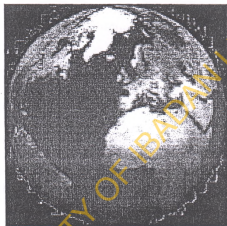


# **JOURNAL OF PEDAGOGICAL THOUGHT**



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# CATALOGUING IN AN AUTOMATED LIBRARY: POLICY OPTIONS FOR LIBRARIES IN DEVELOPING COUNTRIES

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## Abstract

*The tremendous growth of information and its utilization has led to the emergence and use of Information and Communication Technology (ICT) in libraries. The use of ICT is obvious in the information handling process. The introduction of automation in cataloguing has opened up a new era of information processing in libraries. While many libraries in developed countries have embraced automated cataloguing, only few libraries embraced this technology in developing countries. The art of cataloguing is in a state of constant dynamic change due to advancement in ICT. The capabilities of automation are causing changes in the tools used by cataloguers. Catalogues are being computerised all over the world to facilitate better access points and multidimensional searches in the library holdings. As result of these, this article gives an exploration of cataloguing in the library before the advent of automation as well as cataloguing in an automated age. It also attempts to discuss cataloguers' roles in an automated library and also the prospects of cataloguing in an automated library. There are many policy implications which should be given due considerations as the library materials are being processed electronically. The paper therefore suggests that the library management needs to be pro-active rather than reactive, ensure relevant training and re-training of cataloguers on the use of these modern tools in cataloguing by sending cataloguing staff to attend conferences, seminars and workshops in order to update their knowledge and maintain awareness of current trends in cataloguing, maintenance of the infrastructure, patrons education, among others.*

**Keywords:** *Cataloguing, Automation, Library, OPAC, Management, Developing countries.*

## Introduction

The use of ICT in libraries has been expanding all over the world. Librarians all over the world are increasingly aware of the existence of information technology and they feel that in order to improve and streamline their services, the application of computers and information technology is crucial. ICT is the most powerful tools for the quick handling of large quantities of information. Computer application in library and information field has made phenomenal progress in industrialized countries where hardware, software and communication facilities are well developed. The technological advancement in these countries has enabled them to successfully computerise their entire library and information systems. Besides improving services and operations for better performance, libraries are able to evolve effective computer networks, towards optimum utilization of resources and facilities.

According to Aina (2011), the advent of Information and Communication Technology (ICT) brought remarkable transformation into the development of information. These changes are obvious in the information handling process such as generation, processing, storing, evaluation of use, dissemination, and disposition. Automation involves the computerization of routine tasks performed by human beings in different departments of the library; this is replacing man with machine. According to Shivaram (2007), library automation is the general term for information and communications technologies (ICT) that are used to replace manual systems in the library. Library automation is the use of computer and networking technologies in the library. It refers to the implementation of information and communication technologies in the libraries and information centres. It is the conversion of manual system into a specific Machine Readable Catalogue (MARC) format which makes it suitable for cooperative networking and resource sharing among the libraries and information centres. The goal of library automation is to make the library operations and services efficient.

Adediji (2003) is of the opinion that library automation is paramount in enabling libraries provide broader and convenient access to information because automation is the application of technology to a process or phenomenon. Library automation is the application of computer to the routine work or operations in the library. According to Oketunji (2003), information technology is a term that embraces the

notion of the application of technologies to information handling, such as acquisition, processing, storage, retrieval, etc. Faisal and Surendran (2008) define library automation as the application of computers to perform traditional library housekeeping activities such as acquisition, circulation, cataloguing, reference and serials control.

Oduwole (2005) refers to cataloguing as one of the processes carried out by librarians on information resources such as books and journals to facilitate their arrangement and easy retrieval. Cataloguing is the act of creating surrogate records for information packages, choosing appropriate access points, and maintaining the system through which the records are made available. Cataloguing is the process of creating entries for catalogue. In libraries, this usually includes bibliographic description, subject analysis, assignment of classification notation and the activities involved in physically preparing the item for the shelf. These tasks are usually performed under the supervision of a librarian trained as a cataloguer.

