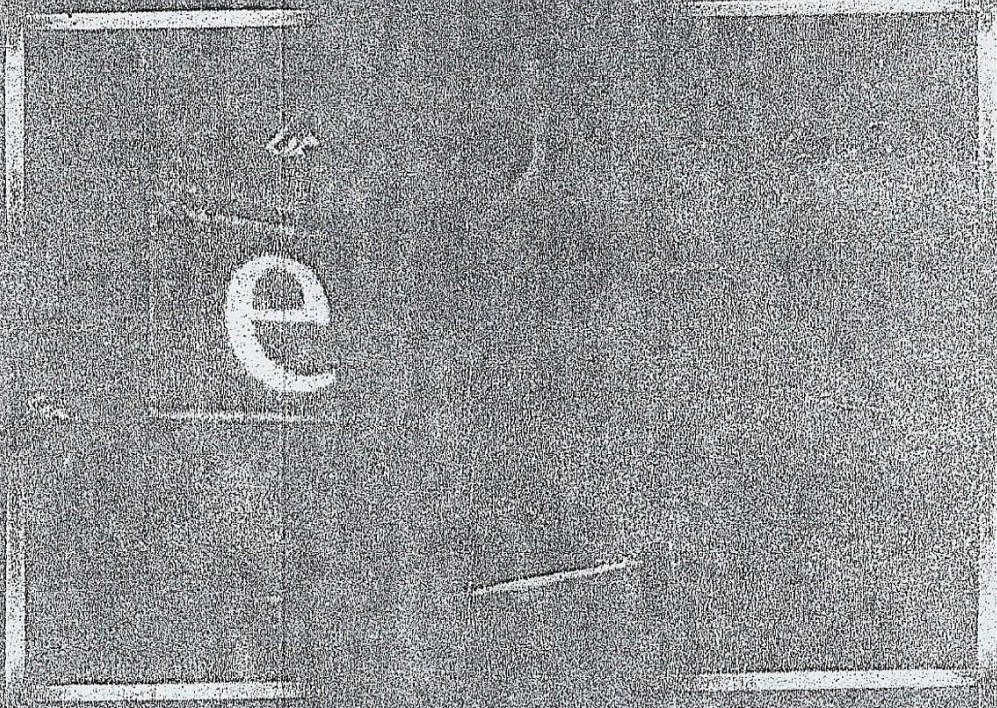


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Technology for Information Management and Service



Modern Libraries and Information Centres
in Developing Countries

Edited by:

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– *Evarest C. Madu*

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– *Charles O. Omekwu*

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Automation and Service Provision in Libraries and Information Centres in Developing Countries

Evarest C. Madu

Introduction

In Nigeria and indeed the whole of Africa and the Third World countries, the talk about automation of library services is now commonplace. Also the benefits derivable from the use of computer-based systems in library and information centers are no longer an issue to be debated. In fact, there is a consensus on the automation of library service because of the benefits that would accrue from such a project.

The basic functions of a library include acquisition, accessioning, cataloging and classification, charging in and charging out of materials from the shelf, ensuring proper maintenance of the serials. All the above functions of the library can be better performed with the use of the computer. Apart from better access to information, automation will encourage possibility for cooperation as it enhance resource sharing and improved productivity.

What is automation?

The word, *automation* has many connotations, but central to them is mechanical process. In the first place it can be described as a technique by which mechanical processes are subjected to some degree of automatic control without human intervention. The New Webster's Dictionary (1992).

For proper understanding of the concept, automation ranges from the operation of simple device to a fully automated system or automatic factory for this system to work very well, there is a feedback system, which is automatically controlled. For instance, in an automated factory, the production lines are automatically transferred and fed back in machine, which in turn tests the work, rejects defective piece under the controls of a digital computer. Automation could also be defined as a self-moving machine, or one that is, moved by concealed machinery, it is a device that works automatically. According to Boards and Williams (1983) the

speed and flexibility of automated processes as in the use of computer for instance have proved to be now an invaluable asset to information processing.

