

# **ENHANCED DIGITAL LIBRARY SYSTEM THAT SUPPORTS SUSTAINABLE KNOWLEDGE: A FOCUS ON UNIVERSITY LIBRARY SYSTEM IN NIGERIA**

**EZE, U. F.**

**Information Management Technology Department  
Federal University of Technology, Owerri**

**Email: [drezeudokaf@yahoo.com](mailto:drezeudokaf@yahoo.com)**

## **Abstract**

The essence of this research is to design a digital library which runs on internet platform. It is all about the provision of digital collections, services and infrastructure to support continuous learning, research, scholarly communication as well as preservation and conservation of recorded knowledge accessible anywhere and anytime. The motivation behind this idea is to tackle some itching problems on ground such as location of the users relative to the physical location of the library, cost, lack of timely availability and accessibility of information and lack of comfortability of the user. This research work provides a Web-Based University library, ability to access the library anywhere and anytime with ease, read books in a Portable Document Format (PDF), allows subscribers access, read, comment and publish articles on the browser instantly with a nice pagination links for swapping in-between pages, restricts access from unauthorized users with the login details, in order to avoid over congestion in the network. It uses autosuggestion to avoid delay from page reload associated with dial-up connections and generates pins to authorize bonafide students and staff of the University.

**Keywords:** Enhanced, Digital library, Sustainable knowledge

## **Introduction**

It is rooted in the recent year's expression, "learn anywhere and anytime". Libraries of all types and sizes are embracing digital collection. This is the age of information explosion. The most challenging task for information professionals and the information centers all over the world is to manage and supervise the huge information that is being provided and developed in the world. No library however big it may be is able to satisfy the needs of its users due to various constraints. It is because of this deficiency that the concept of electronic library has developed. It is impossible for a single library to monitor all the explosions of knowledge in all fields and accumulate same for users. With the emergence of internet in particular, the World Wide Web as a new medium of information storage and delivery in the 21<sup>st</sup> century makes this concept come into sight than earlier. In recent years, the

availability of information resources in digital or electronic medium has further facilitated the exchange of information resource among libraries thus creating favorable condition for increased resource sharing. The emergence of electronic libraries is a very promising development in this direction.

Digital libraries are well known for sharing resources all over the world. Several libraries in the world have formed consortia to their human and electronic resource. It refers to co-operation, co-ordination and collaboration between and amongst libraries for the purpose of sharing information.

The aim of this digital library is to weaken, if not silence, the difficulty encountered in the physical or traditional library mode of operation. Due to the new technology, storage media and the new channels for transmitting information, electronic library complete the information of libraries. Library is reshaping its service. We speak about electronic references, full text data access, web resources that are the integral part of the University education.

### **Background to the Study**

The access to information is now considered more important than the collection of buildings. The need for the library is to get the benefit of wider access to electronic resources at an affordable cost and at user's convenience. Such a library with the strength of electronic resource available in it, is in a better position to resolve the problem of managing, organizing and, archiving the electronic resources. The phenomenon of information revolution has posed several problems and this has far reaching implications in the society. The nation, institution or society which possesses more information will lead the world. This is also true in the case of individuals. The person with more information will guide a group or society and he will be superior to others. This power of information has induced people to acquire and control large quantity of information. Nowadays, some poor nations, society, individuals or institutions appear to be backward compared to others. This has created a big gulf in the availability and use of information. The electronic library can be an ideal solution in this context. Perhaps the most important thing about an electronic library would be its enhanced ability to serve the society by giving a better library solution at a distance and at a convenience ([www.cs.mdx.ac.uk/ridl/UET/TR5Usingclaims.pdf](http://www.cs.mdx.ac.uk/ridl/UET/TR5Usingclaims.pdf)).

### **Major Problems of This Study**

This study is faced with several acute problems that attracted the attention of the researcher to analyze and make some recommendations. The problems include, high cost of establishing library systems in different parts of the country Nigeria to satisfy people's need, difficulty in accessing these libraries in terms of distance, difficulty in sharing the archival resources, cost to operate and maintain conventional library is high and difficult, difficulty in accessing large collection of information by the user and finally there is delay to have international books, periodicals, articles and scientific journals.