Cataloguing section is saddled with the responsibility of organizing and providing bibliographic access to the total holdings of the library. According to Igbeka (1998), cataloguing section catalogues and classifies all monographic publications which include monographs issued serially, unpublished theses, government documents, as well as non-print media documents such as tapes, CD-ROMs etc. Cataloguing a book is entering information about the book into the library's catalogue in such a way that patrons are able to have answers to their questions. There are two types of cataloguing: original cataloguing and copy cataloguing. Original cataloguing involves the preparation of a bibliographic record from the scratch, without the aid of a pre-existing catalogue record for the same edition.

The cataloguer is responsible for assigning a subject heading to the book and deriving its classmark, etc. for the book to be placed in the right position on the shelf. This is more time-consuming for the cataloguer than copy cataloguing while copy cataloguing is the adaptation of a pre-existing bibliographic record usually found in Online Computer Library Center (OCLC), National Union Catalogues (NUC), Library of Congress (LC) and some other bibliographic databases to fit the characteristics of the item in hand with modifications to reflect locally accepted cataloguing practice as distinct from original.

The use of ICT in libraries has made possible the emergence of a library online catalogue which consists of a collection of bibliographic

records in a machine-readable format, which is maintained on a dedicated computer that provides uninterrupted interactive access via terminals or workstations in direct continuous communication with the central computer. Most online catalogues are searchable by author, title, subject heading, and keywords. All these are done in order to enable library patrons to find a book of which either the author or the title or the subject is known. This is important because the main purpose of any library is to provide access to information in all its forms and formats and to provide assistance to users in locating specific pieces of that information.

Omekwu (2008) is of the view that cataloguing and classification is the central nervous system of librarianship, while Aina (2011) refers to cataloguing unit as an engine room where the appropriate class numbers of library resources are assigned. These mean that cataloguing unit and cataloguers are vital to the library. Cataloguing and classification operations have always form significant parts of library operations and services with the goal of enabling users locate library resources quickly. Activities in cataloguing focus on providing a leading tool to assist patrons to access information in all its many forms and formats (Ajibero, 2003). This is important because the main purpose of any library is to provide access to information in all its forms and formats and to provide assistant to users in locating specific pieces of that information. Libraries are to support teaching, learning and research activities as well as providing up to date information at the right time required by clientele.

Many libraries are replacing manual operations with computer procedures. The Online cataloguing has taken over the manual system of cataloguing. With the use of internet, a lot of library materials can be classified within a short period. For instance, library of congress classification system is available on the internet. Automating house-keeping operations are major effort in the area of computer application to libraries. The process of automation closely means that a manually operated library converting to an automated functioned library, this means that all activities of the library like order processing, book purchase, accessioning, classification, cataloguing, book issue and return, fine and due assessments, library users' status, etc. can be done very accurately and fast. Automation is used to reduce the amount of staff time devoted to repetitive activities that must be done in any properly functioning library.

ICT is the most significant factor forcing libraries to develop more effective methods of service delivery. The art of cataloguing is in a state of constant dynamic change due to advancement in information and communication technologies. The technological advancement often results to change of work flows and learn new skills as a result of improved procedures and tools. The capabilities of automation are causing changes in the tools used by cataloguers. Catalogues are being computerized all over the world to facilitate better access points and multidimensional searches in the library holdings.

The emergence of online catalogues has offered better access capabilities. Access to a variety of databases is one of the recent developments which is greatly influencing library services in general and catalogues in particular. Librarians now require maintaining their library catalogue in such a way that it should be able to serve the diversified needs of a wide range of users and systems. As a result of the ICT application to libraries, there has been technological advancement resulting in the need to change work flows and learn new skills. In automated library, technology has changed the way cataloguing is done, the way patrons are served, etc. Librarians are moving into different roles as new services are implemented. There is a need for the cataloguing and classification to keep abreast of time. It is essential to revisit cataloguing and classification in order to ensure that cataloguing staff are not left behind in the use of modern tools in cataloguing by adequately training them to face the challenges in working in an automated library, maintain awareness of current trends in cataloguing, as well as using automation for house-keeping operations.

