

# BUILDING THE NEXT GENERATION INTEGRATED LIBRARY SYSTEM: PROSPECT AND CHALLENGES OF BANGLADESH

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## ABSTRACT

Technological development has brought a radical change in every field, and library management is not the exception to it. Information technology impact positively on library and information system and services they provide for users. Integrated Library System has been the center of attention in the library world for the past several years. Koha and Dspace are the two major open-source integrated library systems (ILS's), and they continue to grow in maturity and popularity. This paper overviews of prospect and challenges of the integrated library system in Bangladesh.

**Key Words:** Library Automation, Integrated Library System, Information and Communication Technologies (ICT), Library Software, Online Public Access Catalogue (OPAC), Koha, Dspace, Database.

## 1.0 INTRODUCTION

Library automation means the application of machines to perform different routines, such as repetitive and clerical job involved in the function and services of the libraries. Library automation is concerned with managing controlling and automating library collection, activities, and services in an automated library, computers are used in most of the activities, such as acquisition, cataloging, circulation control and periodical management. Library automation not only does housekeeping activities but also provides the current and relevant information to the user, according to their demands.

An "integrated" library system is an automated system, as described above, in which all of the functional modules share a common bibliographic database. Library management system software or integrated library system may be divided into four generations on the basis of sophistication of their

facilities for integration and interconnectivity. An integrated library system (ILS) is truly an enterprise resource planning system for a library. It is used for complete process automation in libraries that not only handles standard procurement tasks such as tracking items owned, orders placed, invoices paid but also allows searching bibliographic records, manages circulation, and a host of other user-facing services.

## 2.0 OBJECTIVES OF THE STUDY

The aims and objectives are to render smooth services to its clients and to fulfill these, the library requires necessary staff, satisfactory collection, own building, sufficient budget etc. Information technology has brought drastic and dramatic changes in the functioning of the libraries and render services. The study highlights the meaning, main components, measure the status, prospect, and challenges of Bangladesh. The objectives of the article are as follows:

- a. To exploit the information dissemination services;
- b. To develop and maintain an effective database management system;
- c. To improve the quality, speed and effectiveness of automated library services;
- d. To know the awareness of users;
- e. To subscribe and use digital resources effectively;
- f. To identify the problems faced by the readers as well as by the library professionals;
- g. To adhere international standards.

### 3.0 GENERATION OF INTEGRATED LIBRARY SYSTEM

The integrated library system was developed in all parts of the world from the mid 1970s to till date may be fitted into one of the following four compartments.

3.1 The integrated library systems were module based systems with no or very little integration between modules. Circulation module and cataloging module were the priority aspect of these systems and were developed to run on specific hardware platform proprietary operating systems.

3.2 The second generation ILS becomes portable between various platforms with the introduction of operating system UNIX and DOS based systems. The ILS of this generation offers links between systems for specific function and are command driven or menu driven systems.

3.3 The third generation ILS are fully integrated system based upon relational database structure. They embodied a range of standards which were a significant step towards open system interconnection. Colour and Gui features, such as windows icons, menus, and direct manipulation have become standards and norms in this generations.

3.4 The fourth generation ILS is based on client-server architecture and facilitates access to other servers over the internet. These systems allow accessing multiple sources from one multimedia interface.

### 4.0 FOUR ASPECTS OF NEXT GENERATION INTEGRATED LIBRARY SYSTEM

There are four distinguishing characteristics of the next generation ILS.

- a. Comprehensive library resources management.
- b. A System based on service-oriented architecture.
- c. Meet the challenges of new library workflow.
- d. Next-generation discovery layer.

### 5.0 INTEGRATED LIBRARY SYSTEM SOFTWARE

Library Management System (LMS) are computer based-systems that automate one or all functional areas performed by a library. Library Management Systems have also been referred to as 'Integrated Library Management Systems' (ILMS) to reflect the fact that all functions are managed via a central database. The term 'integrated' is used to refer to a system in which all the library functional modules, such as acquisitions, circulation, cataloging, serial control, budgeting and OPAC (Online Public Access Catalogue) are processed against a single master bibliographic database. Some of the popular proprietary and open source ILMS are shown in table 1:

**Table 1:** Proprietary and open source ILMS

Ser	Proprietary	Open Source
1.	The Library Corporation-TLC	BiblioteQ
2.	LS2	Evergreen
3.	Library.Solution	Koha
4.	Carl.X	NewGenlib
5.	SirsiDynix-Dynix	OpenBiblio
6.	Exlibris	PMB
7.	Voyager	EBITDA
8.	Aleph	PhpMylibrary

## 6.0 REQUIREMENT ANALYSIS OF LIBRARY SYSTEM

The basic requirements of an Integrated Library System (ILS):

- a. Acquisition
- b. Cataloguing
- c. Online Public Access Catalogue (OPAC)
- d. Circulation
- e. Serials Control
- f. Management on Report
- g. System Maintenance Facilities

## 7.0 TECHNOLOGY

The large majority of the library's technology hardware and software is current and useful. In order to execute the library's technology plan, the library will need to:

- a. Faster Internet access and additional bandwidth.
- b. Upgrade selected hardware such as servers, workstations, laptops, printers, scanners etc.
- c. Upgrade and acquire additional software which may require for ILS.
- d. New devices such as e-reader for both patrons and staff instruction and use.
- e. Acquire scanners and handheld scanners capable of digitizing research reading materials.
- f. Acquire hardware necessary to provide wireless access.
- g. Acquire video digitization tools and expand digital audio tools for recoding new oral histories.
- h. Communication devices: Telephone, Fax Machine etc.