Brief history of library automation

The idea of library automation dates back to the 1940's. However no significant impact was made until the mid 1960s when significant activities occurred. At this period, two very significant changes occurred in the library operations.

Firstly, there was the replacement of **Batch Processing** to **On-line** operations. Secondly manufacturers took advantage of this development to incorporate telecommunication capability into their computers. With this in place, by 1960, online systems "offering immediate access to all files by a variety of approaches become common". These efforts were given impetus by the library of congress which facilitated the creation of OCLC and other bibliographic utilities.

What is library automation?

Having explained above what automation is, and a brief history of library automation, it is imperative to look at the various concepts of library automation. According to Corbin (1985), in the traditional manual library system, staff performs the various tasks required to complete each operation, but if a computer is used to perform some processing operations, an automated library system results. In such a system humans and the computer usually share responsibility for performing the work. For example, a staff member might perform the first five operations; a computer, the next 100 operations a staff member, the next 10 operations, and so on. Due to this sharing of responsibilities, today's automated library systems actually should be referred to as "human-machine systems", or, literally, "systems in which humans are assisted by a computer". "Completely automated library systems, in which no human intervention and control are necessary, do not exist and are not likely to until the end of the century or beyond."

In a guide to library automation a step-by-step introduction by Winnebago software company, library automation is seen as the computerization of library records and functions, it uses computer hardware and software for tasks that otherwise require a lot of paper work and staff time. It also makes possible a wide, free exchange of information.

They went ahead to outline four considerations one must look at before going into automation.

- (1) Weigh the advantages and disadvantages.
- (2) Learn about your library automation options and the conversation process.
- (3) Decide what software and hardware.
- (4) The data input requirements.
- (5) The data base system.
- (6) General management and starting requirements your library requires.
- (7) Plan how you will obtain approval and funding.

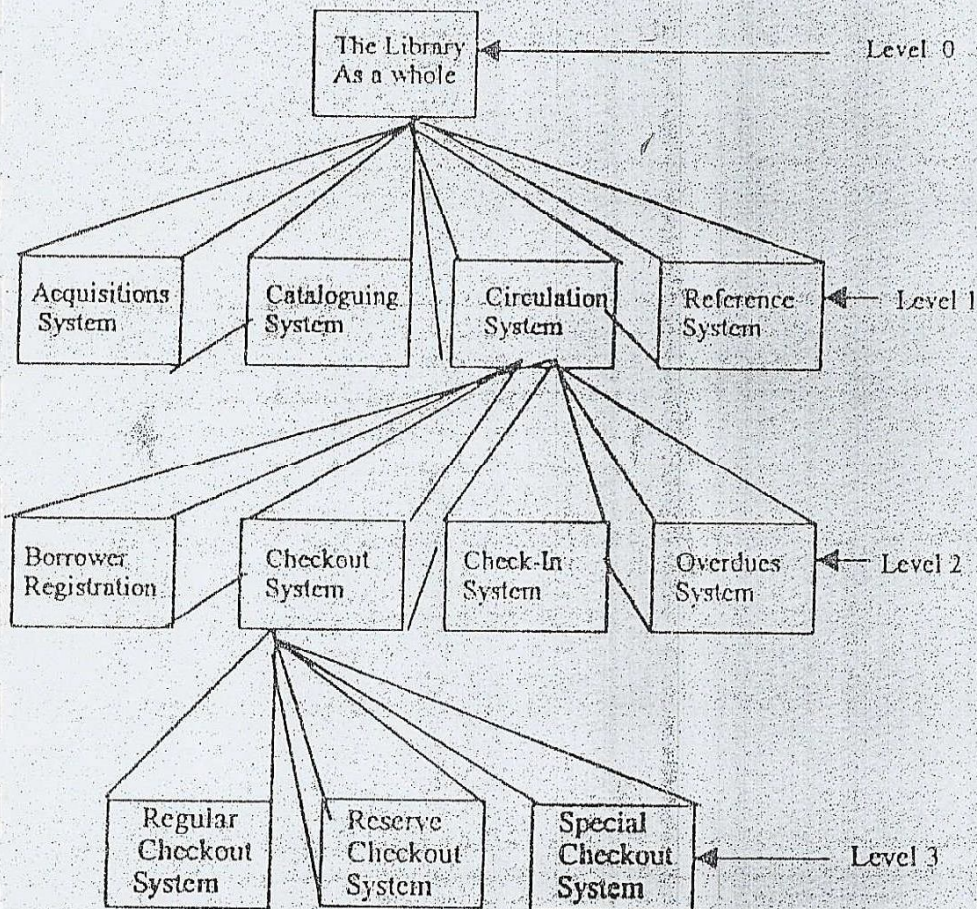
Library automation is also defined by Bierman (1980) as "the use of computers and associated technology to do exactly what has been done in libraries (with the justifications of reduced cost and or increased performance. And on the other hand, as the use of computers and associated technology to revolutionaries the meaning of libraries and to redefine their existence"

