Design of a Model Automated Library Cataloguing System for Federal Polytechnic Idah Library, Kogi State Nigeria

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Abstract
In the manual library cataloguing system, books are arranged on the shelf by library staff to enable workers and library users to easily locate books. Automating the existing system has made activities in the cataloguing section of the library faster and easier. The new system has a database, which enable the effective management of the library cataloguing system. This paper is set to investigate the means of handling manual cataloguing system using a computer by the Federal Polytechnic Idah library. Machine Readable Cataloguing (MARC) and the Online Computer Library Center (OCLC) and Online Public Access Catalogue (OPAC) are briefly discussed as examples of automated cataloguing systems. In this paper, the researchers report the outcome of their experimental model design of automated cataloguing system for the Federal Polytechnic Idah library.

Keywords: *Automated Cataloguing system, MARC, OCLC, OPAC, Federal Polytechnic Idah, Library Catalogue.*

1.0 Introduction

It is a well known fact that computer application in library and information field has made phenomenal progress in industrialized countries where hardware, software and communications facilities are well developed. In view of their technological advancement, they are able to computerize their entire library and information systems in the country, with great success. Besides improving services and operations for a better performance, libraries are able to evolve effective computer networks, towards optimum utilization of resources and facilities.

Defining catalogue, Ihiabe (2005) posited that, the catalogue is a systematic guide to the book collection organized according to a strictly formal system (size, subject, author and year). The development of cataloguing systems has roughly followed the development of acquisition systems, and this holds true in the progress from offline to online systems. In the case of cataloguing systems, however, the end products are normally produced off-line in a "batch" made – that is, all at one time, rather than as the data are entered – and only the functions of

imputing data and searching the data files are performed online and in real time. With rare exceptions, this tends to be true whether the products are catalogue cards, book catalogs, or both (Kochar and Sudashan, 2008).

The largest best known and most influential cataloguing system is the Ohio College Library Center in Columbus, Ohio, known universally as Online Computer Library Center (OCLC) began its online operations in 1971. Perhaps no other system has had as much effect on library practice; indeed, if the development of MARC is the most significant accomplishment to date library automation the development and operation of the Ohio College Library Center is probably the second most significant. This is not primarily because of the technological expertise employed in the development of the system (although that is great) but because it is the largest and most efficient shared cataloguing system yet implemented. OCLC produces catalogue cards economically, as do many of the other systems, but its importance lies in the fact that it provides a common cataloguing data base for searching and consolation by almost 350 libraries. The margin of savings achievable by any system of catalogue card production is small in relation to the total budget of most libraries, but the cost of performing the intellectual task of original cataloguing is much larger; the OCLC system provides significant savings because both MARC records and the cataloguing records prepared by all member libraries can be displayed of the terminal screens in any one member's library, thus obviating the need for any library but the first to catalogue it. It is against this background that this study seeks to find out how automated library cataloguing systems is applied in the library of federal Polytechnic Idah, Kogi State Nigeria.

1.1 Statement of the Problem

It is obvious that all Federal Polytechnic libraries including Idah Polytechnic provide their services not only to staff and students of the institution, but also to the entire citizens. The problems facing the library in Federal Polytechnic Idah include: time consuming; the processes involved in the cataloguing system of the library is time consuming. This ranges from the time it takes to gather the books, process the call numbers, and other processes involved. The problem of storage; in this case record of books in the Polytechnic library are stored in files physically kept on a cabinet, hence there is high rate of insecurity, and document can be easily lost. Again there is insufficient manpower; using manual method cataloguing system requires a large number of man-power which might lead to mismatch or lost of information about a book needed for cataloguing. There is also the problem of inaccuracy. This refers to the poor arrangement of the books in the cataloguing section of the Polytechnic library caused by the manual cataloguing system.

1. 2 Objective of the Study

The objectives of the study is to design an automated cataloguing system which will render fast, reliable, efficient and more economical services so as to enhance its operation. Other specific objectives are:

i. To develop a computer program to carry out cataloguing operation in Federal Polytechnic Idah library

ii. To create a database in the library

iii. To ensure security of books through the use of password in order to prevent unauthorized access of the books in the library

iv. To alleviate the staff of the Polytechnic library the tedious means of using the manual method of cataloguing in the library

2.0 Literature Review
2.1 Brief History of Automated Cataloguing Systems

Washing State established the Washington Library Network (WLN) as an automated union catalog system for the northwest region of the United States (Pulsifer, 1970). In parallel, OCLC was established by Fred Kilgour in Dublin, Ohio. And the Research Library Network (RLIN) was created as part of the Research Library Group. Each was intended to serve on a national basis as means for dealing with the generic issue of retrospective conversion of catalog records, a dominant concern in the effort to introduce automation in academic libraries (Hayes 2010).

