-to-date computer laboratory (equivalent of Cataloguing Laboratories of the past) where lectures can be delivered and students can do hands-on practice and troubleshooting. In most cases, lecturers are content to have personal desktop computers with functionalities that are as old as four years back.

None of the Library Schools has its own direct Internet connectivity because of the cost of Internet connectivity and, probably, because of lack of sufficient motivation to take up the leadership role. None has a computer workshop where computers can be coupled, opened up and fixed. Again, this has cost implications which none of the schools has any advantage over; but can be met if diligently pursued.

The personal competence (skills) of lecturers can also affect their perception of the relevance and application of ICT in librarianship today. In most of the library schools, lecturers have had to develop themselves by paying for their training and purchasing their personal computers and, sometimes software.

In order for our library schools to make more progress with ICT, sufficient funds must be released for proper equipping of staff and students in the new electronic age.

Lecturers must also engage more in grants-winning proposals writing in order to secure necessary funds and facilities for their teaching and learning, computer laboratories, and general ICT facilities.

The Challenge before Nigerian Academic Libraries

Having looked at the factors affecting the deployment of ICTs in Nigerian academic libraries, and the global trend, it is obvious that there is a serious gap between our embracement of ICT and the global trend. The question that naturally follows is: what then should be the preparation of libraries in Nigeria seeing that ICT is an irreversible global trend that has great benefit for academic purposes? Apart from the implications drawn and suggestions made above, some other pragmatic approaches to relevance for Nigerian academic libraries include: Library Services, Library Management software, Budgetting, Strategic Planning, Training, Consortium Building, the Role of The Library Association, and National Library.

Library Services

Library services must be patron-centred and increasingly use ICT to meet patron needs. The use of appropriate databases for research and learning must be explored, starting with free and open databases. To accomplish this, a ***paradigm shift*** is required where the keyword is “access”. Computers and network points will have to be provided and increased for library patrons to access library off-line and on-line resources.

As part of library services, sufficient space should be provided for patrons to express themselves. In other words, library space should not be used up with only book shelves, reading tables and chairs only. Provision should be made for group activities and lock-in carrels. A courtyard should be created for receiving mobile phone calls. These suggestions are made so that we can focus on meeting real patron needs instead of dissipating energy and resources on ‘controlling’ behaviour of patrons. Their behavior can be creatively moderated to accomplish the desired service goal.

Because today’s library operates in a dynamic ICT environment, libraries will need to necessarily engage students in delivering services to the academic community.

This will serve a dual purpose of meeting up with budget cuts, and training them to manage what they can actually manage best.

One area the library will need students most is in the provision of Knowledge and Learning Commons. A Knowledge Commons is a virtual environment created within a library furnished with computers with a variety of databases and gadgets for learners and researches to do self-study and group learning in a laboratory situation. A Learning Commons is similar and, many times, interchangeable with Knowledge Commons. Learning Commons is a multi-media centre that creatively provides space for all sorts of flexible approaches to learning by students. As the library becomes more patron-centred, it will find this concept appropriate in delivering services in an increasingly virtual environment.

Another area of service is the design and maintenance of the Library's web site. This is necessary in order for the library to sell its product to, and interact with the global community. Services of libraries - such as catalogue, serials list, databases, etc, can be better accessed if placed on a library's web site. Almost all of the universities in Nigeria have web sites in different stages of development. For 95% of the sites, the library has only a mention or home page without content. Only the University of Jos Library (http://www.unijos.edu.ng/library) has some content - Use of Library Lecture Notes, Serials List, Library ICT Handbook, egranary Digital Library, Library Handbook (Know Your Library), and Free Internet Resources, at its site designed for easy navigation and accessibility by patrons. The challenge before academic libraries in Nigeria is, therefore, to develop dynamic, easily navigable, patron-centred web sites. This should be done by librarians and updated from time to time.

Yet another area of service that the library could offer patrons is the digitization of library resources starting with some unique special collection(s). There are some special collections like University Archives, Theses and Dissertations, and Local Area documents that are rare collections and could be digitized for preservation and more accessibility by the library's public. There may be some other special collections such as rare books that have run out of publications, or manuscripts that could be digitized by academic libraries in Nigeria. Ife is already digitizing some newspapers. Kano is planning to digitize its Arabic manuscripts before they get brittle and destroyed. Both Ife and Jos

have, in the last three years, been part of an African-wide project to digitize theses and dissertations emanating from their institutions through an association of African Universities Database of African Theses and Dissertations (DATAD) project.