From the above definitions, automation as a process helps, in the acquisition, organization, storage and dissemination of information in a library. It facilitates their processes in a most reliable electronic process. Automation aids selective dissemination of information (SDI). For instance, in a library where all users have their interest or research topics, it is the computer that matches the document profiles (subjects) and user profiles (interest and research topics). Where there is a match, computers will inform the librarian or in a well set upon system, it will print out a notice to the user in question that an item of interest is available. Document and user address will both be in computer already. This type of alert, which, is done with computers, in an automated system is called selective dissemination of information (SDI).

Kimber (1980) defines library automation as a process by which the technique of automatic data processing is used to perform functions which for thousands of years have been the prerogative of human clerks, scholars etc. In the case of the library, these functions include accessioning, charging in and charging out of book and non-book materials, library statistics, writing date due notices, writing charge cards etc.

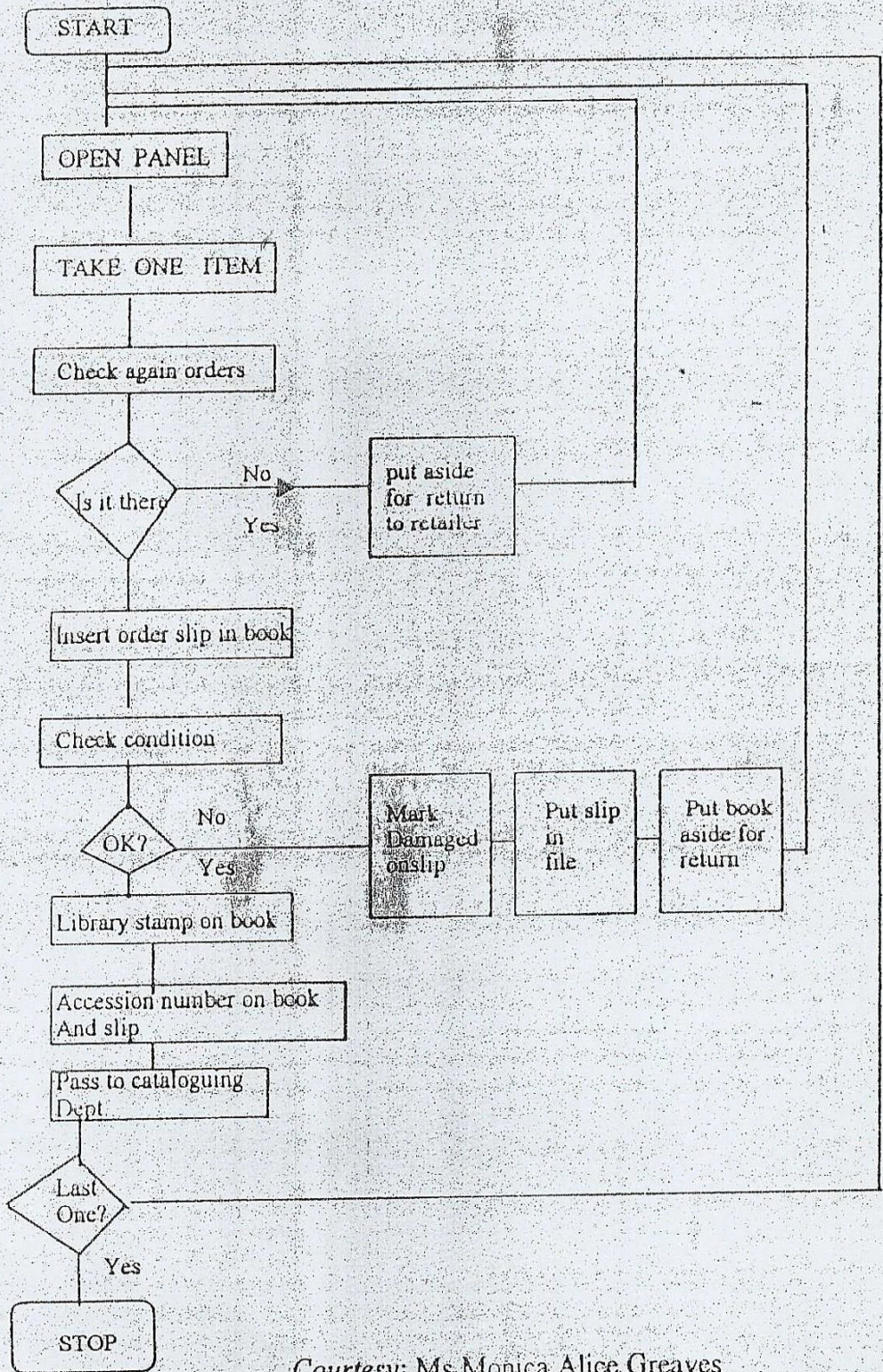
Having stated all these, it is imperative to allay the fear that automation, especially in the library will lead to loss in job. According to Heiliger, Edward and Henderson (1972) automation

