



Review Article

DIGITIZATION OF EDUCATIONAL RESOURCES IN NIGERIAN ACADEMIC LIBRARIES: PROSPECTS, CHALLENGES AND THE WAY FORWARD

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ABSTRACT

This paper discusses the process of digitization of educational resources in academic libraries in Nigeria, the challenges faced by libraries and the way forward. Digitization is a process by which an electronic representation of a tangible item is created. Therefore, digitization of educational resources implies the conversion of educational resources from the analog to the electronic format. It involves transferring materials from tangible to digital format; this protects the original item from damage while providing public access to materials that might otherwise be restricted. The paper outlines some benefits which Nigerian academic libraries could derive from the digitization project which include: security of library collections, improved preservation and conservation of library resources, space conservation and improvement of library services to users. Also, the paper reveals some hurdles standing on the way of Nigerian academic libraries which could prevent them from effectively digitizing their collections; such as: digital illiteracy among library personnel, funding, inadequate supply of electricity, lack of modern infrastructure and technical experts. The paper concludes by pointing out some important measures that could help in resolving the challenges confronting the Nigerian academic libraries in digitizing their educational resources.

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INTRODUCTION

The process by which an electronic representation of a tangible item is created is known as digitization. It is the conversion of educational resources from the analog to the electronic format. It involves transferring materials from tangible to digital format; this protects the original item from damage while providing public access to materials that might otherwise be restricted. According to Jagboro, Omotayo and Aboyade (2012) digitization could be simply referred to as all the steps involved in the process of making collections of historical and other materials available online. In the world of Information and Communication Technology (ICT) and globalization, digitization of materials is fast becoming the norm among libraries as each seeks to contribute its quota to the world information resource. Equally, they affirm that the digitization project has been slow and expensive. Most libraries in Nigeria especially School and Public libraries are having financial challenges in digitizing their resources while some Academic libraries are still in the preliminary stage in digitizing their collections.

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However, Nebeolise (2013) asserts that academic libraries in Nigeria make use of Information Communication Technology (ICT) as tools to meet the information need of users who in this context are students and faculty staff. Academic libraries are established to support the objectives of their parent institutions which are to promote teaching, learning and research. Therefore, academic libraries are expected to serve the students, lecturers and other members of the academic community. To meet the information need of users, academic libraries provide various services such as user education (orientation/instruction services), inter-library loan/connection services, abstracting and indexing services, referral services and circulation services. Other services provided include library book loan, reference services, photocopying, online services, compilation of reading list and bibliographies, e-mail, internet connectivity, CD-Researching and publishing (Ifidon, 2006). Globally, electronic resources are becoming preferred because of their inherent benefit of wide outreach. As a step forward in making prints in hard copy format available online for our teeming users, it becomes essentially necessary to digitally scan our library materials especially the newspapers, text books, theses and court cases so that many users can gain access to a wide variety of information online (Jagboro, Omotayo & Aboyade, 2012).

Generally, educational resources in Nigerian academic libraries comprise of both printed and non-printed library materials such as text books, student projects and theses, newspapers, journals and other periodicals; while the non-printed library resources consist of microforms which include microfilms, films, microfiches, micro-cards, slides and other non-book library materials in which information contained in them can only be accessed with the aid of some equipments such as overhead projectors, film projectors slide readers, computers, printers and other hardware accessories that enhance the information accessibility of these aforementioned educational materials in the academic libraries. Nonetheless, as good as these library resources seem to be, yet they can only be accessed and used by few readers who personally visit the library for their information needs. Hence, for the library resources to have a global usage there is urgent need for its collections to be digitized. That is what aroused the interest of these researchers to write on the subject.