### **Cataloguing in a Pre-Automation Age**

Before the introduction of ICT in libraries, card catalogs, typewriters, and manually assigning of call numbers to library materials were the order of the day. According to Ajibero (2003), library collections date back to the Alexandrian library which began some centuries ago with handwritten entries of manuscripts housed in royal libraries. Individual entries were abbreviated in form and content, a function not only of lesser numbers of manuscripts but also of the fact that the catalog makers knew the collections intimately and were integral in their use. The fundamental reasons for cataloguing remain despite the stages it has gone through. Within the system of information exchange, authors



and creators want their documents to be found while users want to find information relevant to their needs. The library pays attention to all aspects of making information accessible through its rigorous application of principles for organizing and describing retrieval, especially in this rapidly changing world of information and communication technology.

Traditionally, librarians used to select, search, collect, organize, maintain and preserve the resources. Cataloguing and classification goal is to enable users locate library resources. The activities in cataloguing section are to assist users in locating specific pieces of information by providing a leading tool to the location of library collection. This is done by providing access to information in all its forms and formats by bringing related works together.

### **Cataloguing in an Automation Age**

The technology used for the processing of information has grown considerably with advancement in ICT. Libraries existed for many centuries without automation, but as technology emerged in the world at large, libraries embraced these tools as a means to avoid some of the menial tasks inherent in managing large collections. According to (Ajibero) 2003, the large amount of cataloguing data available, the cataloguing of the same publications in thousands of libraries, the repetitive nature of cataloguing and the desirability of having consistent cataloguing information in all libraries made cataloguing the first operation for the application of computer.

Library automation development began in the 1930's when punch card equipment was implemented for use in library circulation and acquisitions. During this period, progress on computer systems was slow because of the depression and World War II. Many developments assisted the application of ICT to cataloguing; such include the development of the Machine-Readable Cataloguing (MARC). MARC formats are standards used for the representation of bibliographic and related information for books and other library materials in machine-readable form and their communication to and from other computers. By the mid-60's, computers were being used for the production of machine readable catalog records by the Library of Congress.

According to Greenberg (1975), the MARC program began in 1966 with the weekly distribution of MARC tapes to sixteen participating libraries. The tapes contained English language Library of

Congress (LC) cataloguing in what was called the MARC I format which was a pilot project which lasted for two years with varying degrees of success reported by the participating libraries in their use of MARC records. Due to the difficulties encountered using MARC I, MARC II was designed by the Information Systems Office, which was responsible for MARC. In 1969, the distribution of MARC II records began with cataloguing of American imprint material, later all English language publications were included. In 1974, the MARC II format became the basis of a standard incorporated by National Information Standards Organization (NISO). This was a significant development because the standards created meant that a bibliographic record could be read and transferred by the computer between different library systems.

MARC was designed to tag bibliographic records using 3-digit numbers to identify fields; which are fixed fields and variable fields, while indicators and subfields in form of numbers and alphabets respectively are accompanying some of the fields. For example, a tag 020 field indicates "ISBN", while another tag 100 field indicates "author's name", 010 field indicates "LCCN", 245 field indicates "title", and so on. Authors, titles, imprints, collation, notes, added entries, and subject headings are becoming things of the past, fixed fields and variable fields in the form of tags are the order of the day.

CD-ROM was introduced towards the end of 1980. This contained databases, software and information which were previously available through print. This further enhanced access to information through various ways. Connections to various databases like OCLC, DIALOG and RLIN continued. Library automation equally witnessed another era with the use of networks for e-mail, telnet, Internet. It is possible for users to connect to the libraries from their home or office.

The Library Manual Catalogues are now being replaced by the Online Public Access Catalogues (OPACs) in an automated library. This OPAC through database provides access to a variety of other documents such as periodicals, special files, catalogues of other libraries, reference and information sources, etc., located at different places, thus making OPACs to serve as both an information retrieval system and a module of an integrated library management system. Cataloguing in Publication (CIP) is another development in cataloguing. The book with CIP contains the bibliographic description as well as the call number and added entries, which lessens the work of the cataloguer because the cataloguing information is in it and is ready for

use.