Figure 1. Systems and Subsystems of a Library



Courtesy: John Corbin

Figure 2. Flowchart in Library Operation
Receipt of Books in a Library



Courtesy: Ms Monica Alice Greaves

does not imply elimination of human resources in favour of machines but rather the choice of concepts and processes that use both human and machine resources in the tasks both suited to each. Automation encompasses new concepts to better serve the needs and introduces the processes and resources best suited to these concepts.

Argument against manual system of library operations

In order to appreciate the need for automation in a library, it is necessary to outline the problems faced with the use of manual labour in library operations and services especially in the Third World countries.

Manual work in library operations especially the clerical aspect involves the use of hand, paper, biro and human brain in the performance of library duties. This has been found to be inadequate and cumbersome, as we shall discuss below, hence the need for automation.

Firstly, it has been argued that manual systems in most cases operate at a very low and decreasing efficiency in the face of ever increasing library work. This decreasing efficiency is a function of delays, backlogs, errors, staff dissatisfaction and perhaps a high rate of staff turnover. The delay mentioned above could be as a result of not being able to supply materials in good time or potage to ensure that guides and regulation governing loans was enforced.

Need for library automation

In view of the above problems, which have been reflected in unsatisfactory library operations, it is necessary to examine the question on the need for an automated system for libraries especially in the Third World countries.

One of the reasons for library automation is the apparent and visible improvement in the access to information for users. With library automation, there is interconnectivity. The implication of this is that a library can easily access the collection of other libraries.

Closely followed to the above reason is the efficiency that results in the use of an automated system. The efficiency affects all the library operations. With automation, the basic functions of a library, which include acquisition, organization, dissemination and maintenance, are performed. The result of this application of technology is that information delivered is timely, accurate precise

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and relevant. These qualities, which determine a good library, are the dividend of an automated information system.

