COMPUTERIZATION OF LIBRARY SERVICES IN NIGERIAN UNIVERSITY LIBRARIES: THE STATE OF THE ART

INTRODUCTION

Recent advances in computer technology have pointed to a greatly improved data/information processing capability for given cost in libraries. "While large libraries have been able to fulfill their requirements at lower cost, others with small or medium requirements have been able to invest in the appropriate equipment for their operations"[1]. The developed or industrialized countries have used technological developments to improve the quality of life of their people while the underdeveloped nations, not having access to some of these technological developments, have had their developments in the various fields of endeavor slowed down[2]. In his observation, Aiyepeku[3] emphasized that the availability of a national information system would promote a cost-effective national planning process in Nigeria while its absence would adversely affect meaningful national planning.

The computer has contributed immensely to development in the various facets of human development, and a widespread application of it in the developing countries will surely narrow the technological gap between these countries and the industrialized nations.

While the role of science and technology has always been crucial for socioeconomic developments, there is always the need to strengthen the technological information capabilities of the developing world. This is to enable such information systems to identify, select, process and deliver relevant information on various aspects of development. It is in this connection that the computer comes in. Mention had been made in the literature of a catalogue of capabilities of the computer notably in Computer Assisted Instruction (CAI), the provision of health care facilities, the ability to handle well-defined and repetitive jobs with accuracy and greater speed, the storage and distribution of food and in the area of housing. For all these operations information is greatly required. In order, therefore, to facilitate the processing, dissemination and utilization of the required information necessary for development purposes, the computer plays a key role.

The advantages of the computer have also been explored in the developed countries where it is being used extensively for various aspects of information handling like acquisition, cataloguing, circulation, literature searches, compilation of bibliographies, and Selective Dissemination of Information (SDI) Services.

Libraries all over the world to be developed or developing have, as one of their priorities, the need to provide, in addition to other various activities, an efficient book circulation system. To achieve this, Robert Burns has suggested "a more sophisticated use of statistics (which had hitherto been unavailable and unrealistic with the manual system) to forecast, stimulate and model all phases of library operations especially those of circulation which will eventually sharpen management's ability to control by an order of magnitude the strength of library decision making and in formulating policy guidelines[4]."

The operational automated library systems were designed to operate in the environments of the developed nations. From the available review literature[5] very little activity has been carried out so far that is geared towards the developing environment.

While automation activities have greatly assisted libraries in the advanced countries to improve their services to the clientele at reduced costs, in most cases, there is a need to study the possible effect of such a system when applied to the less advanced countries of the world.

In planning for automation, library administrators have always expected a number of effects, some of which are speedier and simpler
processing procedures, greater sharing of bibliographic information, improved access to collections and reduced staffing. In general, the practical goals of automation have always been (1) to do what is currently being done better, faster or more effectively, and (2) to provide services and products that were neither feasible nor possible with the manual system.

SCOPE OF THE STUDY

The study focuses on seven university libraries in Nigeria. These libraries are currently using manual circulation systems but are contemplating the introduction of automated systems.

The estimated student population of the seven universities studied was in the vicinity of 56,856 [6]. In essence, this figure represents 78.5% of the total university population in the entire country of Nigeria as in the 1980/81 session.

Moreover, since the seven university libraries selected use different manual circulation systems, which thereby represent the systems being used in all the university libraries obtained from these institutions because the manual circulation systems currently in operation in these seven university libraries could possibly highlight requirements and constraints in the development of a computer-based circulation system for Nigerian university libraries as a whole. This same approach was utilized by McAllister and Bell [7] in their investigation of the success of Project Intret, a prototype computerized information retrieval system developed at the Massachusetts Institute of Technology in 1977, where the sample population was limited to four users who were exceptionally knowledgeable about the professional literature covered in the Intret System, and so were best equipped to test the maximum efficiency of the system. It is pertinent at this stage to give a brief description or overview of the manual circulation systems in the seven university libraries.

CIRCULATION ACTIVITIES IN THE UNIVERSITY LIBRARIES

The manual circulation system in most Nigerian university libraries has been undergoing some internal transformations since the establishment of the respective parent institutions.

The Ibadan University Library, to use this as an example, which started with a Bookmatic Circulation System when the institution was established in 1948, did not decide until 1979 to change to the Browne System because, according to Robinson [8], “the Bookmatic System is difficult to operate”. This assertion was supported by Soyinka who observed that the Bookmatic system “can no longer cope with the increasing workload” [9].

With the use of the Browne System, a number of tickets can be prepared for borrowers. These tickets contain information such as borrowers’ number, borrower’s name and address and a certain number of tickets corresponding to the borrowing entitlements of each user. At each borrowing of a book the reader submits a ticket to the circulation staff. This ticket is attached to the book card and both are filed by call number within the correct due date. As soon as the book is returned, the card is retrieved from the file and put in the pocket, while upon discharge of the book, the borrower’s ticket is returned to him.