### **Cataloguers' Roles in an Automated Library**

The cataloguer performs the following roles in an automated library:

- i. They provide bibliographic control and access to all materials. A cataloguer becomes a combination of a cataloguer, bibliographic instructor, subject specialist, bibliographer, and collection manager (Ajibero, 2003). According to Dyer (2011), the skills, knowledge and understanding that cataloguers have make them a valuable resource as a result of these, there is a need for cataloguers to keep up with the changing environment.
- ii. Cataloguers provide enhanced access to the new resources such as CD-ROMs, computer discs and multi-format items (Oketunji, 2003). The capabilities of automation are causing changes in the tools used by cataloguers. In this era of advancement in ICT, it is essential that cataloguers take an active role in this development and use their analytical talents to ensure that systems are led by need rather than by the force of ICT capability alone.
- iii. Maintaining awareness of current trends in cataloguing: Cataloguers should be ready to acquire education and training on the use of these modern tools in cataloguing. Cataloguing is the intellectual process whereby a given material is described, categorized by subject, and assigned a physical location in a library in accordance with a code of rules and thesauri governing the form and content of the catalogue record. Cataloguers require training and retraining to be able to meet the new challenges. Omekwu (2008) is of the view that cataloguers' skills and competencies have made them to be entirely suitable to exert some control over the wild wayward web, and to take advantage of the possibilities technology offers in relation to retrieval and presentation of information. Cataloguers should prove themselves capable of responding to new and changing scenarios in the libraries, by grasping automation and using it to their advantage through training, reading and practice.
- iv. Organising Training: The role of cataloguers becomes important in an automated library. Cataloguers in an automated library

are involved in in-house training of cataloguing staff as well as other library staff whenever there is a change in the tools being used due to technological advancement and needs of the library.

- v. **Managing Databases:** Library databases are managed by cataloguers through the authority control. Management of database is an essential cataloguing function in an automated environment. In addition, cataloguers must also make planning decisions for database management, authority control and back-up. According to Singh (1999), Librarians are now required to maintain their library catalogue in such a way that it should be able to serve the diversified needs of a wide range of users and systems. This is necessary because of the constant dynamic change in the art of cataloguing which is due to advancement in ICT. Cataloguers must attempt to create a high quality machine-readable database as this will be the bedrock on which future automation will be based. In addition, cataloguers should be able to put in place a well-constructed, well maintained database with its accompanying local holdings as this will be the library's transportable and viable link from system to system. According to Wedgeworth (1996), catalogue record has to be automated to facilitate better access points and multidimensional searches in the library holdings. Cataloguers in an automated environment have to make maximum avenues of access to knowledge and information in their holdings. Library records should be organised for ease of retrieval. Extensive bibliographic standards and controls that enable the users to identify and find individual items among the millions of works created each year throughout the world should be developed.
- vi. **Patrons' Education:** Cataloguers should educate their patrons on the best way to access library holdings. Cataloguers have to make known to their patrons the availability of the range of documents in the collection through their catalogues, have to arrange and present the information contained in a wide variety of documents so that their intellectual contents become clear to the users. As the catalogue will be integrated with other automated library activities, it will be able to provide access to materials other than books alone unlike the