Overview of digitization in Nigerian Academic Libraries

For many years, libraries in Nigeria have traditionally offered only printed books and print holdings still make up majority of the resources of Nigerian libraries. However, the introduction of ICT and digital libraries are relatively new development in Nigerian libraries and the desire to use these emerging technologies is spreading fast despite the constraints in implementing them. Libraries did not have technology tools at an earlier time and the effort to implement technology was not seen as necessary by many then since their collections were small and they did not see the real need for embracing technology until the information revolution evolved and the realization that virtual information was valuable and could be accessed if one had the proper infrastructure in place (www.eprints.rclis.org). Digitization can be referred to as the process of conversion of analog educational resources present in the library into digital format for the purpose of extending access and, where appropriate, to assist with preservation. Digitization also referred to as the management of new materials created in digital formats.

In recent times, tertiary institutions of higher learning in Africa have embarked on integration of technology in their operations. This serves as a tool for improvement and development, especially in a situation where attention is drawn to the academic contents and ways of digitizing and preserving them. University libraries are fully involved in this development as they are the heart of the University, being that they house the intellectual contents of the institutions. This effort to digitize the intellectual property of the institution is what is known as digitization (Eke, 2011). In the same vein, Eke (2011) narrates their experience during the digitization project that was carried out at the University of Nigeria, Nsukka library; she disclosed that it started with a set target of digitizing and uploading about a total of 500,000 files in the university's website. The project commenced in 2008 with the training of staff that were involved in the programme. These include data entry operators, some youth corps members and some library personnel. She further revealed that the first set of documents selected for digitization was PhD theses while other library collections follow in the digitization exercise. This has been the same procedures in most Nigerian university libraries where the digitization projects had taken place.

Also, as noted by Eke (2011) while citing Omekwu and Echezona (2008), the state of ICT in Nigeria is poor especially when compared with some African countries such as Egypt and South Africa. However, Okiy (2008) asserts that many librarians in Nigeria are therefore taking up the challenge of computerizing their libraries and some have taken some steps to source the requisite funds to digitize and archive their library resources for easier web-based access. For Kashim Ibrahim library, Unesco's sponsorship of the heads of six University librarians to a workshop on the use of the Greenstone Open Source Software, sparked the library's initial interest in digitization. Additionally, digitization of theses and dissertations at the university libraries of Jos and the Obafemi Awolowo University, under the AAU-DATAD programme, provided a model for ABU to start digitizing its post-graduate theses and dissertations. The ultimate aim was to provide global access through the Internet for all the theses and dissertations accepted for higher degrees in the University.

In Yaba College of Technology Library, the state of digitization is still at the preliminary stage, the library management utilized X-Lib software to create database for the library materials in order to pave way for the full digitization project which the library management intends to embark upon in future. Consequently, in October 2013 under the project sponsored by the Tertiary Education Trust Fund (TETFUND) donated to the institution's library fifty set of new computer system with their accessories. Besides, the library management on their part organized series of workshops to sensitize the library users especially the faculty members of the institution about the digitization programme and the library online resources which can be useful for their research activities. Also, on 19th and 20th December, 2013 the Library management took another giant step by organizing a training workshop in the library whereby some group of System ICT experts were invited from Abuja the Federal capital city of Nigeria to train some selected library staff (the correspondence author of this paper was one of the beneficiaries of the training) on a new computer software known as Genplus which the library management had acquired for the digitization of the library collections. After the workshop, the Polytechnic Librarian formally announced that the full digitization of the library resources and users will commence in January 2014. However, Yaya and Oyediran-Tidings (2010) opined that the application of Information Communication Technology (ICT) into the library operations is expected to contribute massively to the growth of libraries, in the areas of diversification and multiplication of methods of gathering, processing and transmitting information to the general public. Unfortunately, ICT has not been an all-embracing concept in Nigerian libraries, despite the numerous benefits and strategic advantages it is expected to bring. Reasons for this could be as a result of some challenges being faced by most academic libraries in the country. Hence, this paper intends to reveal some benefits which the Nigerian academic libraries could derive in digitizing their resources and also suggest some factors that could help them in eradicating some of these hurdles.