The slip charging system, on the other hand, requires the borrower to complete three slips for each book to be borrowed. The borrower’s slips often contain information such as borrower’s number; accession number and classification number of the book; borrower’s name, signature and date. This method enables the circulation staff to know instantly whether a given book is on loan, how many books a given reader has borrowed and which books are overdue at any given time. It is, however, a rather slow system in the sense that there are three slips to be completed for every book and there is the possibility of some mistakes occurring in the process of filling the slips.

In the Bookmatic card system each book is provided with a plastic ticket containing information about author and title. Every borrower also has a ticket containing his name and address. This system is semi-mechanical making use of manually operated addressograph imprinter to record details of the borrower and the book each time a book is taken out on loan from the library.

The Newark System being used by the University of Benin and the University of Nigeria libraries maintains the borrower’s record and due date on the book card. The creation of the record is done by the borrower who fills in his name and address on the card which is in turn filled by author or call number under due date. The system enables the circulation staff to detect overdue books from the cards that stay longer on the circulation file.
USER STUDIES

Several user studies have been carried out recently to study performance measures of some university library circulation systems notably in the U.S.A. and Britain [10,11,12]. Most of these studies have arrived at one principal conclusion that 40 to 50 percent of academic library users are never satisfied in obtaining what they want from the library, whereas libraries have been known to hold 90 percent of the material sought by users. The causes of frustration among the remaining 50 to 60 percent were analysed thus:

(a) A user may be frustrated if the book he wants is not in circulation.
(b) Cases when a reader cannot obtain a book which is neither circulating nor being read in the library. This may be due to wrong shelving.
(c) The book being sought may not have been acquired by the library.
(d) Errors by users in locating the books on the shelves.

These four causes were independently tested for Ibadan University Library, one of the seven university libraries under study, and the satisfaction level of 34 percent (instead of between 40 and 50 percent obtained for most studies) was obtained.

The product of the probabilities of the above four parameters gave the satisfaction performance of 34 percent for the entire library operations: This low satisfaction level was associated with the performance of the circulation system because, unlike other studies, where the circulation performance (PC) is above 50 percent, the satisfaction level often conforms with the general expectation of academic libraries. However, in the case of Ibadan University Library the circulation performance was below 50 percent.

A similar study on the loan period analysis of the Ibadan University Library[13] showed that at the end of an undergraduates' two-week loan period, about 66 percent of the books borrowed were still unreturned. This figure was found to be alarmingly high compared with other studies in similar academic libraries. It then became obvious that the Ibadan University Library circulation system needed some change to reflect a greater percentage of user satisfaction in the entire library system. This fact was supported by Soyinka who claimed that

"The present manual system can hardly cope any longer with an increasing workload without a corresponding growth in circulation staff. Yet, increasing staff strength is neither presently feasible for reasons of current financial constraints on university funds nor desirable on account of the greater administrative overheads involved"..[14].

Trends observed as arising from this inability to cope effectively include:

(i) the cycle of constant backlog of manual filing and discharging of records, a situation which leads to
(ii) constant backlog shelving, which in its own leads to;
(iii) reader frustration in obtaining documents, and the failure of the library to achieve one of its most important objectives.
(iv) the frequent breakdown of existing charging machines for which replacements are no longer available, the model being long outdated;
(v) method of borrowing;
(vi) type of circulation system under use;
(vii) students enrolment;
(viii) professional staff as percentage of total personnel;
(ix) library expenditure per student;
(x) wages and salaries as percentage of total library expenditures.

THE STATE OF COMPUTERIZATION ACTIVITIES

In Nigeria today, some libraries have now been found to be either computerizing some of their activities through their respective main university computers or installing these computers in their own libraries.

The Ibadan University Library was the first to computerize its list of serial holdings[15], and this was published in book form in 1975. It contains holdings of the library up to 1973. With the computerization of these holdings it was possible for the university library's clientele to know what journals were available in their subject areas without having to visit the library and subject themselves to the tedious browsing through the catalogue cards which most of them are not used to.
The database of the Ibadan University Library serials holdings titled the Catalogue of serials at the Ibadan University Library contains items of information such as

(a) Journal title
(b) Subject
(c) Place of publication and
(d) International Standard Serial Number (ISSN) which is designed to be used to facilitate inter library loan of the journals.

With the storage of its information of journal holdings on disk, it has been possible over the years for the Ibadan University Library to provide different types of information to its users. Most common among these has been the request for journals listed on a particular subject area by the academic staff of the University.