- manual system. This will further boost the library services which can be made more efficient as well as effective by retrieving citation to many more formats of documents.
- vii. Resource Sharing: Cataloguers are expected to maximize the use of cooperative efforts, by accessing already catalogued materials from the publishers and the databases. Cataloguers in an automated environment should be able to harness the benefits of automation such as sharing of catalogue records; copy cataloguing will relieve cataloguers from cataloguing materials already catalogued by another library in the network, thus enjoying the benefit of cooperative cataloguing. Cataloguers will be able to find a high percentage of their titles awaiting cataloguing in the OCLC, LC, NUC, etc. databases, thus copying and adapting of a pre-existing bibliographic record to fit the characteristics of the item in hand with modifications. This will increase the output of cataloguers as original cataloguing which is time consuming will rarely be done.
  - viii. Cataloguers often provide information that is uploaded into the web for users. Cataloguers should be more thorough in their work because with automation, their work is visible and identifiable through participation in a shared cataloguing system. Recent developments in ICT have enabled libraries to publish their catalogues on the Web, thus making them accessible locally and remotely through the Web as a web OPAC. Cataloguers should therefore be more meticulous while cataloguing in order to have an error free database.
  - ix. Maintenance of International Standards: Cataloguers should follow bibliographic standards as this will enhance the portability of data and gives room for resource sharing. Cataloguers should maintain both content and data structure standards. Content standards are the cataloguing rules such as the International Standard Book Description (ISBD), Anglo-American Cataloguing Rules Rule 2 (AACR2) while data structure standards include MARC 21, other local versions of MARC, UNIMARC, Dublin Core and other metadata standards.

### **The Prospects of Automated Approach to Cataloguing**

Automated approach to cataloguing has the following advantages:

- i. It improves the quality, speed and effectiveness of services.

- According to Aina (2011), a computerized library system offers the benefits of increased speed and accuracy of performing routine functions, thereby reducing errors. It also offers improved services and benefit to users, albeit at a cost. In the same vein, cataloguing in an automated library will improve quality, speed, accuracy and effectiveness of cataloguers. It also offers a reliable, competent and accurate manipulation of library and information functions, and frees human beings from much repetitive and boring work.
- ii. It encourages resource sharing: Automated cataloguing gives room for networking and cooperation among libraries on both the national and the international levels. Libraries will be able to collaborate. The fact that data is stored in a computer facilitates its communication to other computers and other computer system users. Shivaram (2007) opines that automation will give room for resource-sharing among other library networks. Libraries will be able to share their resources among other library networks. The ultimate aim of networking is to achieve maximum results with minimum input. The OPACs of the participating libraries can be made searchable from any network member. This enhances the capability to share bibliographic data and resources with other libraries. This advantage is of potential value to libraries without adequate funds to employ the required number of staff since there is access to the use of centrally developed bibliographic records.
  - iii. With automated cataloguing, repetitive cataloguing of the same material by different libraries in the network is avoidable. This is possible because of the accessibility of the databases of other libraries in the network. Cataloguers will be able to access already catalogued materials from the publishers and databases and copy, thus saving cataloguers time from cataloguing materials that have already been catalogued by another library. This will enable cataloguers to get rid of their backlogs thereby enhancing cataloguers' productivity since original cataloguing which is time consuming will rarely be done. Cataloguers in an automated environment have the opportunity to harness

the benefits of automation such as sharing of catalogue records; copy cataloguing will relieve cataloguers from cataloguing materials already catalogued by another library in the network, thus enjoying the benefit of cooperative cataloguing.

- iv. Cataloguers will be able to make maximum use of the availability of bibliographic information in machine-readable form and share these resources through computer technology. Libraries can form a consortium; this will make it possible for them to share catalogue records; this will reduce the cataloguing of the same publications in thousands of libraries.
- v. Automated cataloguing enhances both contents and data structure standards. Content standards are the cataloguing rules such as the International Standard Book Description (ISBD), Anglo-American Cataloguing Rules Rule 2 (AACR2), while data structure standards include MARC 21, other local versions of MARC, UNIMARC, Dublin Core and other metadata standards. These standards allow for quicker cataloguing of library items as well as having consistent cataloguing information in all libraries.
- vi. Automated cataloguing saves time: With automation, the manual system of cataloguing will be taken over by the online cataloguing, whereby a lot of library materials can be classified within a short period with the use of internet. Cataloguers will be able to access a variety of databases with the use of Internet. For instance, databases of other libraries are available and accessible on the Internet, such include Library of Congress. Access to a variety of databases is one of the recent developments and is greatly influencing library services in general and cataloguing in particular.
- vii. Automation of cataloguing enhances efficiency. Application of automation to cataloguing led to the development of the OPACs which are replacing card catalogue. OPAC is the user interface of the automated system and it is user friendly (Adeyemi, 2002). The user gets all information regarding the holdings of the library from OPAC. Catalogues cards can be produced for the library that is interested in producing them because of the facility of printing which the