Digitization Procedures

Digitization is not an easy task as one may think. The intending library needs to put a number of things in place.

However, the following are the basic procedures which any academic library that intends to digitize its resources may carefully observe:

Setting up of digitization planning committee

This is an important step in the digitization project. This committee has to map out the general plan on how the digitization project will be implemented. It has to scout and select the best software that could be used in the digitization exercise. Also, it has to organize series of workshop and seminars in order to sensitize the library users and friends of the new digitization project which the library is embarking upon. Besides, this committee is expected to organize in-house-training for the library staff and the computer operators as they are the personnel on ground to fully implement the project.

Selection of the library materials

It could be borne in mind here that not all the library resources that will be digitized at the initial stage of the project. Hence, the library management has to draw out a guideline on the materials that would be digitized. The content and texture of the materials must be considered.

Contracting for Digital Conversion

According to Fleischhauer (1996), most collections are digitized by contractors who specialize in various types of originals: unbound paper, bound paper, searchable texts, moving images, still-pictorial images, microfilmed documents, sound recordings. In a situation whereby the digitization contract was mistakenly awarded to the incompetent contractor, the bibliographic details of the digitized library materials will not be accurately created, this may lead to the loss of vital information in the library portal site. The library management should be objective when selecting contractor for their digitization project.

Image and content capture

The document(s) or other materials are captured in digital form using a scanner or digital camera. Decisions made about the desired image quality during benchmarking (e.g., the type of scan, the resolution of the scan, the bit depth) are implemented. The bibliographic details of the library materials are to be captured. For example, in Yaba College of Technology library, worksheet has to be developed for each textbook, this provides full bibliographic details for such book and the information in each worksheet will be converted to the electronic format and then stored in the library database. Also, the personal data and photograph of each registered library user will be captured and scanned into the library database.

Image processing

This includes image editing if necessary (e.g., compression of files, sharpening of images) and the creation of metadata (sometimes defined as "data about data"). Metadata indexes and describes the scanned materials. Aside the image editing, the bibliographic details of each book entered into the system might be wrongly done by the computer operator who may not be a librarian, hence, there is need for the professional librarian to edit both the image and content of materials entered into the library database.

Image and content delivery

This is the process of getting the scanned images and contents to the user through computer networks, monitors, and printers. Delivery methods, file formats, file compression, and acceptable image quality will differ depending on various user characteristics. It is crucial to consider image delivery needs during project planning, not after the images have already been created. Digitized library resources could be made available to numerous information users globally via internet facilities. All they needed to do is to get connected to the Institution website and then to the library portal.

Quality control

The content and image quality of the digitized library resources have to be evaluated from time to time. This involves both initial and ongoing evaluation of whether the technical requirements for image capture, processing, and delivery are being met. At the beginning of the project, it is a good idea to digitize a representative sample of documents to be sure that all quality requirements are being met. For this to be made effective, the library management has to set up a monitoring committee chaired by the head librarian himself in order to maintain its veracity. This committee serves as a task force and saddled with a responsibility to review and maintain the quality of the digitized resources before they are being disseminated to the outside world.

Storage and Maintenance

After digital objects are created and appropriately indexed and described, they must be stored on-line, near-line, and/or off-line. Over time, however, obsolescence of hardware and software (the technology chain used to access digital objects) becomes a far greater concern. If a CD-ROM survives intact for 50 or even 100 years, but no device survives that can retrieve the data, then the data have effectively been lost. The library management should maintain a server (a secured computer system) which can only be accessible to the system administrator where all the digitized collections are safely stored.

Prospects of Digitization

The following are some of the benefits which Nigerian academic libraries could derive if their collections are fully digitized:

Security of Library collections

Digitization offers a solution for theft of items especially in developing countries where libraries have no electronic security systems to prevent theft of their collections. It is also a way of preserving aging materials which could have otherwise gone into extinction. It further allows users to search collections rapidly and comprehensively from anywhere at any time. Digitalized academic libraries could renew and replace on shelf their heavily-used, old and tattered books. The books are digitized, printed, bound and placed back on shelves. And when digitized materials are put on the web, they tend to increase the library's visibility as the users all over the world access the materials.