However, as valuable as this publication has been, it has been faced with a number of problems, notably that of updating. This problem is not of the Library’s making but is the usual problem confronting most of the computer installations all over the country today - the shortage of manpower. Coupled with this, of course, is the problem of computer breakdown or low level of electricity supply. These problems have slowed down the activities of the university library in utilizing the computer-stored information for the services of its clientele.

The Ibadan University Library, maintaining its role as the largest university library in Nigeria with a book stock of more than 350,000 volumes, also embarked on similar automated systems notably in the areas of cataloguing, circulation, and in the compilation of a union list of serials in Nigeria’s academic libraries. These projects are, however, still in the preliminary stages because of lack of personnel and equipment.

At the Ahmadu Bello University Library, Zaria the conversion of its circulation records into machine readable format was being processed totally in-house with the help of the University Computing Centre. Work on this started with the staff inputting some of its information into two visual display units (VDU) terminals located in the circulation section of the library for its on-line circulation system. During the early stages of the design the library claimed that

"Despite the constant power failure and the mechanical faults resulting in the breakdown of the computer terminals, progress has continued to be made in the computerization of the circulation procedures"...[16]

The idea of automation is reflected in the library’s statement which maintained, inter alia, that

"In an attempt to offer more efficient service the library decided to computerize its procedures... which started in 1976. The system in use at the Computer Centre was Cyber".[17]

The computerization exercise was based on putting all the library’s resources on file, which will then be used for all transactions - loans, reservations, withdrawals, etc.

A pilot project was initiated, using books in class T (Technology) involving about 5,000 books and entry was direct through interactive visual display units. As in June, 1978 only 300 books were entered. It was estimated at that time that it would take a year to complete entering the books. Work on the users’ file started in January 1978. Details entered included: category of user, i.e. whether staff, student, or others; user’s number, name, department/address... It was also expected that among other housekeeping exercises the system would give such records as daily loan transactions, certain monthly statistics required by the library for the Bulletin, overall records of books on loan, reserved, withdrawn or missing, and list of users. These could be displayed on any of the three visual display units or printed on the hard copy terminals to be located in the library.

It was also decided that in the event of a breakdown in the system, the library would use its Browne book charging method. To establish how often the breakdown procedure would have to be used, reference was made to some statistics taken from December 1977 to February 1978 during which it was found that over 400 computer hours had been lost. This meant that the library would have to fall back on the manual system for over 50% of the time if power failure continued at that same rate.

However, the circulation system, when completed would enable books to be borrowed, returned, renewed, recalled and reserved for individual readers and it would be possible to generate the following information.
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(1) Total number of books charged, overdue, on reserve, at the bindery, missing, on interlibrary loan and on recall.
(2) Which books are on reserve.
(3) Which books are on interlibrary loan, and where
(4) Which books are withdrawn.
(5) Which books are overdue, in date order.
(6) Which books are for recall, by author.
(7) Which books are missing, by author.
(8) Which books are at the bindery, by date.
(9) Which books are on loan to any given reader (registration number)
(10) Number of registered staff readers (and listings, alphabetical and by registration number).
(11) Number of registered post-graduate readers (and listings, alphabetical and by registration number).
(12) Number of registered student readers (and listings, alphabetical and by registration number). 

Apart from the circulation control system, the library was also feeding information into the computer on its serials holdings. This resulted in the compilation of a union list of serials holdings in the eight libraries within the Kashim Ibrahim Library system. When the computerized information becomes fully operational, it is expected to provide the following information:

(a) Alphabetical listing by title of complete catalogue.
(b) Alphabetical listing by title of holdings of individual participating libraries.

However, after a lot of information had been fed into the computer via the terminals in this unit, it was discovered that the programme did not take off properly owing to several inadequacies in the equipment and methods employed. As mentioned in the library’s 1981/82 annual report,[19] an altogether different and more reliable approach has since been initiated.

As at the moment, data which were collected during 1977/78 session had become obsolete, as most, if not all the students who constituted the borrowers’ file had completed their courses in the university. Although test runs have been going on for the past three years, not much has been achieved because of problems which were not envisaged at the planning stage. In addition some of the difficulties contributing to the failure of the project include:

- Erratic power supply resulting in the burning of some components which could not be replaced easily.
- Personnel problem, resulting from the sudden departure, from the university, of the Computing Centre’s expert handling the project on behalf of the university library. No handing over was done and the Computing Centre was therefore unable to maintain continuity in the handling of the project.
- Lack of library personnel to study and follow the project to its conclusion. A senior librarian with some experience of the system had once initiated some changes in the filing system in 1980 but left shortly after having secured a job at another university library. With his departure, the library, according to the Circulation Librarian, has now reverted to its age old filing system by accession numbers.

