# Digitization of Library Resources in Academic Libraries: Challenges and Implication

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***Abstract:*** *The advent of information and communication technology (ICT) has made imperative that library holdings must be both in digital format and traditional format. Converting the analog library holdings to digital format is indeed a herculean task. This paper discusses these challenges and proffered solutions.*
***Keywords:*** *Digitization, Library Resources, ICT, Analog*

## I. Introduction And Background

With the advent of information and communication Technology and the internet facilities the traditional function of the library as a place for storage and preservation of library resources has changed dramatically. Academic libraries are duly bound to acquire, preserve and disseminate information for whatever source, hence there is need for such sources of information to be kept preserved and made available in a more convenient and accessible format, this call for digitization which is the process of converting analog (print, caving, artifacts etc) materials to digital/electronic format.

A number of scholars and authorities have defined the concept differently. For instance Ndor (2007) sees digitization in his own passion as turning information into binary digits. It refers to the process of translating a piece of information such as books, sound recording, picture or video into bits. Thus digitization process can be accomplished through a variety of existing technology such as digital storage media, high speed scanners and high – band width networks, digital libraries have received a boost in the last few years. The dream of digitizing the vast knowledge of mankind, and making it available online through institution repositories (IRS) and library website has now become a realizable goal for information professionals in Academic libraries.

Digital libraries depend on digital content. There are information resources which are born digital, having created by computational technologies and never existing in analogue format, but the majority of holding offered by digital libraries according Tollee (2002) in Okeke, Udem, Onuwrah (2015) were created through the process of digitization, that is, the conversion of an analogue signal or code into a digital signal or code.

Today's libraries are repositories and access points for prints, audio, and visual materials in numerous formats, including maps, prints, documents, micro – form (microform/microfiche), CDs, Cassettes, videotapes, DVDs, Videogames, e-books, audio books and many other electronic resources. Modern libraries are increasingly being redefined as places to get unrestricted access to information in many formats and from many sources. They do this by providing tremendous amount of information with a variety of digital tools.

Digitization refers to all of the steps involved in the process of making convections of historical and other materials available on line. 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. Libraries embark on the digitization of their resource available electronically thereby providing a wider access to its collections. In a networked campus, users can access the library's digitized resources from their offices and house of residence even when the library is physically closed. Also, as many people as possible can gain access to as much material as needed at any given time, a difficult situation with a text resource.

Therefore, digitization holds the advantage of providing a platform for sharability and duplicity of data, and networking because of the digital form of content. It also enhances the life – span of records as well as securing data and records that would have been obliterated due to their age. Every effort should therefore be made to digitize and promote digitization, particularly in libraries where information is essentially harnessed for sharing to communities of users, with different information needs.

## II. Related Works

Digitization could be viewed as the process of converting non-digital born documents into digital format, this includes selection of collection/materials, imaging or scanning, transcribing, creating markup and index, creating metadata, processing images, uploading to the web, preserving and maintaining archival media (Gbaje 2007). It is the transformation of information from whatever forms or from whatever support to digital code using computer technology. This may "include electronic snapshots taken of a scene or photograph, films,

manuscripts, printed texts and artworks scanned from documents" (Cornell University Library, 2001). It could also be seen as "the process by which analogue content are converted into a sequence of 1s (ones) and 0s (zeros) and put into a binary code to be readable by computer" (Hughes, 2004).

Ndor (2007) in his own passion sees digitization as turning information into binary digits. It refers to the process of translating a piece information such as a book, sound recording, picture or video in to bits. Bits are the fundamental units of information in a computer; it is therefore a crucial transitional step from traditional to electronic library.

Digitization makes materials available electronically and improves wider access and collaborative sharing of information resources. In the Africa context, digitization refers to "conversion of non – digital materials to digital form" (Tsebe, 2005).