Library Management software

With the exception of University of Benin, the situation in all Nigerian university libraries is that the use of total library solution software is yet a dream. Benin uses locally developed proprietary software – SLAM: Strategic Library Automation and Management, and it works for them in all necessary module controls: acquisitions, cataloguing, circulation, and serials; with reports generated as needed. Other libraries like Unilag, Abeokuta, Ahmadu Bello, Covenant, Ibadan, and Bayero have at least an OPAC system activated using Alice for Windows. Ife uses locally developed proprietary software for its OPAC.

Ife, Ibadan, Ahmadu Bello, Bayero, and Jos, are at various stages of the retrospective conversion of their catalogues using a variety of software such as Online Computer Library Centre (OCLC) (Ife), Alice for Windows (Ahmadu Bello, Bayero, and Ibadan), and (Bibliophile) Integrated Technical Services (ITS) for Windows (Jos).

An appreciable level of a library's catalogue record should be re-converted (at least 75%), before a library can operate an online catalogue effectively. It is however, possible for smaller and newer libraries to start-up their collections electronically. This is what an institution such as the University of Western Cape in South Africa did when the University was established in 1975. They do not have an experience of retrospective conversion of catalogue.

In order to purchase and effectively manage an integrated library system or library management software, care must be taken to ensure that the software is compatible with the campus' database system. This will facilitate the use of staff and student records for circulation purposes. It is also important that a Z39.50 web interface is recognizable by the software.

Vendor Support statement must be one that provides good documentation, training of library staff, and solving of technical problems. The essence is that the library would have developed its own capacity and will not continue to rely on the vendor for

support. Training is usually built into the cost of the software, therefore, librarians should ensure that whatever the cost of the software would be, the cost of training is included and is suitable to the need of the library.

Another consideration is the hosting of the cataloguing database server. Some libraries prefer to host their servers with the vendor. Some others host theirs in remote servers such as OCLC, for security purposes in case of natural disasters. Others host their own servers in the library but have a back-up copy on their campus' Computing Centre. Each library must study its situation and choose the best option.

Yet another critical consideration when considering a total library management solution is the degree it allows for customization of modules and features to local library needs. The more flexible a management software is, the better the control by the library. The level of technical support the vendor is ready to give is also an important consideration, because, without adequate support, especially, initially, use of the software might run into serious problem sooner.

However, it should be mentioned that there are generally two categories of library management software: proprietary and open source. Proprietary software has been the known type until the last five years when the open source movement accelerated its development of compatible open source library software, partly to provide an alternative to the sometimes highly prohibitive cost of proprietary software. Whereas proprietary software generally charges for purchase, yearly license, training, and maintenance, open source essentially charges for support. The activation of modules in a proprietary software comes with an additional charge. Cost of training and maintenance is always negotiable. For open source software, the source code is usually made available. Organizations that download the software are expected to customize it to suit their peculiar need and to further contribute to the development of the software. That, actually, is the strength of open source. Where there is no one to contribute to the development of the software, especially in troubleshooting, the organization will have to pay some fees for support.

Academic libraries in Nigeria will therefore have to weigh all the options and decide on what type of software they want to choose for their respective libraries and how to keep them up and running. In any case, it would appear that whichever type is

chosen, there is wisdom in a group of libraries choosing a common software. It provides opportunities for sharing – cost, maintenance, knowledge base, and eventually, catalogue and other e-resources. This is the path that six university libraries have agreed to take for their total library solution. The libraries are: Ibadan, Ife, Bayero, Jos, Port-Harcourt, and Ahmadu Bello. They are currently negotiation, and hope to conclude and acquire the software soon.

Meanwhile, adequate infrastructure is being put in place in the libraries – electric power back-up, tidying up of the catalogue, acquisition of computer systems, training of staff, retrospective conversion of the catalogue, and profiling. A success of this plan will surely serve as a model for Nigerian libraries.

Consortium Building

Consortium building is a common but necessary phenomenon among libraries in the continents of America and Europe. A consortium is a group of libraries coming together to find a common solution for their common problem in order to advance the practice of librarianship and information science. Thus, consortia are formed to acquire software, to share resources, etc.