### **The Aims of the Research**

The general objective of this study is to examine the existing situation of the library in universities in Nigeria and find the most secure approach to building a Web based University library. The specific objectives of the study are as follows:

1. To investigate the possibility of accessing the library anywhere and anytime with convenience
2. To explore the possibility of reading books in a Portable Document Format (PDF)
3. To enable subscribers to access, read, comment and, publish articles on the browser instantly with a nice pagination links for swapping in-between pages
4. To restrict access from unauthorized users with the login details in order to avoid over congestions in the network.
5. To provide autosuggestion chances to avoid delay from page reload associated with dial-up connections
6. To generate of pins used in identifying student who has paid his school fees

### **Boundaries of the Research**

This research survey is aimed at investigating existing Library Systems framework, reference model and current Library System in Federal University of Technology, Owerri and to make some recommendations for the University.

### **Why the Research is Very Important**

The need for electronic library may be summarized as follows:

1. The need to leverage resource by sharing existing resources or collection through virtual union catalogues and online sharing of information
2. The need for sharing the archiving of resources
3. The need to provide electronic resources such as creation of digital collection as portable documents files or format.
4. There is the need to reduce the cost of library operation by obtaining a group of purchased price for information products.
5. There is the need to challenge providers especially publishers to reduce the rate of rise in the cost of purchasing information.
6. To enable users have great access to larger collection by sharing catalogues.
7. There is the need to enable the users to initiate their own search for remote catalogues and make request for information.
8. There is the need to enable users read books, periodicals, articles and scientific journals, which are not available locally.

### **Review of Related Works**

Digital libraries are relatively new, evolving increasingly with the phenomenal success of the internet. This has opened up the idea that digital collections can be made available to a wide variety of users, over an international platform. With this

innovation comes a limitless set of problems to be overcome through research. In this review, the broad outline of the types of problems facing digital library development will be discussed resulting in particular focus on usability. This vast area of research has been narrowed down to techniques for evaluating the usability of digital libraries and the shortcomings of these standard techniques that work well on the internet platform, but not for the digital library domain. Ultimately, these shortcomings are investigated through discussion of research into proposed frameworks for evaluating multiple digital libraries attribute by attribute in order to begin to create some standards for digital library development. This was evaluated by Stacey (2006) in a report he submitted to the University of Wolverhampton.

A **digital library** is a library in which collections are stored in digital formats (as opposed to print, microform, or other media) and accessible via computers. The digital content may be stored locally, or accessed remotely via computer networks. A digital library is a type of information retrieval system (Candela, et al, 2011).

The web based nature of digital libraries means research into internet. Www based topics are relevant to digital libraries. Examples are in the areas of accessibility, usability, information retrieval, automation, xml, metadata. However, whilst this research provides a ground for digital libraries, their diversity brings about a sub set of research areas that can only be relevant to their domain. In addition, there are areas of research relevant to the information science aspect of digital libraries, where traditional library ideals are being transferred onto a technical platform for international audiences. One of the greatest problems for digital library development is fulfilling the requirements of Computer Scientists, Information Scientists and the myriad of users that will access the collections.

There are countless different types of digital library e.g. music, video as well as academic collections, which will have their own set of requirements for research. There are some general areas that are relevant to all libraries regardless of genre. Classification of digital libraries is one area of research that has implications for other research areas such as usability and information retrieval, in that it allows for digital libraries to be compared to each other. This is not only helpful in searching for collections but also in evaluating their usability. One key way of classifying digital libraries are to produce metadata, which are used to index all of the content in the library; it provides information about each item in the form of keywords and abstract descriptions that can be searched. The metadata can be produced manually, but research into automating its creation is being conducted. By automating the digital library, the metadata can easily be entered by a "librarian" and a new item added to the library.