Another need for the automation of libraries and information centers lies in the need to ensure easy method of updating information. Compared with manually taken documents like statue inventory and stock taking, automated system has a way of updating these documents without necessarily going through the troubles associated with repetition of routine work which is common with manual work. In this regard they use of automated library system will help to perform the following library functions in a manner that will avoid repetition:

- (a) Compilation of accession lists
- (b) Maintaining library statistics
- (c) Charging and discharging of books
- (d) Compiling over due notices
- (e) Keeping book on the reserve
- (f) Maintaining library roster

The benefit of networking and interconnectivity is also associated with library automation. With automation, it is possible for a library to be linked to one another. The benefits accruing from this include the fact that a library can easily access the collection of other libraries. This also serves as library co-operation. A library with a small collection can enjoy the collection of a bigger library. With this it is easy to serve his client better. Network also "allows high quality information to be available quickly at a wide spread location" In this sense, an automated system ensures a technical advantage when it comes to resource sharing. This is not so with the manual system.

Automated library system also reduces or eliminates the tedious and energy sapping tasks associated with manual operations. The result of this elimination of strenuous task is that the library staff will have more energy and more time which can be used to attend to move library users and perform more professional duties, the implication of all these is that more staff time has been saved.

Considerations for the choice of software for successful library automation

Many authors have argued conclusively that the success of any automation experience is a function of the choice of hardware and

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software that can satisfy the operational requirements of the library. Software as it was determined the direction automation goes. It is therefore necessary to examine the quality of good software packages and how best libraries engaged in this venture can benefit from the exercise.

Lawani, Azuibuke and Ibekve (1992) have articulation the consideration necessary for a successful automation of libraries to include:

Produce/vendor reputation and reliability based on the performance of previous installations; software functional flexibility and expansively; indexing and searching capability; Interactiveness of input and output inter-faces; system security provision; good system documentation and manuals; cost; scope of customers trainings, and possibility of system up-grading.

The above considerations also have their own peculiarity to the particular library being automated or the objective of the parent body.

Apart from the above, other considerations that are necessary before embarking on library automation include what is popularly referred to as **User-Friendliness**. The very simple way to explain this is that there are some softwares that have **Menu** which is a list of options put forward by the software and which enables the user to use the programme. The menu assists the researcher to get over a confused situation. It also saves the librarian's time and effort, as the patron will rely on the menu for assistance instead of calling on the librarian who may be busy with other assignments. This is the essence of automation.

Winnebago (1994) also identified four more considerations for the choice of software package for libraries wanting to automate. The second one is ensuring what he called "industrial standard". These industry standards are the library of congress' machine-readable catalog - MARC, MARC is micro computes interchange formal - MICROLIF etc. it is advisable that the software you buy should meet the standard of the above industries. One format may be more suitable than the other depending on the requirements of a particular library.

The Winnebago guide also talked about the need for integration as a major consideration before going ahead with library

automation. The need for integrated program ensures that they not only share databases but also "can find out whether the collection includes the material wanted and whether it is on the shelf, checked out, or on reserve". To achieve the above objectives successfully, libraries are advised to buy all their software programmes from one vendor. Some libraries for one reason or the other stagger their automation or carry out the process in phases, it is advisable that libraries who fall into this category should ensure that the programmes they acquire now must be integretable with the programme they will purchase later.

The other consideration in the acquisition of programmes is not to be scared by the price of the programme but be guided by the features of the programme vis-a-vis the expected features and the role of the automation programme. This position goes with the saying that "it is better to have a high quality and adequate programme than to have inexpensive and inadequate one."

Finally, Winnebago spoke of what he called **Customer Support and Training**. The essence of this is to have a reputable company that will be able "to assist you before, during and after purchase". In order to ensure the above, they posed six questions which the CUSTOMER or company should be able to provide satisfactory answers. These questions are

- (a) Are the products and services guaranteed, and what are the guarantees details?
- (b) Is there a charge for post-sale support and if so how much?
- (c) Are the account specialists and technicians knowledge helpful?
- (d) Is support and training available when you need it?
- (e) Does support include toll-free assistance?
- (f) Is modern support provided?