Cooperation in the area of cataloguing was made possible because of the crucial contribution of Henriette Avram, at the Library of Congress, in establishing the Machine Readable Cataloguing (MARC) format as the de facto national standard for exchange of catalogue data; without that, it would have been intolerably difficult (Avram 1975). So, using the MARC format, WLN, OCLC, and RLIN could serve as economic solutions to support cataloguing and catalogue access could be developed within institutions. At about the same time Stanford University developed the BALLOTS system; it later became the basis for the RLIN national bibliographic database system. IBM developed DOBIS for the University of Dortmund, in Germany, as an online catalogue system (Grosch 1995). In parallel, modules began to be developed at individual libraries to support other aspects of internal, technical services (circulation and collection management, serials records, and support to acquisitions).

As Kochar and Sudashan (2008) noted, one of the most exciting aspects of library automation today is the transition to online public access catalogues (OPACs). To the contrary, as more libraries continue to automate various parts of their technical processing operations, the issues pertaining to the selection and use of systems specific to those operations are crucial. But the design of such systems has attained at least certain degree of functional maturity. Some OPACs stress simplicity of operation above all else, even if the resulting product is little more than an electronic card catalogue. Others are highly sophisticated retrieval systems that allow the user and greater flexibility than is available through other form of the library catalogue. This level of sophistication, however, is often achieved at expense of simplicity of operation. The sophisticated system may require catalogue users to master techniques to which they have had little or no previous exposures, either in the library or elsewhere.

2.2 Benefits of Automating the Library Cataloguing System

Applying computers to the library cataloguing system is a necessity in order to simplify the work being carried manually and also to provide accurate, efficient and fast retrieval of information of records kept. Some benefits of automating the library cataloguing system are identified by Ajiboye (2002) to include the following:

Automatic – the system involves automatic process. Once the programme is in the computer memory, the individual or user instruction is executed without the need of any human intervention.

Speed – manipulating and processing of data can be achieved at a very high speed and the response time is small.

Accuracy – it provides a standard arrangement of books in the library.

Updating – this provides a simpler means of reviewing records about the book or catalogue in the library to reflect the changes.

Storage – it provides a better and safer

means of storing information to prevent it against lost or damage.

Automating the library cataloguing system of the Federal Polytechnic library will be of great benefit to both the staffs and students of the institution and other users of the library. Some of the benefits of automated cataloguing system to any academic library are identified by Eze (2008) as follows:

➢ Security: It will provide an enhanced or improved means of securing/protecting the books in the library from theft (i.e. being stolen by library users).

➢ Accessibility: It will provide easy means of accessing the books and other materials in the polytechnic library.

➢ Record keeping: It will enhance proper storage of records about the books in the polytechnic library, i.e. creation of database.

➢ Faster: The new system will facilitate speed in the processes involved in the cataloguing section of the Polytechnic library, thereby alleviating the staff of the library the stress involved in using manual cataloguing system.

➢ Efficiency: The new system will facilitate proper handling of information about a book needed for cataloguing, since a minimum number of manpower is required for the processing.

➢ Reducing cost: The new system will, in no doubt, eliminate some specific cost, which are unavoidable in the manual method.

2.3 Review of Empirical Studies

Ogunmoded, Nwokocha and Apata (2014) examined the automation of cataloguing and classification practices in academic libraries in South-West Nigerian

and what effect the automated cataloguing system has on manual cataloguing in the the libraries. The study population comprised 110 library professional and paraprofessional personnel working in the cataloguing section of the ten federal and state university libraries in South-West Nigeria. Total enumeration technique was used to randomly select the study population for this study. Data for this study was collected using questionnaire. A 5-point Likert scale were used with 1-5 representing 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree' respectively, to elicit information from the respondents. A total of 110 copies of the questionnaires were distributed to the respondents. 85 copies of the questionnaires were retrieved and valid for analysis. Data were analyzed using charts, table, frequencies, percentage, mean and standard deviation. The result of the study find out that automation is changing positively the way bibliographic details are being created and displayed. Cataloguing is now quicker with the automated system and that automated system is preferred to the manual system. The study highlighted various benefits of cataloguing automation such as automation improve interpersonal relationship, saves time, easy feedback from library user, etc. The study recommends that libraries should not be satisfied with the little benefits derived from the partial automation of the cataloguing and other sections of the libraries but should fully automate the systems and continuously upgrade the automated systems especially as technology unfolds.