Further research in this area includes algorithm designs to automatically capture the metadata out of scientific journals and conference papers in order to categorize them. More research areas include using xml to do this, which crosses over into research for information retrieval. This is a well-established research area for the internet, Researchers are currently experimenting with ways of transferring some of the new developments for web searches such as clustering, and topic based

searching to retrieve information from digital libraries more quickly and accurately in line with user's information needs.

Research areas which cross over between computer and information science are Obtaining Information, Preservation and Quality of Service. Problems can arise if institutions are not willing to freely share their resources. Depending on the type of library, information may need to be digitized, or converted to more recent technologies. There may also be issues of trust, whereby owners of the collections may not fully understand internet technology or dislike the lack of control they have over access to their collections. Preservation of information has been a concern for traditional librarians since their creation and while many techniques exist, more research is needed into ensuring that the data in the digital library will be accessible in the future when technologies change. When designing a digital library, the system needs to be able to adapt to changing technologies. In the past inventors/scientists/authors/philosophers kept notebooks that have been preserved and contained background to some of their major works and theories.

Nowadays, these notebooks exist not physically on paper but as attachments in email or in emails themselves, or maybe as blogs. The question of how all this information is captured and preserved for future generations to be able to be read is an important research area of digital library development. Quality of service exists as a research area generally for distribution of digital content across the internet and so is of importance in digital library development. Ensuring the quality of information inside the library includes checking the validity of the research when creating a digital library of academic/scientific research papers. File quality is important in video and music libraries. For images, the quality of the image includes optimization that it is not skewed. This crosses over into usability and accessibility principles in that the content must be of good quality and easy to read by the majority of users. A research area relevant to information science is in the area of Intellectual Property Rights and Copyright Laws. There is contrasting opinion toward restricting open access to information versus freely sharing information, which the internet was created for. Research areas include how intellectual property rights and copyright laws are adhered to whilst still being able to freely share information (McCray and Gallagher, 2001). How can the information be protected against misuse e.g. plagiarism, misquoting? This area is of particular importance with music and video libraries where it is vital that permission is granted by the artist/publisher and in most cases, the correct fees paid.

A digital library is an informal collection of information, stored in digital format and accessible over a network, together with associated service according to Arms (2000). Research on digital library flourished in the mid-1990s with the advent of internet coupled with the need to make information open and accessible (Lagoze and Fielding, 2010). From Arms, Blanchi, and Overly (1997) concept, the role of digital library is essential to collect, manage, preserve and make accessible digital object. To this effect, at a minimum, the core service expected of a Digital Library System include: a repository service for storing and managing digital object, a search service

to facilitate information discovery; and a user interface through which end users interact with digital object.

The cost involved in the acquisition and initial set up of open source software for managing digital collection might be minimal; the initial cost incurred when setting up digital collection and archive is only a fraction of the ongoing maintenance cost. Lawrence and Connaway (2011) showed, using statistical data collected by the Association of Research Libraries, that the median life cycle cost of maintaining media was order of magnitude higher than the initial cost of setting them up. This is especially higher for manuscript and other historical archives due to their long expected physical life.

### **Usability and Accessibility**

McCray and Gallagher (2001) gave an overview of issues concerning HCI Usability and Accessibility of digital libraries. The system must be accessible to the vast majority of users regardless of disability, language or cultural differences. The information should be easy to find using keyword searching. The interface should be intuitive with the keyword search that is easy to find as well as the ability to browse topics. Information should be optimized so that the retrieval of information is quick. Good indexing is vital so that the search terms can be well matched in results and results found quickly. Further research areas exist within the usability area for accessing digital library collections on small screen hand held devices, in measuring the user's experience when interacting with a digital library which is linked to research into emotive design, and in cross-cultural usability ([www.ucl.ac.uk/annb/DLUsability/JCDL02.html](http://www.ucl.ac.uk/annb/DLUsability/JCDL02.html)).