## III.    Academic Libraries In The Digital Age

A well-established library is essential for any academic institution. As a focal point for teaching, learning, and research, it is expected to provide standard information resources. Today, academic libraries are struggling to keep their place as the major source of inquiry in the face of emerging digital technology. Digital technology has revolutionized not only the way information is packaged, processed, stored, and disseminated, but also how users seek and access information. Academic libraries no longer restrict themselves to print services such as collection development, cataloguing and classification, circulation and reference services, current awareness, selective dissemination, and other bibliographic service, but have extended their effort to interdisciplinary concepts and computer software and hardware and telecommunication engineering and technology. As observed by Campbell (2006), "numerous creative and useful services have evolved with academic libraries in the digital age: providing quality learning spaces, creating, metadata, offering virtual reference services, teaching information literacy, choosing resources and managing resource licenses, collecting and digitizing archival materials, and maintaining digital repositories. "Academic Libraries presently are faced with not only the decision on what books and journals to acquire to satisfy faculty and students but also on how to remain relevant in the digital era, mindful of low budgets and resentment on the part of institution administrators. There is also the issue of library users opting for alternate, more convenient and "qualitative" source of information (the internet). As Lombardi (2000) notes, users will prefer more computer content, more and more computer indices, digitized finding aids, digital repositories of articles, online access to newspapers, etc. libraries also struggle with, when, how, who and where to begin digitization efforts, while keeping in mind that hesitation in digitization of institutional archives will result in relinquishing the function to another institutional repository host. The consequence is repositioning of academic libraries resources, operations, services and skills. Resources today occur in hybridized form: Print and electronic, and therefore services provided and skills possessed by professional in these libraries should reflect that trend.

## IV.    Purpose For Digitization Of Library Resources

The word is fast changing: academic libraries are now responding to these global changes by adopting digitization, digital library and institutional digital repositories in their various institutions.

Digitization being one of the important aspects of current global information trends, it fit into the library and information services for effective information dissemination, preservation of information resources and facilitating the integration of library services into the learning process of academic institution. It also makes library's resources available electronically, users can access the library digitized resources from their offices and halls of residence even when the library is physically closed. Also, as many people as possible can gain access to as much material as needed at any given time, a difficult situation with a text resource.
There are three main reasons for digitization endeavors:
i.    There is a need to preserve endanged library resources
ii.    The improvement of the efficiency of information search mechanism
iii.    Digitization improves access to library resources.

Most libraries are digitizing materials which might not be lost in the future, such as old manuscripts, research projects, photo images,  analogue maps, non – live musical recordings, government official gazettes and several other historical records, making high –quality  digital  unpaged available electronically will reduce wear and tear of fragile items. Pinnell Stephens (2005) reported the digitization of two oral history resources in Alaska, USA to ensure preservation an greater access.

Liu (2004) reported that libraries usually digitize the achieve of newspapers, artifacts, maps, coins, art, music, children's literature, historical records and images of international and cultural interests such digital collections will allow the public researchers to view, read, and hear the photographs, speeches and documents.

The search mechanisms for information in the traditional library set- up are very slow and inefficient. This makes accessing materials in these libraries to necessitate physical contact by users. If these libraries become digitized, such library resources can be accessed online without stress.

Digitization improves access to library resources. Digital projects allow users to search for collections rapidly and comprehensively from anywhere at any time. Users can access the same material at the same time without hindrance. It also removes the problem of distance, as user do not have to travel to libraries that posse the hard copies of library materials before they can access and use such materials for learning, teaching and research works.

## V.     Process Of Digitization Of Library Resources

According to Fabunmi, Paris and Febunni (2006). The setting of digitization projects entails the following stages:

**Policy Enactment:** A policy is a guiding statement. The top management should enact a policy on the project. Such a policy will serve as a reference point and guide for implementing the project. The policy should contain the goals of the digitization project. Good goal setting is important for any new initiative. To make our materials more accessible on the web is not specific enough, There is a need to be specific, particularly on the categories of users that will access the collection, the type of material they may be interested in, how they will use it, how many people are envisaged to use it, the planned "procedure for its advertisement, and the benefit of the material to users and institutions, Contacting current and potential users is an excellent way of having clues to all these issues. One may consider sending out a survey to the project's intended audience in order to learn how they are currently using the material, and how they might use it differently if it was digitized. It may be helpful to contact other institutions that have digitized similar collections and learn from their successes and failures.

**Policy Approval***: The policy should be approved by appropriate authorities before project for digitization, is implemented. For instance, a university library may need the approval of the university management and other funding agencies before any digitization project can be embarked upon.