Apart from the machines that act as interfaces, it is now possible to have most library resources stored virtually (Jagboro, Omotayo & Aboyade, 2013).

Improved preservation and conservation of library resources

Since the electronic documents are not prone to physical wear and tear, their exact copies can easily be made, the digital libraries facilitate preservation of special and rare documents and artifacts by providing access to digital versions of these entities. The digitized library materials last longer than the paper-based collections.

Space conservation

Lack of adequate space has been one of the major challenges in the library. Digitization of library resources helps in reducing the problem of space in the library. It could be recalled that what make the traditional library congested are book shelves and books but technology changes our libraries from traditional libraries to virtual libraries. Absence of shelves and physical books give much space in our modern libraries (Idi, Saleh & Abdulkadir, 2010). Large volume of library books and periodicals could be digitized and stored in an electronic file and this could be accessed online by many information seekers globally.

Improvement of library services to users

Any library that embarks on digitization programme, its services will be improved as readers will have easy access to the library collections even at their convenient time. Digital libraries are typically accessed through the Internet and Compact Disc-Read Only Memory (CD-ROM). They can be accessed virtually from anywhere and at anytime.

They are not tied to the physical location and operating hours of traditional library. Users of such library will appreciate the services being provided by the library. It can be affirmed that at any point where the user appreciates services rendered to him, the image of such library will be publicized to other information seekers within and outside the domain of such library.

Digitization improves the accessibility of library collections globally

Globally, electronic resources are becoming preferred because of their inherent benefit of wide outreach. Gone are the days when readers have to physically visit the library before using its facilities, but now through ICT, library users can easily access and make use of the library materials such as electronic books, e-journals and open access journals at homes, offices or at their convenient locations without necessarily visiting the library.

Library collections could be accessed via the internet in full text or in the form it was digitized (such as bibliographic), via the internet 24/7 or twenty four hours a day, seven days a week at any place in the world where there are internet facilities. So, digitization enhances multiple and simultaneous access to the organized information.

Cost reduction

The initial expenses incurred by the library management during the acquisition and installation of digitization software and hardware could be very high; but in the long run this would be drastically reduced. Think of the amount of money used in hiring and maintaining large number of employees in the traditional library, what about the money used in paying their entitlements even after their disengagement from the active service? Such amount of money could be saved with the digitization project being embarked upon by the library. An average computer system that is manned by a librarian could conveniently perform the tasks of many library personnel within a short period of time.

It enhances easy recovery of data during natural disaster

Nigeria is based in a tropical climatic region where library and other educational resources are prone to different forms of natural disasters such as fire, flood or war. At present, Nigeria is having some security challenges mostly in the Northern part of the country where a group of insurgents take up arms against the land. What will happen to the academic libraries sited in such area? What if these dissidents decide to bomb the entire academic community what will be the fate of library if its materials are not digitized? However, once the library collections are digitized there will be an immediate electronic backup for all its resources. All one needs to do is to get connected to the University website, and then all the digitized items would be recovered from the library portal.

It helps in building partnerships among libraries

Digitization helps in building partnerships among libraries of many institutions; this improves the quality of digitization projects by sharing resources, adopting common standards and facilitating good practice and the exchange of information and expertise. There can be networking among many academic libraries from different parts of the country; this helps to identify funding opportunities whereby collaborative libraries can put their resources together to acquire a standard computer software to digitize their collections and this will also enhance accessibility to their individual library resources.