### **Usability Problem**

Several usability studies of digital libraries exist namely, Alexandria Digital Library, Greenstone Digital library, Perseus Digital library and Networked Computer Science Technical Reference Library (NCSTRL). The latter was evaluated using usability inspection methods. According to Hartson et al, (2004), the analysis of the evaluation raised numerous problems found in evaluating digital libraries. A lack of research was highlighted in techniques to effectively evaluate digital libraries along with the issue that they, as usability specialists, do not have extensive knowledge and experience with digital libraries and can only evaluate using general guidelines established for systems; highlighting the research requirement for a usability evaluation technique specific to digital library evaluation. I can agree that although research exists into usability evaluation for digital libraries, it is not extensive which is surprising as usability is of vital importance in development of any system.

Saracevic and Covi (2000) make an interesting argument that defines a usability problem for digital libraries. Traditional libraries are all organised in a similar way and if you can use one library you can use another regardless of geographical location (language barriers aside). This highlights the need for standards to be developed in the design of digital libraries to gain "uniformity for access and use".

They suggest that through the creation of an evaluation framework like their conceptual framework it may be possible to highlight common usability problems, in fixing them some standards will be established. A major problem in developing any evaluation framework is in how to model user behaviour. This problem is highlighted by many researchers and will be discussed throughout in later sections of this review. There has been research conducted that concentrates predominantly on understanding users of digital libraries. Adams et al. (2005) discuss users different information needs of different libraries and the "user's journey" in finding that information. They draw attention to the fact that "No sooner has users' needs been identified and supported than they change." Users' needs are very hard to model, causing a problem for usability design. There are different types of users with different information needs. Another problem is whether they enter what they want to search for into keywords, they may not have enough knowledge on the subject they are searching to enter correct search terms to retrieve the best results for their desired information need. Adams et al. (2005) also highlight the problem that different users interact with a system differently depending on their profession or subject interest areas. In their research, they used users from academic and health care backgrounds and evaluated their comments on interactions with different libraries that highlighted the differences between users from different backgrounds and how hard it is to model these differences. This is a massive research area and it is beyond the scope of this literature review.

Users' priority regardless of discipline is how easily they can interact with a system, how quickly they can receive results to their query and how relevant the results are to their query. This is the same for any information retrieval task. They also identify a problem when assessing the usability of multiple digital libraries. A good digital library means something different to different users depending upon their information need and background. How can a library dedicated to humanities research be compared to a medical science library? Equally, how can the users' needs for each be modeled when the designers and developers do not have sufficient knowledge of the content? Fuhr et al. (2001), Tsakanos et al. (2004) and Sandusky (2002) also discuss this problem.

### **Different Types of Library**

There are different types of libraries, namely:

**Academic Library** Is made up of school libraries at the primary and secondary levels, college libraries, and university libraries. The aim of this type of library is to satisfy the academic needs of the particular institution for which it is designed to serve.

**Public Library** This type of library is often referred to as peoples' library. University in a democratic society that reserves and organizes human knowledge, freely

focused in the service of the community without any bias in occupation, creed, class, religion or ethnicity.

**Special Library:** This type of library specializes in literature of particular subject or group of subjects in an institution that is designed to take care of the needs of some working organization, a company, a research association or a government department. The latest type of library is the Visual Library.

### **Digital Libraries Reference Model and Frameworks**

A reference model is an abstract framework that provides basic concept used to understand the relationship among items in an environment. The Organization for the Advancement of Structured Information Standards (OASIS) by MacKenzie (2006), states that a reference model consists of a minimal set of unifying concepts, axioms and relationships within a particular problem domain, and is independent of specific standards, technologies or other concrete details. A number of digital library systems have been suggested; discussion of three popular once now follow:

#### **Delos Digital Library Reference Model**

The Delos Digital Library reference model was initiated on the premise that the digital library universe was a complex domain that could not be captured using the single definition (Candela, 2007). The reference level identified three different systems operating within the Digital Library universe: first, a Digital Library (DL) recognizing that collects, manages and preserves digital content, Secondly a Digital Library Systems (DLS) for implementing a DL facility, Finally a Digital Library Management Systems (DLMS) comprising of tools for administering the Digital Library System.

The Delos introduces a specialized domain into the Digital Library Universe. They together help to model generic information systems thus:

**Content** This domain comprises the digital objects that are made available to end users systems.

**User** the domain represents actor (end user or automated systems) who interacts with the system.

**Functionality** This represents the subset of services that are supported by the system.

**Policy** The policy domain comprises the role and the conditions that govern the operation of the systems. This may include digital right associated with the content hosted by the system.