University Librarians in the last two years have consolidated the formation of a Nigerian University Library (NULIC), which is to facilitate the acquisition of library materials and provide better services to patrons. One of the successful projects embarked upon by the group is payment for the renewal of license for the EBSCO Host Database which had expired after a three-year grant by the George Soros Foundation.

The six university libraries mentioned above are also on the path of buying their library management solution through a consortium. This should drastically reduce the cost of the software, and provide sufficient expertise in the maintenance of the software. Consortium building helped South African libraries purchase computer systems from IBM at less than 50% of the cost some years ago. The potentials of a consortium are therefore limitless. The challenge is for Nigerian academic libraries to study their situations and consider the introduction of consortium as a necessary viable and steady option in coping with decreased funding, and sharing of resources.

Budgetting

Budgetting, an effective allocation of resources, is most necessary in an emerging ICT environment. The cost of ICT hard and soft ware is very high. The same thing goes for maintenance. Among Nigerian university libraries, there is no budget head yet among Federal and State universities to acquire and sustain ICT as most of the budget is barely sufficient for the payment of staff remuneration and overhead costs. Head librarians will therefore need to devise a strategy of making fund consistently available for ICT in their libraries as the present funding model does not support ICT. Other creative funding models may have to be considered, such as fund-raising, and hard and soft ware donations.

Strategic Planning

Perhaps a proper place to start planning for the electronic library is by drawing up a strategic plan. A strategic plan explains in a simple but clear statement what the vision of an organization is, and (step-by-step) how the organisation would accomplish the vision. In order for Nigerian academic libraries to accomplish the vision of becoming ICT powered, each of the libraries must be able to state where it desires to go and, precisely, how it will get there. This will be like a checklist against which each of the libraries or group of libraries will work and, ultimately reach their destinations.

It may be necessary to conduct trainings on Strategic Planning for librarians from time to time, so that there will always be an understanding of shared vision. It will also impart skills on how to design strategic plans by all librarians from time to time.

Training

The training of staff is a very necessary investment if an oragnisation must be productive. Librarians in all of Nigeria's academic libraries already have some professional librarianship training. But the skills required for the application of ICT in libraries today requires some customized training. And, because technology becomes obsolete so easily, it is imperative that re-training be done as a routine in order to cope with innovation.

The trainings required include proficiency in Office Applications, and job specific proficiencies such as modules of library management systems. Librarians also need to

train on how to communicate to their publics through effective presentations (using the digital projector and power point) and, general communications such as blogging on the web and other discussion group services.

Training of librarians is fundamental to the training of library patrons. As Manda (2005:276) aptly put it:

> "The training of library staff is not an end in itself. The expectation is that the staff will impart the skills and knowledge gained to library end users including academic staff and students. . . . The training of end-users in the use of electronic resources should be one of the central activities in any library so that staff and students can effectively search and utilize these resources, in which institutions and donors have made substantial investments"

Librarians themselves need to be conversant with the products they are to sell to the public. It is imperative therefore, that they reach such level of competence that they gather sufficient confidence when relating to patrons on the uses of library services through ICTs.

Many of these trainings require a strategic approach by each university library; though individual staff should first take up the challenge of developing themselves in ICT. Library staff seminars should be revived and continued, especially where it had become dormant. These should focus on the integration of ICT in delivering library services.

Some of the trainings will necessarily be off-site (i.e. away from the campus environment), but, most of them will likely be on-site. Funds should be allocated for these in order to make them succeed.

The Library Association

The Library Association of any country is the light-bearer for the practice of librarianship. It is the professional organization which sets standards of practice within which practitioners perform. The Nigerian Library Association (NLA) has, in the past, played leadership role in the training of librarians through sectional activities such as Cataloguing, and Information Technology Sections. Faced with the ubiquitous challenge

of ICT, NLA may have to draw up a strategic plan to ensure that librarians in Nigeria are not totally left behind in the emerging new world information order.

Strategic trainings on topics such as emerging technologies, choice of library software, user – centred services, education for librarianship, library building, advocacy, consortium building, etc, are relevant and necessary.

NLA, pursuant of the Librarians Registration Council, can ensure that the Council accredits libraries by setting up and enforcing minimum standards of practice. The same process is applicable to library schools so that librarianship in Nigeria can have a renewed life and focus.