The above questions are expected to expose the buyers or libraries to a better choice. If systematically followed, decision will be informed and the longevity of the programme will be assured as a result of the customer support and training.

Problems with automated systems in Africa

As has already been discussed in this chapter, before dabbling into automation, consider certain options. This options include, the hardware and software your library plans to use, the conversion

process, etc. In some cases many libraries have ventured in the process of automation without considering the nature of available soft wares. The error in the choice of software has caused problem in the use of the automated system and the result in some use has always been abandonment. It is therefore advisable that librarian's must have a clear cut understanding of their library needs before the choice of software is made. This need include future plan for the growing library and how the vendor can keep abreast of new development in terms of technologies in Library Automation Software and Computer Hardware. The above advice if ignored is capable of creating some problems in the working of automated systems in the library or information centres.

Another problem that can disrupt the use of an automated library system especially in an African setting is the problem of power outages. This has been identified as a major problem not only in the use of information retrieval system but also on other equipment that rely on the use of electricity as a source of power supply. In countries like Nigeria, the regular and uninterrupted use of the system cannot be guaranteed. Apart from disruptions caused to the activities and works of users, the software and the hardware could be affected as fluctuation in power source could cause damages.

Skilled manpower to use the information retrieval systems is lacking, technology as we know it, is very new in Africa. Very few of the users of our libraries today, can be said to be computer literate. A search for example that could easily be done by a user, usually a library staff is called for assistance. This reduces the time and effort that a computerized library system is expected to save for the library staff. This regular call from users to library staff for assistance in the use of the system reduces the essence of the automated system, which ordinarily should individualized learning.

Another problem in the use of an automated information retrieval system especially in Africa is the issue of updateness, maintenance and storage. This again takes us to the need to consider your library situation and software before going in to automation. Winnebago Software Company has advised as follows:

Choose a software company that will be able to assist you before, during and after your purchase.... Is support and training available when you need it? Is modern support provided?

The essence of this advice is to ensure that the software and hardware used in the automation are properly maintained and updated when the need arises. Also related to maintenance is the issue of storage, to ensure effective and efficient use of automated system in Africa the environment where it is stored is very important. The system requires full air conditioning of the room where the system is housed. This in most cases is very expensive to accomplish. Some information retrieval systems, have installed without air-conditioner and the result has been the break down of the system.

Post – automation problems

There are clear signs that computer – based library or information system may have with it some inherent problems which apart from creating doubts in the advantages, discussed earlier, also frustrates the users of such an automated system.

The designers, managers and librarians in the 1960s were not always fully aware of the political problem inherent in computer based library system. Some systems were oversold, some budgets were overrun and some systems were installed for the wrong reasons. Because of such facts many systems produced less than their expected benefits. (Mason in Teddy, Lucy A. 1984).

The above statement by Mason quoted by Teddy aptly described the problems an automated information system is most like to face after all. According to him, these problems include

- (1) *Hardware Problem:* - With the automation of a library completed, the library is very much dependent on the hardware it is using. There may be products of the hardware being inappropriate for the task expected of it. It could be as a result of the unexpected expansion in the size of the records and files of the center or library. The inability of the hardware to cope becomes a problem to the center or organization.
- (2) Closely related to this is the failure of the computer vendor to supply hardware in working condition. While it is advisable for the receiving library or center to pre-

audition or check the condition of items ordered for on arrival, some hard wares could work briefly only to disappoint sooner or later.