**Quality** This represents all aspects needed to access the quality of the systems.

A digital library is an informal collection of information, stored in digital format and accessible over a network, together with associated service according to Arms, (2000). Research on digital library flourished in the mid-1990s with the advent of internet coupled with the need to make information open and accessible, From Arms, (1997), C. Blanchi, and Overly, (1997), concept, the role of digital library is essential to collect, manage, preserve and make accessible digital object. To this effect, at a minimum, the core service expected of a Digital Library System include: a repository service for storing and managing digital object, a search service to facilitate information discovery; and a user interface through which end users interact with digital object. This literature survey is aimed at investigating existing Digital Library Systems framework, reference model and open Digital Library System. The review is focused on design consideration of Digital Library System for FUTO library System.

The cost involved in the acquisition and initial set up of open source software for managing digital collection might be minimal; the initial cost incurred when setting up digital collection and archive is only a fraction of the ongoing maintenance cost. Lawrence and Connaway (2001), showed, using statistical data collected by the Association of Research Libraries, that the median life cycle cost of maintaining media was in the order of magnitude higher than the initial cost of setting them up. This is especially higher for manuscript and other historical archives due their long expected physical life.

### **Library Development in Nigeria University**

The main purpose of a university library is to support the university in areas of learning, teaching and research. The library is regarded as the "heart" of any academic institution, particularly, the university. Hence, to a large extent, the quality of a university is measured by the services provided by the library because of its unique contributions in the over-all goals of the university. For a university to perform its myriad of functions, its library collection must not only have quality and current books or journals but also modern information sources in electronic formats, such as e-books, e-journals and, internet etc. Besides available information sources in a university library must be accessed at convenience by potential users. Consequently, the demand for effective use of library resources calls for the need to ensure that students have effective and efficient access to the library resources. The questions that ensure are: how can Nigeria University Library ensure that students know how to use the library recourses effectively? How can students' expectations change with the advent of the modern information technologies? Furthermore, do students know how to search, identify, locate and select, and use library resources relevant to their learning? In providing library /information service to students, it is imperative for the Librarians to know information needs and seeking behaviour of students, their search skill and satisfactory levels using library resources. Osundina (1973) urges that information is a key resource that can bring about change and improvement in their society.

The need for thorough user education programme according to Edoka (2000) is for effective use of the library resource because of exponential growth of published materials in various fields of academic studies. The growth in published materials (particularly in the science and technology) requires that scattered information in various forms be properly disseminated through users' instruction. This involves teaching the student in search strategy. A search strategy is the general plan for finding the needed information for learning, teaching and research (Ajayi, 2000). This can take many forms such as, use of card/online catalogues and, reading of books from the library and also through the use of computer, internet and different search engines. All these forms of search strategies could be properly achieved through "user education programme".

In Nigeria, Elaturoti, Shyllon and Udoh (2003) examine the under-graduates' library orientation at the University of Ibadan Library and recommended that librarians should work out among themselves a co-operative means of tracking the problem of library orientation and instruction along the lines similar to the LOEX scheme in America. They recommended that Committee of University Librarians in Nigerian Universities (CULNU), should work through the Committee of Vice Chancellors (CVC), and make the establishment of General Studies (GS) programme which will incorporate "use of the library" formal, compulsory, credit-earning and examinable courses in the library instruction and orientation in Nigeria Universities. Edem and Lawal (1996) in their studies postulate an aggressive user education to enhance students' greater utilization of the information sources that are available in the library. In a study on user education in academic libraries in Southern Africa, Mohammed (1996) posits that users' education programmes should be aimed at sensitizing users to the value of online public access catalogue (OPAC) and CD-ROMS so that they can learn to appreciate and use the online systems. He further explained that instructions in the use of OPAC forms a basic step to searching a computerized database, which might lead to more supplicated searches like searching other databases thus being exposed to more information.