**Planning, Budgeting and Monitoring:** It is the most essential and desirable to set up a planning committee that will draw the plan and budget for the digitization exercise. Budgets for digitization projects should include the following categories:

> ➢   Salaries, wages and benefits (likely to be about 50% of the project cost);
> ➢    Staff training;
> ➢    Equipment and supplies
> ➢   Services, contracts and legal fees;
> ➢   Overhead and indirect costs (including offices and workspace);
> ➢   Maintenance, licenses, and communications charges;
> ➢   Contingency (setting aside about 10% of the total project budget for unexpected expenses)

The purposes of the digitization project, the source of fund and the amount available for the project should also be taken into consideration. At the regional or national level, effective planning for digitization can bring together all types of libraries, museum, academic/professional societies, historical societies and archives to take advantage of the exercise.

**Acquisition of Appropriate Technology***; The plan drawn for the project will determine the appropriate technology to acquire. Technology here refers to all the equipment/hardware and software that are needed.

**Administrative Decision on the Procedure to be adopted:** Decision has to be made on the mode of operation, whether to just establish-links with existing digital libraries or to digitize in-house or to contract it out. There is a need to establish time limit for the project.

**Sensitization, Psychological Preparation and Retraining of Staff:** In most places the staff will like to resist the digitization project. It is a common thing for people to resist change, just for the fear of the unknown. The library staff may fear that the success of the project may affect their jobs adversely. Those who are not computer literate may not be willing to adjust. All these categories of people have their genuine reasons to resist. It is the responsibility of the library management to educate them and allay their fear.

**Legal/Copyright Issues:** Who owns it? Selection of archival materials for digitization should first be based on a clear understanding of copyright law and the rights of ownership (Tennant, 2000). Does physical ownership mean rights of reproduction? Physical ownership does not mean that an institution owns the rights to reproduce it. One of the most important selection criteria for digitization will be the copyright status of the original materials. Will it be possible to obtain permission to digitize? After digitization, will the institution be able to protect the digital assets by managing the rights to their use'? If the institution does not have the rights to digitize, or the means to manage the digital assets, then digital project should not embarked on.

**Selection Criteria:** In developing selection criteria for digitization, the process of selecting specific item to be digitized will employ such standard library selection criteria such as value, significance to the overall

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collections, user demand and interest, availability and fragility of the original. The UNESCO, IFLA, and 1CA suggest that digitization projects - should be user driven or based on high demand for access (UNESCO, IFLA&ICA,2002).

**Verifications:** Having selected materials for digitization, the next thing to do is to verify or ascertain whether digital copies of such materials already exist. Duplication of efforts is not necessary. However, re-digitization is necessary if the electronic resources created were carried out using older technologies. In addition, if the copyright permission to digitize resources was not in the public domain (that is, if it was for internal use only) and if the material or the institution concerned wish to embark on a wider area network such as the Internet or World Wide Web, there is the need to re-digitize the materials. In the past it was thought that when scholarly production was transferred to an institution the legal rights to reproduce the material are automatically made. Today institutions can no longer count-on "the fact that legal rights are transferable. For this reason, institutions must be assured that project objectives are attained within the context of the Copyrights Act,

**Metadata:** Metadata simply means information about information that describes digital objects and enables users to find, manage and use digital objects. It represents the total historic record of the digital object and the totality of information about the object. For developing countries, good metadata is a key component of developing digital archives that are usable and useful for long term. Metadata helps to identify the work, who creates it, migrated or reformatted it, and other descriptive information; it provides unique identifying information about the organization's files, and databases that have detailed information about the digital contents; describes the technical environment in which the digital files were created, equipment, used, the software, operating systems and other things. The justification for digitization and provision of metadata is to enable it in future for without metadata there is no access and when there is no access, it would be difficult for users to learn from the past in terms of their successes and failure. These are the key issues which they should bear in mind whenever they are planning for digitization of their collections.

## VI. Benefits Of Digitization Of Library Resources

These can be summarized as access, support of preservation activities, collection development, institutional and strategies benefits, research and education.

**Access: broader and enhanced, to a wider community**.

The obvious benefit of digitization is that it enables greater access to collections of all types. All manner of material can be digitized and delivered in electronic form.

Digital materials can be made available to a broader audience than those who have the resources or ability to travel to see the analogue collections, and access can be expanded to non – traditional audiences such as lifelong learners.