- (3) *Soft Ware:* - problems may also be with the type of software the library acquired. Some organizations because of the price of some programmes have adopted the in-house packages. Most of these in-house packages have failed because of their inability to appreciate the need for "a purpose - built package". There are peculiar tasks in the libraries or information centers that require special purpose built "package" to fit into the tasks of the organization. Once this is not properly articulated from the beginning, there is always a problem.
- (4) *People:* - service in any library or information centers, are targeted at the people or users as the case may be. It is therefore necessary that the software to be used should have the input of the users or the people in the design of the software. The essence of this is to have the need of the users in mind so that services provided by the system can satisfy the need of the users. This satisfaction of the need of the users can be used to evaluate the computer-based system. There is always a problem if the design of the computer-based system does not take into account, the need of the users, the above problem can be solved by bridging the gap between the library staff and the computer specialist. Also an input from the users can help to ensure that their needs are taken care of.
- (5) *Financial Resources:* - Bearing in mind that any computer - based information system is capital intensive the need for financial resources can not be overemphasised, inadequate financial resources can create a problem for the system. Changes occur in hardwares and softwares used, what a library does is to acquire the new and latest technology. Staff training is therefore needed for this purpose. The above can be achieved only and if there is regular and enough financial resources. The above post automation problems are capable of grounding an automated system if not tackled.

emphasized that this does not in any

way diminish the benefits that accrue from an automated system since there are solutions to the anticipated post-automation problems.

An evaluation of automated system

With the automated system in place, it is necessary that the system be evaluated. This will help to determine the cost effectiveness of an automated retrieval system and its ability to save staff time.

In this chapter, evaluation will be used to mean assessment of the value of the system, this also includes some activities or objectives of the system. Since libraries deal with an interface between available resources and the users it serves, the evaluation of a library therefore will examine how far this role has been fulfilled.

In order to determine the above the following procedures are followed. The evaluation can be divided into two aspects:

- (a) The benefits
- (b) The effectiveness

The benefit of an automated system is a function of the use for library the system is put. Has the system been rightly implored to satisfy the users? Again the system is said to be beneficial if sets of original plan of the formulator is achieved.

The second and more critical method of evaluating an automation system is the determination of its effectiveness. This procedure will include:

- (a) Cost factor
- (b) User's time
- (c) Quality of output.

The first consideration, which is the cost factor, is very vital. It is important that every librarian or information officer incharge of a system should systematically determine the unit cost of the operations involved in the system. In the library system the operations include: catalog, circulation, Acquisition, serial management, charging and discharge of books, keeping loan records, compiling over due notices etc.

The proper determination of the unit cost of the operations includes is very necessary so that it can be compared with or judged against other alternative system. It is when this is done and

the result determined that one could actually say that a system put in place is good or bad.

The second consideration in the evaluation of an automated system is its ability to save the effort and time of the users. In this procedure, time and efforts are quantified in monetary form. Certain retrieval systems and physical arrangements of materials seem to produce answers more rapidly than others" (Turner 1987) p, 47. The logical corollary here is that when the system is fast user will spend less time and effort in getting what they are looking for, in the same vein, when the system is sluggish and slow, more time and more efforts be expended. A good retrieval system therefore is one that makes available the information required at the press of a button.

Closely related to the rapid response expected of a good retrieval system is the issue of good arrangement. Since the essence of arrangement in any information system is to make retrieval easy and without delay, it follows logically that a badly arranged system will delay retrieval. The implication of this is that the user wastes time and efforts in an attempt to get the required information.

Another criterion for the evaluation of an automated retrieval system is the quality of output. Output in this sense could also mean the satisfaction a user derives from the system, and this satisfaction is in terms of the user's objectives, which sets out to fulfill. It is necessary to quickly add here that the output of any

System is a function of the input hence the famous saying in computer parlance that "garbage in garbage out". From the above assertion, no matter how fantastic an automated system is, if the input fed into the system is bad the out-put is most likely to be bad. Therefore, a retrieval system that dishes out bad output can be said to be the product of bad input which is not good for a retrieval system.

Other criteria that are used for evaluating an automated library collection is the up-datedness of the system, the scope, the timeliness, the precision, the level of accuracy and the relevance at any particular point in time determine how good or bad an automated system is and to see if it worth the trouble in terms of value.

While appreciating the problems mentioned above they do not however diminish the values of an automated system since there are solutions to the anticipated post-automation problems.

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