Aguolu (1996) reveals that the Nigeria University Librarians seem to be preoccupied with basic library duties like acquisition, processing and preservation without giving the proper service on how to use the library by the students for their learning research. Katunmoya (1992) explores the problems facing users' education to include: scarcity of funds, lack of professional librarians, lack of faculty cooperation, students' inability to use the resources of the library, over emphasis on bibliographical instruction and poor integration of user education course period. These problems if attended to may probably meet the students' expectations which will help them to become more effective in using the library resources for their successful university education.

## **The Role of Library in Education and National Development**

Libraries are viewed as one of the key elements for open access information relevant to democratic information society development (Mirja Ryyanen, 1999). Libraries are very relevant nowadays when the entire idea of education is stressing extensively on independent learning and acting. Everybody is expected to discover and apply information on daily basis; therefore, access points to information and important documents must be made available to eliminate certain problems and confusions.

Culture must be pointed out especially because it has an important and unique role in mobilizing resources of human beings. Again, culture to some extent makes its influence felt more indirectly than knowledge, but it is impossible to imagine how people's creative powers could be fully activated without the impact of culture, which extends into the depths of minds (Mirja Ryyanen, 1999).

## **Education Development**

A web definition of Education Development (ED) is the process of improving the effectiveness of educational provision through an ongoing review of relevant factors at all levels from teaching methods and materials to institutional structures and policies, and the provision of mechanisms for progressive change. Role of libraries in education development is a complex of social processes of acquiring knowledge and experience, formally or otherwise. According to (Ogunsheye, 1981), library involves the apparatus used for the development of the individual. It permits the individual to acquire spiritual, inspirational, and recreational activity through reading, and therefore the opportunity of interacting with society's wealth accumulated knowledge (Omojuwa, 1993). Library services are needed to keep the skills that have been acquired through literacy classes-alive by the provision of good literature. Education facilitators should include librarians in planning education programmes and learners should be given library instruction. 'Education' and 'Library' work together because they are basically and synchronically related to and co-existent with each other. Attempt to separate them might lead to confusion and collapse of either of them. Hence, education cannot exist alone in the absence of library and library has no meaning, if it cannot impact education. Standard library improves people in a particular community (academic and non-academic community). For instance, a school, a club, and enterprises of a society can never alone impact education; each of them is dependent upon a library. The concept of education for sustainable development and its relationship with Education for All (EFA) is a new vision of sustainable development programme by UNESCO. In December 2002, resolution 57/254 on the United Nations Decade of Education for Sustainable Development (2005 – 2014) was adopted by the United Nations (UN) General Assembly and UNESCO was appointed lead agency for the promotion of the decade. A prerequisite for education for sustainable development at all levels and in all modalities of education is the establishment of the concept on education for sustainable development and its relationship with Education for All (EFA), the United

Nations Literacy Decade (UNLD) and the Millennium Development Goals (MDGs) shown through quality education. The educational policies and plans of UNESCO in the role of education and its development, poverty alleviation, the promotion of universal human rights, values and tolerance, and challenges of new ICTs (Library in particular).

### **Challenges of Electronic University Library System in Nigeria**

Computerization is an expensive but a necessary project. The implementation of an online library management system implies that libraries will spend more on computer hardware and software, licensing, training of librarians in new technology especially in the area of texts selection, scanning, verification and indexing of the materials to be digitized as well as employment with web technologies skills to support and manage them. Copyright holders have to be contacted and rights obtained. Money is needed to translate content into digital form and to access the resources. A powerful service is required, supported by specialized software and personnel. The server must operate all day, and new materials should constantly be added. Building and sustaining an online library management system requires proper technology infrastructure which include telecommunication, servers, application platforms and software application (Gbaje, 2007). There is the need to have good telecommunication infrastructure in place for the implementation of an online library management system.

There is the problem of inadequate web technology skill needed to maintain web servers that locally host digitized materials and other resources hosted remotely as well as maintaining proxy access to restricted resources. Ashcroft and Watts (2004) observed that Nigeria has an acute shortage of digital systems librarians, information and web technology literate staff and librarians to install and manage technology networks.