Advocacy is another area that NLA can play leadership role. Library Advocacy is the powerful but strategic dissemination of information about the library with the aim of popularizing library services and winning public support for the development of the library. NLA is in a good position to advocate at both national and branch levels for librarianship in Nigeria. The advocacy should focus on positioning libraries in our institutions of learning to be central to academic activities and the image of such institutions. It should also open up the need to provide funds for the libraries to be sufficiently equipped – in terms of human and material resources, to provide services in a digital environment. From all indications, the Nigerian Library Association has the capability to do this.

The National Library

The National Library also has some space to play a major role in the effective deployment of ICTs in Nigeria's tertiary institutions. By consolidating the nation's bibliographic database into an open electronic system, the National Library can be a major junction for the development and sharing of institutional repositories.

The National Library occupies a strategic political space in which advocacy can be successfully launched on behalf of Nigerian libraries. Advocating on the changing role of libraries is a major product that the Nigerian public needs to hear and contribute to its development.

Conclusion

From the report and discussions above on the state of ICTs in Nigeria's academic libraries, it is certain that there is a lot of room for improvement. Some modest steps have been taken by some institutions. More progress is required if Nigerian academic libraries will be relevant within the global academic community. The attitude of librarians and funding are major factors that can affect the deployment of ICT in the libraries. These are surmountable factors that can be transformed into productivity with the right motivation. Dwindling funds and the mutual benefits of global engagement should inspire librarians in Nigeria to make every effort to be part of the global community. Indeed, with ICT, our libraries can do more with less. Let us rise up to the challenge. It takes a small step. It takes one person!

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10

The State Of Information And Communication Technology (ICT) In Selected Libraries In Lagos And Ibadan Metropolis

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ABSTRACT
The emergence of ICT has greatly shrunk the world into a global village that anyone or any organization, the library in particular, ignoring ICT is asking to be sidetracked and placed in the periphery in the international arena, get unredeemably outdated and grossly limited in the acquisition as well as dissemination of information. Information and communications technology is a powerful tool that would link Nigerian libraries with libraries in the West and facilitate the ongoing revitalization of the information acquisition and dissemination process. The paper is an empirical, historical attempt to show the state of ICT in Nigerian Libraries, constraints to the development and utilization of ICT in Nigerian Libraries and a clarion call on librarians to shift from librarianship to cyberianship or simply remain grossly limited in providing information to their clientele.

INTRODUCTION
Before the advent of the computer, telephone services were commonly used all over the world for communications purposes. then fax, telex etc came in. By the advent of the computer and its capacity for networking, came the Internet (Information Technology: IT). The fusion of the information technology with that of communications has given rise to Information and Communications Technology (ICT
Hawkins (2002) notes that knowledge and information have become the most important currency for productivity, competitiveness, and increased wealth and prosperity. ICT in Libraries can be understood as the application of digital equipment to all aspects of library work. According to Akintunde (2004), ICT "emphasizes the use of the computer and other technologies such as telephone to process, transport, and transfer voice and other data singularly or mixed with least interference or distortion of content".
Computer has made such a tremendous impact on the organization, management, and dissemination of information that it readily commends itself to every library to accept it or become limited in satisfying its clientele. For the libraries, several systems have been developed for their various house-keeping chores and more still are being designed and refined. For such library processes as acquisitions, cataloguing, serials and circulation control. Communication tools such as e-mail, fax, computer, and videoconferencing are being used to overcome barriers of space and time, and opens new possibilities for library services. Librarians and their clients can gain experience of communications

through e-mail and electronic conferencing systems that run over the telephone network. Librarians should be able to use the Internet both to access materials and resources ***and to display their own Web pages***. These developments are given learners access to the vast contents of libraries and multimedia resources.

Libraries use ICT in several ways, they include, according to Akintunde (2004)

- Library management and administration;
- Processing of Library materials;
- Developing on-line resources;
- Accessing on-line resources;
- Developing off-line resources;
- Accessing off-line resources
- Provision of regular library services to users;
- Inter-library cooperation and lending;
- Videoconferencing, etc.

Library users can use ICTs to find more information at minimal costs and in less time. For instance, librarians in any library in Nigeria can easily find out any information concerning any book in the Library of Congress in United States of America within a couple of minutes without leaving the confines of their library buildings. The fact is that ICT has become indispensable to libraries in the provision of timely information to users and, in fact, to the progress of librarianship as a profession.