Audiences can access the collections for often unanticipated and broad- ranging research interest. Whatever the audience, their access to the materials is enhanced by the advantages of the digital format with the application of the right technology tools, and careful attention to the design of the user interface, it is possible to search, browse and compare materials in useful and creative ways. Patrons may scroll or browse through thumbnails of the materials that were previously inaccessible, such as glass plate negative, or oversized or fragile materials.

## VII. Institutional And Strategic Benefits

Providing access to digitized collections can help publicize the materials to other departments and peers, in other institutions around the world and demonstrate the importance of the collections. The digitization of priceless and valuable collections of institutions brings prestige to the whole institution as it creates visibility not only of the library's content, but the scholars work within the university.

Many funding opportunities are contingent on collaborations and partnerships between several institutions, so this can be an excellent opportunity to develop strategic liaisons with other institutions.

## VIII. Research And Education

Digitization creates accessibility to the research findings, improve access to research work, reports and other intellectual contents it makes it easier for researchers to find and share the results of research, through free and unrestricted online availability and provide reliable long term access to managed digital resources to its designated community, now and in the future in other to achieve optimum development goals in the institution.

## IX. Challenges Of Digitization Of Library Resources

**Selecting Documents:** In an age of information explosion and information pollution, librarians are in a dilemma about 'what type of records not to be digitized'. The documents in high demand today may become obsolete even tomorrow because of the vast developments in the subject, printing and publishing industry. A digitized

documents deselected from the collection is lost forever. To overcome the problem, librarians should seek the advice of subject experts in each field and users of the library about the importance of each and every record and from this list selection of records for digitization can be done.

**Copyrights:** The issues regarding copyright rise serious matters before librarians in digitization. Research scholars usually include graphs, data from books and journals without prior permission of the author. In a digital library, users are always demanding back issues of journals and rare historical archives for which the library has no copyright. This may lead to serious dissatisfaction about digitization among users, as a final solution to this matter, librarians must be given permission to digitize copyrights works in connection with digitization.

**Longevity of Storage Media:** Many of the storage media praised by people all over the world may become less useful only long after they become unreadable. Thus documents digitized and stored in such media become useless and their maintenance will be more difficult than print media. The digital archival media today used are magnetic tapes, CD – Rom discs and DVDs. From the scene magnetic tapes disappeared because of their short life due to demagnetization, material decay and oxidation.

During 1980's CD – ROMS emerged into the field and boasted of a longer life span of 30 -100 years. Nowadays most of the CD's go to the way of 51/4 diskettes. DVD having several standards pushed CD's behind the screen. The changes and improvements of storage medium put serious questions about the future of digitized materials and their alteration.

**Funding:** Digital projects are expensive. Digitization of archival library automation requires enormous funding due to frequent hardware and software upgrades, and increasing cost of subscription to electronic databases. Apart from inadequate fund to train archivists in African, training of archivists in digitization a preservation of electronic format creates a herculean problem. A well-funded digitization project assures new and improved services and sustainability of the project.

**Technophobia:** Due to inadequate skills on information technology many traditional librarians and activists are conservative and have phobia for computers. Because of generation gaps between the new and old professionals, computers are perceived as a threat to their status as experts. Thus, they find it difficult to cope or measure up with the requirement of the electronic/ digital age, and at the same time too reluctant to jettison the old practices for new one. Successful application of information handling technologies requires an ability to overcome staff and personal resistance to such innovation.

## X. Implications

In view of the importance of digitization a special annual vote or financial allocation ought to be made for it. Libraries keep on acquiring materials, some of which have to be digitized. Financial allocation should be extended to digitization exercise.

Orientation programs should be organized for the staff. This will enable them to understand the purpose and importance of the exercise. Training of staff in the required computer stills and technical expert personnel should also be employed.

Special policies and plans have to be formulated to guide the conversion of library resources to digital form. A committee should be assigned to each aspect of the exercise and also monitor and evaluate performance.

## XI. Conclusion

Digitization is an essential task in modern day libraries. If a library is to live up to current challenges, it has to go digital, that is, provide online services. This will enable it to preserve endangered library resources, improve the efficiency of information search mechanisms and enhance access to library resources. It creates new ways to search and access library content and also a step forward leading Nigerian Universities to greater heights. A strong partnership and collaboration with other related project and Donor agencies is important.

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