The erratic nature of electric power in Nigeria is a major problem. There should be no power outage in order to maintain Online Library Management System. Again, distinct user interface of every product is another challenge; Users therefore, need to remember different passwords for different products. The scope of coverage and available archives are often limited. At times, difficulties are encountered while downloading or printing; there is no cost savings, especially when both the virtual and print products are maintained. Everything is not available in digital format. There are restrictions, which vary from vendor, on how the product can be used. The online library management system relies on power and computer networks in order to be available for use. Users cannot spread everything in front of them and use them all at once. Users are most comfortable using books.

## **Conclusion**

Digital library system operates in web platform which makes use of internet. It sustains knowledge by ensuring that users access it at any time and in anywhere with convenience unlike the traditional approach whose accessibility is limited to the opening hours. The user uses the personal computer to connect the internet to access the materials readable in a Portable Document Format (PDF) or other formats with the help of the browser, with a nice pagination links for swapping in-between pages. The personal computer must have the following specification, VGA Monitor, Pentium III Microprocessor, 128MB of RAM, Free hard disk space of 1GB, Window 2000, XP or higher versions of operating System, Wampserver and recent and functional Web Browser (e.g. Mozilla Firefox 3.x or Opera 9 and Google Chrome). This particular digital library system, restrictions from unauthorized users without the login details were imposed to avoid over congestions in the network. Autosuggestion option was introduced to avoid delay from page reload associated with dial-up connections. Every authentic user has a pin to enable him have access to the digital library. Digital library supports remote access which refers to connection to a data-processing system from a remote location, for example through a virtual private network. Remote access involves download and upload of materials. **Download** means to receive data to a local system from a remote system, or to initiate such a data transfer. **Uploading** refers to the sending of data from a local system to a remote system such as a server or another client with the intent that the remote system should store a copy of the data being transferred, or the initiation of such a process. The Electronic Library System has contributed immensely in reducing the time spent for each task in the library. This has made the tedious work done by librarians more straightforward and the effort of making a physical presence in the library minimal. In some cases where the librarians might not have expertise knowledge, they can still use the application to manage the library though without maximum result.

## **Recommendations**

The issue of serving the public effectively has been of great concern to the management and staff of most libraries in Nigeria. It is therefore highly recommended that Electronic/digital Library Systems should be introduced to institutions' libraries that are yet to be digitalized. I also recommend that the new system and the old system should run concurrently so as to have a more reliable result. Staff should be trained towards effective use of the enhanced operations, devices and software

## References

- Aboyade, O. (1976) "Issues in the development of tropical Africa" Ibadan University Press
- Adams, A. & Blandford, A. (2005) "Digital libraries' support for the users" A research work on understanding user's predicament of digital libraries
- Aguolu, I. E (1996) "Nigeria University Libraries" What future? The International Information and Libraries Review,28(3),261.
- Ajayi , G. O (2000) "Challenges to Nigeria Globalization and Information Age" Keynote address at the workshop of National Information Communication Infrastructure (NICI) policy plan and strategies for Implementation, Maitama Abuja.
- Ajibero, M.I (2000) "Strategies and Tools for Information Service Delivery in the New Millennium" A compendium of papers presented at the 2000 NLA Annual National Conference/AGM, June 62-68.
- Akintunde, S.A (2004) "Libraries as Tools for ICT Development" A compendium of papers presented at the 2004 NLA Annual National Conference and AGM, Akure, June 10-18.
- Arms W.Y. (2000), Digital Libraries, Cambridge, Massachusetts: The MIT Press, 2000.
- Arms, etal (1997), "An Architecture for Information in Digital Libraries," D-Lib Magazine, Vol. 3, Feb. 1997.
- Blandford, A. Stelmaszewska, H. Bryan-Kinns, N. (2001) "Use of Multiple Digital Libraries" A Case Study in Proceedings of the 1st ACM/IEEE-CS joint conference on Digital Libraries Roanoke, Virginia, United States, New York, NY, USA: ACM Press, pp. 179 – 188.
- Candela L, G. et al (2011): "The Digital Library Reference Model". April 2011, 17. ([PDF](#))
- Edoka, B.E (2000) "Introduction to Library Science" Onitsha.
- Elaturoti, D.F.,A. K. Shyllon, W.Udoh, (2003) "Forty Years of School Library Service to The National.Lagos" NLA/ikofa Press 165-179.