In a conference paper, Weibel (1990), had noted that many changes in cataloging practice have been and will increasingly be technology driven. Bound lists and drawers of cards defined the form and function of catalogs for as long as they existed until the advent of digital computers. Even today, however, MARC records are as much a derivative of catalog cards as the reverse. The

additional functionality of computer catalogs affords opportunities to increase the effectiveness of the cataloging process and improve the value of the catalog itself. Three main research areas are examined with regard to their anticipated influence on this evolution. Automated cataloging research, focusing on the application of rule-based systems to cataloging, represents a novel way to address the cataloging process per se, but has as yet made only modest progress. The incremental implementation of a variety of computer-assisted methods for addressing aspects of cataloging represents a second, more conventional approach to advancing the state of the art in cataloging automation. This approach shares the goal of the first to build intelligent capabilities into cataloging systems but the focus remains on human cataloging systems and the methods of implementation are more conventional. The third area is not part of traditional concepts of cataloging at all, but will have a major impact upon what is available in catalogs in the broadest sense of that term. This "non-traditional" cataloging involves automated processing of documents to extract bibliographic information as well as full text. It will expand the range of cataloged objects to include items not generally cataloged due to resource constraints. Automated processing of such materials will be characterized by lower quality and less complete cataloging, but will nonetheless promote improved access to materials that are currently lost to bibliographic control.

3.0 Methodology

Experimental research design was employed in the study. System/program design extends the study of existing system into actually developing a new set of procedure to replace the old method. Two complementary methods were used in collecting data for this study. These are

observation and interview. Visiting the cataloguing unit to see how the librarians carry out their duties and the responses from personal interview given by the staff of the Polytechnic library provided some information necessary for the design of the new system. A random file is the data structure used. The program is designed in modular forms i.e., it is made up of sub programs. This approach is known as structured programming technique. After design and implementation the automated cataloguing system was evaluated using some checklist.

4.0 Data Presentation and Discussion

The system under design will have an input file for data entered and an output file after processing.

4.1 Input File Specification

These are data items that are required to run the new system. The specifications are described in a tabular form below using field name, field type, and width length.

Table 1: Input Specification

Field Name	Width Length	Field Type
Call Number	4	Alphanumeric
Book Title	24	Alphabetic
Author	20	Alphabetic
Section	9	Alphabetic
Shelf Number	4	Numeric
Publisher	18	Alphabetic

4.2 Output File Specification

The output of the system designed involved result from the processing of the input requirement of the system. The output specification is shown in the format below.

Table 2: Output File

S/N	Call No.	Book Title	Author	Section	Shelf No.	Publisher
1.	XXXX	XXXX	XXXX		XXXX	XXXX
2.	XXXX	XXXX	XXXX		XXXX	XXXX
3.	XXXX	XXXX	XXXX		XXXX	XXXX

The program is designed in modular forms, which is made up of sub programs. One of the modules handles for book registration, another module search for a particular book in the library. There is a module that also displays the number of books in the library. The table 3 below shows designed algorithms for the different modules of the system.

Table 3: Algorithms for the different Modules of the System

Main Menu	Book Registration	Search Module (Search thru Author)	(Search thru Title)	Report Module (Total Number of Books)	List of Books/ Exit Module
START	START	START	START	START	START
Display Main Manu	Display Book Registration Form	Get Author of the Book	Get Title of Book	S = 0	Open File
Selection Option = OPT	Get Book Information	Open File	Open File	Open File	Display List of Books Registered
If OPT =1 Go to book Registration	Write Record to File	Search for Author	Search for Title	Read Record from File	STOP **EXIT MODULE**
If OPT = 2 Go to Search	STOP	If Author Found then	If Title Found then	S = S + 1	START
If OPT =3 Go to Report		Go to 9	Go to 9	Is it End of File?	Do you want to Exit?
If OPT = Go to Exit		Display Book Author Not Found	Display Record Not Found	If answer to Step 6 is yes then	If answer to step two is yes then
STOP		Go to 10	Go to 10	Go to Step 10	Go to Step 6
		Display Record	Display Record	Go to Step 4	Go to Main Menu
		STOP	STOP	STOP	END

It should be noted that each of these algorithms in Table 3 are to be properly presented in normal system communication chat-flow during the actual implementation.

Conclusion

Library cataloguing system is a means of making books easily accessible in the library for all library users. The cataloguing system is formally carried out by the library staff of the Federal Polytechnic Idah library. This manual method is characterized by some problems such as time wastage, inadequate storage, inefficiency, etc. It has been observed that computer can eliminate or alleviate considerably the aforementioned problems. Thus, in this paper, the researchers have through their experimental design demonstrated an automated cataloguing system that can replace the manual cataloguing operations. It is hoped that automated cataloguing system when fully implemented in the institution, will enhance library operations and make things easier and better for both staff and users of the library. In other words, the cataloguing software designed shall greatly assist the Polytechnic library in carrying out the complex and tedious processes involved in the cataloguing section of the library. The new system, when fully adopted and implemented, will provide the library cataloguing section a faster, easier, accurate, efficient and error free operations in carrying out its activities.

Recommendations

Owing to the importance of the automated cataloguing system designed, the researchers recommend that:

- The Polytechnic management should adopt and implement the newly developed system to move the library forward.
- The system should be operated by staff and library users, who are well trained on how to work with the new system.
- The system should be reviewed and maintained when necessary to take care of changes and problems that might come up.
- Other sections of the Polytechnic library should be computerized as well to tap the full benefit of automation.

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