Challenges of digitization project among Nigerian academic libraries

Digitization is a laudable project that enhances global accessibility to the library collections. Nevertheless, there are some hurdles that could impede its smooth operations; they include:

Digital illiteracy among library personnel

Generally, there is computer phobia among many librarians and information managers especially those trained in traditional librarianship. Due to generation gap between the new and old information professionals, the traditional librarians consider computer as a threat to their status as experts. They find it very difficult to cope with the requirements of the electronic age. Many of them lack information technology skill and are unwilling to learn and use it effectively (Idi; Saleh & Abdulkadir, 2010).

The academic libraries should organize short computer training and retraining programs from time to time to assist librarians who do not have knowledge and computer skill, thereby promoting computer awareness of computer potentials and capabilities.

Inadequate financial support

Inadequate funding of educational system in Nigeria has been a great problem. Many libraries depend heavily on donations made by some organizations within and outside the country for their survival. The parent bodies of many academic libraries are not helping the situation; hence, they were been allocated with low budget which are generally inadequate for the libraries to acquire all the relevant educational materials needed to support the curricula of the entire University. Yearly, ICT facilities need increased financial support to purchase upgraded software, hardware, cost of subscription of bandwidth and increase in skills that need constant training and retraining of library personnel. So, there should be increment of library annual budget in order to enhance the procurement of all the ICT facilities needed for the digitization project.

Erratic electricity power supply

The organization that is saddled with the responsibility of providing and distributing electricity power in the country is not effective in this noble task. Generally, darkness covers everywhere especially at night time in the academic community and the library is not exempted from this problem. Unfortunately, only few libraries are buoyant enough to possess alternative source of power (i.e. standby generator) to support their ICT facilities. Most libraries fail to provide effective and reliable services to their patrons due to erratic electricity power supply. It is sad to note that till date, the Nigerian government has been unable to provide even the much promised 6,000 megawatts of electricity generation in Nigeria. Currently, power supply still fluctuates between 3,600 and 3,700 megawatts of electricity generation (Anuforo&Olayinka, 2010). Recently, in 2013 the Nigerian government commenced the full commercialization of the electricity power supply to her citizenry, although this may be very expensive to the populace at the initial stage but we hope that this may eventually put to rest the problem of electricity supply in the country as it was done in the telecommunication sector.

Lack of Modern Infrastructure

Infrastructure facilities in most Nigerian academic libraries is in sorry condition, the ICT department in these libraries lack modern computer systems, even the few available systems are being infested with virus which make them unfit for the digitization project. Hence, for the digitization project to effectively commence in the Nigerian academic libraries, the management of such institution should make available to the library modern infrastructure facilities equipped latest computer system and its accessories.

Lack of technical experts

It should be borne in mind that as good as computer software used for the digitization project may sound at the initial stage; yet, it needs to be maintained periodically in order to safeguard its lifespan.

Most of these library software is were procured from the foreign organization in which their technical experts are based abroad, the library management has to invite them from time to time whenever the software acquired is to be maintained, and this exercise may be cumbersome and too expensive for any Nigerian academic to handle. This is what led to the demise of most library softwares in Nigeria.

The Way Forward

Back-up sources should be provided

There should be provision of back-up sources, this serves as alternative in a situation where the digital sources pack up. Library should still maintain the traditional public catalog cabinet; it serves as key to the library collection in a case where the online public access catalog (OPAC) is not functioning. Also, Eke (2011) suggests that in a case where a virus attacks the files and data is lost, there should be a back-up for continuity before then. An external hard drive of large storage capacity could be purchased for this purpose.

The stated solutions will go a long way in strengthening the digitization exercise in the Nigerian academic libraries. Amongst all the reasons for the digitization project, preservation is the main goal. Although preservation of materials is the ultimate goal of all digitization efforts, provision of greater access is another noble reason for digitizing library collections (Fabunmi, Paris, & Fabunmi, 2006 cited in Eke, 2011). In Yaba College of Technology, the Library has established digital links with the digital collections of the following:

- Access to Global Online Research in Agriculture (AGORA);
- JSTOR;
- Mylibrary;
- Science direct;
- EBSCOHOST; and
- Bookboon.com.