software. Singh (1999) observes that the OPAC in the automated environment is becoming more than the catalogue, as through database, provides access to a variety of other documents such as periodicals, special files, catalogues of other libraries, reference and information sources, etc., located at different places. Thus OPAC is serving as both information retrieval system and a module of an integrated library management system.

- viii. Automated cataloguing improves access to both on-site and remote users, thus facilitating wider dissemination of information products and services. Automated libraries with OPAC can make available to their users much wider range of information from a series of containers more speedily. The users also seek efficiency and the libraries have to use technology only to serve their users and the society. In order to fulfill the users' information needs, catalogues generally integrate, structure, control, and maintain information about the library collections. OPAC has more flexible access mechanism than the card catalogue. When computerized catalogue will provide for complete, up-to-date structure, the computer will allow multidimensional searches in comparison to linear searches in earlier forms. Computer can now provide as many access points as the data elements and thus enhance its capabilities, thereby increasing the service level to the users.

### **Policy Options for Libraries in Developing Countries**

This study has a number of implications on library management and policy in developing countries. In view of the vital importance of cataloguing in the library, the following policy options are hereby recommended for library management in developing countries:

Management needs to embrace automation. ICT represents a fundamental change in the way libraries render services; libraries must make an ongoing commitment to keeping pace with change. Therefore, like automated systems, plans must also change with time. Plans must be regularly revisited and updated as the environment needs change.

Continuous Staff Training: Cataloguers have taken up more professional roles and even assume administrative duties, the



complexity of the new order requires training and retraining of staff to be able to meet the new challenges. In all, the literature is indicative of the fact that cataloguers are at the centre in library automation, and as such, for the successful automation, cataloguers' training should be taken seriously. This can be achieved by sponsoring them to attend conferences, seminars and workshops in order to become relevant and keep abreast of time in the ever changing advancement in ICT used in the Library.

**Provision and Maintenance of Necessary Infrastructure:** Effective use of ICT in cataloguing requires an infrastructure such as hardware, software, Internet connectivity, etc. which enhances productivity. Thus, necessary tools should be provided for cataloguers to facilitate their output by effectively budgeting for the needed infrastructure and its maintenance. Many of the developing countries lack maintenance culture. Maintenance culture should be imbibed by the library management.

**User Education:** Training of library users in the effective use of the new technology is essential; management therefore should organize training as the occasion arises. The management should create awareness and organize training for the patrons of the library, especially in the use of OPAC which is the user interface of cataloguing.

Above all, technical support should be provided: Many libraries in developing countries do not have technical support personnel. Technicians with the capacity to manage network and the information on it need to be viewed as an essential staffing component. Library management should employ capable hands to man automation since it is a strategic issue that needs to be taken care of prior to a crisis emerging.

## **Conclusion**

The development of automation in cataloguing is a natural progression for libraries. It reflects the concern for improving services rendered to library patrons through facilitation of better access points to library holdings, making library materials available to users on time through resource sharing, thus decongesting cataloguing section's backlogs, management of the library database, among others. The onus for a successful management of library automation lies on cataloguers.

However, in order for libraries to achieve the desired results which are improvement in quality, speed and accuracy, at which

services are provided and effectiveness of cataloguers, cataloguing should be handled strategically and efficiently. To be able to enjoy full benefits of automation in the library, cataloguers must be trained continuously as the occasion demands in order to be able to fit into the new roles and the necessary infrastructure put in place. The discussion thus far shows that the mission of the librarian in providing excellent information service to patrons has not changed, but technology has added several new dimensions to the accomplishment of this task, and cataloguers should be prepared for this rapid change.

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