A survey carried out on the availability of ICTs in selected libraries in Lagos and Ibadan metropolis point to the following discoveries contained in table 1 below:

SN	NAME OF INSTITUTION	NO. OF COMPUTER UNITS	LOCAL AREA NETWORK	SOFTWARE IN USE	INTERNET CONNECTION
1	Lagos State Public Service Development Centre, Magodo	1	Nil	Nil	Not yet
2.	Centre for Management Development, Shangisha, Lagos	Various	Yes	X-Lib	Yes with Cybercafe
3	Central Medical	Nil	Nil	Nil	Not yet

	Library, Yaba, Lagos				
4	Federal College of Education (Technical) Akoka	5 plus server	Nil	Nil	Not yet
5.	Nigerian Institute of Advanced Legal Studies Library, Unilag, Akoka, Lagos	Various	Yes	Alice for Windows	About to
6.	Yaba College of Technology Yaba, Lagos	6	Yes	X – Lib	Not yet
7	National Library of Nigeria (Alagomeji Branch) Lagos	Various	Nil	CD/ISIS	Not yet
8.	Nigerian Institute of International Affairs, Victoria Island, Lagos	Various	Yes	Alice for Windows	Yes
9	The Administrative Staff College of Nigeria (ASCON), Topo, Badagry	Various	Yes	Book Collector CD/ISIS	Yes
10	Nigerian French Language Village, Ajara, Badagry	Various	Yes	?	Yes
11	Medical Library, College of Medicine,	Various	Yes	CD/ISIS	Yes

	Unilag, Idi Araba, Lagos				
12	National Library of Nigeria, Ijora, Lagos	?	Yes	CD/ISIS	Yes
13	National Orientation Agency, Abuja	Various	NA	Yes	Yes
14	Lagos State Library Board Library, Old Secretariat, Ikeja	Nil	Nil	Nil	Not yet
15	Divisional Library, Badagry.	Nil	Nil	Nil	Not yet
16	International Institute of Tropical Agriculture, Ibadan	Various	yes	in magic DBT Text	Yes
17	Nigerian Institute of Economic and Social Research (NISER), Library Ibadan	Various	yes	CD/ISIS	Yes
18.	Lagos Business School Library	Various	yes	CD/ISIS	Yes

From the above table, it could be said that most of the libraries studied have computers, have automated their systems of operation, have Internet connectivity and operate in network environment. this finding supports the findings of Abdulsalami (2005) in respect of the state of ICT in University Libraries in Nigeria as indicated below:

- 65% started automation processes
- 62% have LAN in place
- 58% have wireless connection to the Internet through (VSAT)

- 50% have generators for power outages
- 35% have 20 or more computers in the Library
- 35% already have websites

In another study conducted by Ayo (2001) databases; it showed that in Nigeria, few libraries have developed enviable databases that can be launched on websites. notable includions are:

- National Library of Nigeria
- National Universities Commission Library, Abuja
- Raw Mateials Research and Development Council, Abuja-
- National Research Institute for Chemical Technology Library, Zaria
- National Mathematical centre, Abuja
- National Human Rights Commission, Abuja
- The Federal Institute of Industrial Research, Oshodi (FIIRO) Library, Lagos.

He further listed a number of libraries within the Western part of Nigeria that have adopted ICT at varying degrees. These include:

- International Institute of Tropical Agriculture (IITA) Library, Ibadan
- Kenneth Dike Library, University of Ibadan, Ibadan
- Nigerian Institute of Economic and Social research (NISER) Library, Ibadan;
- The Development Policy Centre Library, Ibadan;
- The Redemptorist Community Library, Ibadan,
- National Centre for Economic Management and Administration (NCEMA) Bodija, Ibadan
- E. Latunde Odeku Medical Library, University College Hospitral, Ibadan
- The Society Mission of Africa (SMA) Library, Ibadan
- The British Council Library, Ibadan
- Ladoke Akintola University Library, Ogbomoso.