In the case of the Lagos University Library, a plessey mini-computer system was installed in 1982. This consists of three circulation control unit, namely:
- a charge unit,
- a discharge unit, and
- a unit that performs all functions of the circulation system, namely, charging, renewal, reservation, etc.

The data creation for both the students and library materials which started since 1978/79 is still in progress. For the student’s record, the matriculation number was used. This was bar coded and affixed to the student’s identity card. The accession number is the unique number selected for the library materials. Realising the cost of creating the bibliographic file of all the library holdings, the library has now shifted emphasis to the storage of data of the circulating materials only.

For charging and discharging light pens are used to trigger off some information. Students’ cards can be inserted in either the charge or discharge unit and read with the light pen. If this procedure was not properly carried out the system would alert the user of the error.

The installed equipment functioned only for about three weeks before it broke down and for
more than twelve months all efforts to replace the damaged parts failed.

According to the Circulation Librarian, both the faculty and the users were fascinated with the performance of the system during the three week trial period. One great set-back, however, was that the system could not limit the number of items that can be borrowed.

In anticipation of a repair being effected on the system, record conversion still progressed on the University's Computing Centre uninterrupted.

The University of Nigeria Nsukka Library has also computerized its serial holdings by the production, in 1977, of its computerized catalogue of serials held in the university library system. This, like the Ibadan University Library catalogue of serials, gives information on journal status. But unlike the Ibadan University Library catalogue, information is in a fixed format thereby necessitating the truncation of some journal titles.

Other university libraries had at one time or the other planned to automate their activities. This plan had to be dropped midway as a result of shortage of both personnel and equipment for an effective prosecution of the projects. Apart from the circulation control system which has attracted much attention of most libraries not only in Nigeria but even in the developed countries, automation is being planned for the serial control system in most Nigerian University libraries. The interest in this area has led the conference of university librarians to decide to put into a machine readable format, serial holdings of some Nigerian academic libraries with a view to assisting users to identify the location of a journal or journals stocked by a particular library within the system.

Activities in automation in Nigerian libraries have not been restricted to academic libraries only. Although public libraries in Nigeria have not attained the status of their counterparts in developed countries, the National Library of Nigeria, which is regarded as the focal point of library legislation in the country, and which represents to a large extent Nigeria's interest in world library organizations, has gone steps ahead of other libraries in the purchase of a minicomputer to execute some of its operations, notably the compilation of the National Bibliography of Nigeria.

Therefore, with the current trend in the application of technology to various other day-to-day activities in Nigeria, the question arises if our libraries should not share in this development with the hope of revolutionizing services and redefining their roles and functions, which may be in the form of improved services to users.

PROBLEMS OF COMPUTERIZATION OF LIBRARY SERVICES IN NIGERIA

Coupled with some of the problems mentioned earlier, are other factors peculiar to some of the university computers in Nigeria. Soyinka has highlighted two of these problems:

"....The computer facilities currently available are outstretched and queues have grown longer and longer. Turn around time has consequently increased. Another problem is concerned with the availability and stability of electric power supply. The supply from the National Electric Power Authority (NEPA) is unreliable.[20]

The proposal for the use of a shared or cooperative computer facility in libraries is about the most useful and perhaps the cheapest. For example at the Suburban Library System in Burr Ridge, Illinois, where 13 member libraries were linked together in a network of four CL LIBS 100 systems, members paid $750 a month for the first five years and $280 a month thereafter. Rates were based on each library having one light pen terminal and one CRT terminal[12].

While this approach would have been most suitable for some Nigerian university libraries, notably, Ibadan, Ife, Lagos and Benin university libraries on the one hand and Nsukka, Calabar, Port Harcourt, etc. on the other (because of the nearness of these campuses to one another), unfortunately, problems of communication and transportation will hamper any development along this line.

Another approach, which would have involved the National Library of Nigeria, is similar to the one just discussed above. This approach is also subject to effective communication and transportation systems which at present are not available in Nigeria.

CONCLUSIONS

One major constraint of library automated systems in Nigeria at the moment is that of securing the right calibre of personnel for the
running of the systems. This constraint is not restricted to library automated systems alone but also to most computer installations.

According to a report of a survey of computer distribution and usage in Nigeria,

"Most of the installations are short of qualified personnel. Many of the business/commercial organizations with computers in the small business systems category make do with only one or two programmers without any systems analyst at all. Most of their staff have no formal training in any organized institution except the experience which they gain in the process of their being engaged in the organization. Such staff could not be expected to develop efficient in-house programmes for their environment. This lack of formal training and experience accounts for the low turn-out in most installations and total reliance on packages supplied with the computers or developed by the vendors. They are also responsible for the low utilization of the computers in their installations[22].

This shortage of personnel in many libraries has, indeed, resulted in the abandonment of one project or the other midway.

REFERENCES