Despite this effort, there is still need for the Nigerian academic libraries to develop a digital or ICT departments where all the locally digitized materials could be stored and accessed. Previously in Yaba College of Technology library, the library made use of Libplus (Lib+) library software, which is an upgrade of X-lib. At present, the library is making use of a new computer software known as Genplus (Gen+) to digitize its collections. This software is also used to create an OPAC where all the library materials are cataloged and made available to students in the intranet for easy location.

Manpower training and development

Despite the fact that we are in the electronic age, yet the library work has to be discharged by some competent personnel such as professional librarians, para-professionals and even the supporting staff. These set of library personnel needed to be trained and re-trained so that they can be more effective in their task of information retrieval and dissemination.

However, Okiy (2010) cited the work of Omekwu (2003), articulated the e-competencies required of librarians as follows:

- Have basic knowledge of computers and their capabilities;
- Competency with search engines;
- Competency with internet facilities;
- Competency with e-mail;
- Competency with internet navigator tools;
- Competency with web browsers and web file formats;
- Competency with database softwares;
- Internet development and management know-how.

It cannot be over emphasized that professional librarians need to brace up to the new challenges of ICT competencies so that they can render more effective services to their library patrons in this electronic age. The age-long apathy of older librarians towards ICT should be jettisoned. Okorie and Ekere (2008) assert that if information professionals do not keep abreast of the changing technologies, they will be unable to manage the different types of information resources and cope with the ever growing information needs of the users in this electronic age. Librarians must be involved in training and retraining. They must retool in order for them to be able to manage successful electronic library services. (Okiy, 2010).

RESULTS

Initially, digitization of library materials is a capital intensive venture, a lot of money is needed to acquire and to install all the ICT facilities, engage the services of competent system analysts and librarians and to provide other required infrastructure facilities for the project. Hence, both the federal and the state governments should increase the budgetary allocation for each institution of higher learning in the country. Likewise, the management of these institutions should have a positive thinking toward the library; the subvention allocated to the library must not be diverted to other project which the management deems may yield immediate profit to the institution. Nebeolise (2013) opines that there should be massive injection of funds and financial assistance from both the Nigerian government and some international donor agencies for the provision of ICT infrastructural facilities for effective library services in academic libraries in Nigeria

Establishment of ICT department

There should be establishment of ICT department in the library and it should be headed by a competent System Librarian. This department should be equipped with sets of modern computer and their accessories. This is necessary because the situation in many Nigerian academic libraries is pathetic as many of these established ICT departments lacked modern facilities and competent manpower to provide needed services. Therefore, every ICT department of the Nigerian academic libraries should be fully automated in order to facilitate and create an avenue for effective services.

Consortium building among Academic Libraries

There should be consortium building of educational resources among the Nigerian academic libraries; their collections should be networked so that users can have easy access to their resources. The collaborating libraries should establish joint online public access catalogue (OPAC) where they can have access to each other collections. In the same vein, Okiy (2010) suggests that every academic library in Nigeria will need to be effectively involved in inter-connectivity to facilitate resource sharing.

They should work at forming consortium which will eventually progress towards their active involvement in delivery their library services. These consortia libraries could put their resources together to procure modern software despite its high cost and equally engaged the services of capable experts for its regular maintenance and upgrading. The efforts of the National Universities Commission of Nigeria in this direction should be intensified.

Conclusion

Digitization has opened up new audiences and services for libraries, and it needs to be integrated into the plans and policies of any institution to maximize its effectiveness. Digitization is a complex process with many crucial dependencies between different stages over time. Utilizing a holistic life-cycle approach for digitization initiatives will help to develop sustainable and successful project. Hence in this paper, some vital procedures to be considered in the digitization project were discussed; also, some benefits derived from the programme were equally revealed. Besides, some hurdles affecting the digitization project in some Nigerian academic libraries should be tackled by the management of such institution. However, some important factors that could help in resolving these challenges were suggested.

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