PROBLEMS OF ICT IN NIGERIAN LIBRARIES

Having underscored the indispensability of ICT in the Library and having given a cursory picture of the state of ICT in Nigerian Libraries, what factors could be said to have militated against the pervasive adoption of ICT in libraries in Nigeria? Several contributors/writers on ICT applications in Nigerian libraries have pointed out several factors militating againsat full utilization of the technology. These include:

- ***Operational Orientation:*** Perhaps the first major problem of ICT in Libraries in Nigeria is lack of proactivity in its adoption by Librarians. Librarians need to come out of their shells and take steps for their libraries to be ICT-compliant
- ***Problems of Financial Base:*** Poor state of the Nigerian economy has made the cost of installation of ICT prohibitive to some libraries, Few libraries can boast of the level of funding required to put ICT in place without external aid. Library finance is fragile and , inadequate.
- ***Systemic Problems***: The erratic nature of the provision of electricity, poor telecommunication infrastructure, (both in quantity and quality) constitute major

obstacles to the adoption of ICT in Libraries in Nigeria. Stable electricity and reliable telecommunication systems, should be noted, are indispensable to proper functioning of ICT.

- ***Budgetary preferences***: A lot of other projects in individual libraries may compete seriously with the installation of ICT, thereby relegating its adoption. ICT is highly capital intensive but the benefits by far outweigh the investment.
- ***Low Human Capacity Building***: the education of librarians on the one hand, and that of users on the other must be addressed as most librarians are not sufficiently computer literate to exploit the facilities offered by ICT as at now. This may require a break with the tradition in the education of librarians in libraries schools as well as self development by practicing librarians.
- ***Lack of Political Will***: as in many other areas, government has not shown sufficient political will to implement ICT policies in the country. Unfortunately Libraries cannot operate efficiently outside government policies.

6. THE PROCESS OF INSTALLATION OF ICT

While there are no hard and fast rules in the adoption of ICT in individual libraries, the following process is inevitable:

Set up a Project Committee involving, representations from The Administration, The Finance and the Library Departments;

Management Commitment: Make Persuasive Recommendation to the management of Parent Institution for funding and support

Documentation of Project Plan with Phases;

Implementation: Implement all Phases of Project

Determine Human Resource: Internal (Employment of System Librarian or Externally contract out to Consultants, with training for staff.

Acquisition of Infrastructure: Hardware, Software

Hardware and peripherals: Durable, state-of-the-art computer units for each Section of the Library, the OPAC, the Server; etc. Printers (Laser/Dot matrix), scanners, bar code readers, etc.)

Software: TINLIB, CD/ISIS, (Available free of charge, from UNESCO through IITA, Ibadan,), DBText, Book Collector, The Librarian, Alice for Windows, Glass, X-Lib, etc. (Selection of appropriate library software critical to success of ICT installation);

LAN: Consider Local Area Networking to make Internet connectivity workable;

Internet Connectivity: Connect to the Internet via ISP or VSAT

Catalogue Conversion: Convert Card Catalogue, Serials Index, etc. Retrospectively, while new items are being input into the database;

Project Commissioning: Formally commission the automation project and organize general library staff training user orientation

Project Evaluation: Constant Evaluation and Reevaluation of the Automation Process

7. Conclusions and Recommendations:

The use of ICT is inevitable for any library in modern times. Even though problems of adopting ICT in Nigerian libraries are multifarious, they are not insurmountable for the determined libraries.

The way forward could be that many international funding agencies like Carnegie Corporation of New York, Ford Foundation, and Rockefeller Foundation, British Council, The UNESCO, The Education Trust Fund, etc. should be involved in the general development of ICT in Nigeria. Such assistance would complement the efforts of Nigerian government in order to leapfrog Nigerian libraries to the global information society brought about by ICT.

It is of interest that the Federal Government of Nigeria and International funding agencies are now interested in the general development of ICT in Nigeria. For example, the Federal Ministry of Education has embarked on the establishment of the National Virtual (Digital) Library Project. One of the objectives of this is to provide, in an equitable and cost effective manner, enhanced access to national and international library and information resources and to share locally available resources with libraries all over the world using digital technology.

The need for a realistic National Information and Communication Infrastructure Policy is a requirement that should no longer be allowed to linger unresolved. Nigeria needs a goal-oriented policy as well as well-thought-out plans and strategies to harness the potential of information and communication technologies for national development.

The National Library of Nigeria should as a matter of priority develop a databank of ICT experts in the Library profession, available library software and their respective vendors to serve as a lodestar to libraries looking for expert consultancy services in their attempt to automate.

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