- Fuhr, N. Hansen, P. Mabe, M. Micsik, A. Solvberg, I. (2001) "Digital Libraries: A Generic Classification and Evaluation Scheme" Proceedings of the 5th European Conference on Research and Advanced Technology for Digital Libraries, London, UK: Springer-Verlag, 2163 pp. 187-199.
- Hartson, H.R. Shivakumar, P. Pérez-Quñones, M. A. (2004) "Usability Inspection of Digital Libraries" A Case Study. In International Journal on Digital Libraries, Springer Berlin / Heidelberg, 4(2), pp. 108-123. Information Journey. In Proc. ACM/IEEE joint conference on Digital libraries 2005. pp.160-169.
- Katunmoya, A. (1992) "Public Libraries and Community Service in Africa" African Journal of Libraries Archive and Information Science. 2(1),33-38.
- Candela, L. et al (2001) "The DELOS Digital Library Reference Model (Version 0.98) – Foundations.
- Lawrence, et al (2001) "Life Cycle Costs of Library Collections: Creation of Effective Performance and Cost Metrics for Library Resources," College & Research Libraries, vol. 62, 2001, p. 541
- MacKenzie, M. et al (2001) "Principles for Digital Library Development" From Communications of the ACM, 44(5), pp. 48–54
- Mohammed , Z. (1996). "Development Information at the Community of level: Current Thought and Finding" A paper presented at the workshop on Development Information Strategies in Nigeria Organized by the British Council, Kaduna, December. 2-6.
- Osundina, O. (1973) "The Relationship Between Information Science and Librarianship" A View Point of Nigeria Libraries,9(1&2), 47.
- Sandusky, R. J. (2002) "Digital Library Attributes: Framing Usability Research" In Proceedings of the Workshop on Usability of Digital Libraries at Joint Conference on Digital Libraries, p. 35.
- Saracevic, COVI (2000) "Challenges for Digital Library Evaluation" In D.H. Kraft (Ed.), Knowledge Innovations: Celebrating Our Heritage, Designing Our Future. Proceedings of the 63rd Annual Meeting, November 11-16, 2000, Chicago, IL Washington, D.C.: American Society for Information Science. pp. 341-350.
- Stacey Greeaway, (2006). "Digital Libraries", submitted to University of Wolverhampton M.Sc. module.

Tskonas, G. Kapidakis, S. Paptheodorou, C. (2004) "Evaluation of User Interaction in Digital Libraries" In proceedings of the Delos workshop on evaluation of Digital libraries 2004.

[www.cs.mdx.ac.uk/ridl/UET/TR5Usingclaims.pdf](http://www.cs.mdx.ac.uk/ridl/UET/TR5Usingclaims.pdf) (Accessed on 12/9/12)

[www.ucl.ac.uk/annb/DLUsability/JCDL02.html](http://www.ucl.ac.uk/annb/DLUsability/JCDL02.html) (Accessed on 17/9/12)

Wikipedia, the free encyclopedia (Accessed on 12/03/13)

Gboyega A., Gbolahan O. (2013) "The role of library in educational development" PDF download accessed on 28<sup>th</sup> March, 2013.

Mirja Ryynanen (1999) "The role of libraries in modern society" 1999. PDF download accessed on 1<sup>st</sup> April, 2013.

Ogunseye F. Adetoun (2008): "Prospect for knowledge and information transfers managers in Nigeria in the new Millennium Education" Macmillan Nig. Publication, Ibadan.

Omojuwa, R.A. (1993): "Directions I, Adult Literacy Programming in Nig. Literacy and Reading in Nigeria". Reading Associate of Nig. (7) pg. 207-214.

The role of libraries in Indian society (1999) PDF download accessed on 1<sup>st</sup> April 2013