## 8.0 TECHNIQUES

In order to develop integrated library system organizations have to follow some work procedures which named as techniques. These techniques are may be as follows:

- a. Convince authority for integrated library system;
- b. Selecting a user-friendly and cost-effective integrated library system;
- c. Formation effective and active library automation committee;
- d. Budgeting;
- e. Prepare long term and short term work procedure according to roadmap;
- f. Hardware procurement;
- g. Testing and debugging;
- h. Arrange of training program for ILS;
- i. Data entry (Reading Materials and Users);
- j. Implementation of Integrated library system.

## 9.0 PRESENT SCENARIO OF INTEGRATED LIBRARY SYSTEM IN BANGLADESH

The integrated library system both in the public and private sector libraries of Bangladesh, are not effective due to lack of understanding the values and therefore the inadequate allocation of financial resources by respective authorities to build modern libraries.

### 9.1 University Libraries:

The universities in Bangladesh are mainly categorized into public, private and international universities. The program of learning in the university must be supplemented by the library services. Library facilities are not only to support academic purposes but also to upgrade the quality of students. The well organized and properly administered university library serve as an invaluable aid in the conservation

of knowledge and ideas by acquiring and processing reading materials. An effective integrated library system enables university libraries to provide user timely access to various library materials and reduces the amount of time spent on material acquisition etc. Without library automation or integrated library system university library cannot

run effectively and ultimately library loss its usability and acceptance. Realizing the fact most of the university library become automated. Some of them are fully automated and some of them are partially automated. We mention practical automation scenario of public university libraries in table 2 and private university libraries in table 3.

**Table 2:** Public University's/Institute's Library

Ser	Name of Organization	Total Users	Total Collections	E-Resources	Name of ILS	OPAC	Circulation	Library Website	RFID
1	Dhaka University	40000	663946	E-journal (INASP & UGC)	DULIS	Yes	No	Yes	On Going
2	Bangladesh University of Engineering and Technology	7000	148800	E-journal (INASP)	KOHA	Yes	Yes	Yes	On Going
3	Jagannath University	28000	27000	E-journal (UGC)	No	No	No	No	No
4	Rajshahi University	26500	312314	E-journal (INASP & UGC)	KOHA	Yes	No	Yes	On Going
5	Military Institute of Science and Technology	3000	52000	E-journal (INASP)	KOHA	Yes	Yes	Yes	No

**Table 3:** Private University's Library

Ser	Name of Organization	Total Users	Total Collections	E-Resources	Name of ILS	OPAC	Circulation	Library Website	RFID
1	North South University	18000	89500	E-journal (INASP & UGC)	Bi-lingual LMS	Yes	No	Yes	Yes
2	BRAC University	6607	34906	E-journal (INASP & UGC)	KOHA	Yes	No	Yes	On Going
3	East West University	15350	26000	E-journal (INASP & UGC)	KOHA	Yes	No	Yes	No
4	Independent University, Bangladesh	18147	32528	E-journal (INASP & UGC)	KOHA	Yes	No	Yes	No
5	Daffodils International University	14350	25214	E-journal (INASP & UGC)	KOHA	Yes	No	Yes	No

## 9.2 Agricultural Organization Libraries :

Bangladesh govt has established 12 agricultural universities and some research organization. Moreover, 4/5 universities exist in private sector. Strong library management stimulates research

activities simultaneously new development from research can be materialized. Without automation, a library cannot serve its patron effectively. Five agricultural organization Libraries practical automation scenario are presented in table 4.

**Table 4:** Agricultural University Libraries

Ser	Name of Organization	Total Users	Total Collections	E-Resources	Name of ILS	OPAC	Circulation	Library Website	RFID
1	Bangabandhu Sheikh Mujibur Rahman Agricultural University	1200	26000	E-journal (INASP & UGC AGORA HINARI)	No	No	No	Yes	No
2	Ser-e-Bangla Agricultural University	2545	37984	Oxford scholarship online Pearson	Koha	On Going	On Going	On Going	On Going
3	Bangladesh Agricultural Research Institute	2950	73349	E-journal (INASP)	Customized	No	No	Yes	No
4	Exim Bank Agricultural University	185	2850	No	No	No	No	No	No
5	Bangladesh Agricultural University	6000	186942	E-journal (INASP & UGC AGORA HINARI)	KOHA	Yes	No	Yes	On Going

## 9.3 Medical College Libraries:

At present 30 governments medical colleges and 59 private medical colleges exist in Bangladesh. Library plays an important and vital role in health and medical education.

It is evident that most of the medical college libraries are manually operated. Practical automation scenarios of five medical college/ university libraries are mentioned in table 5.

**Table 5: Medical College Libraries**

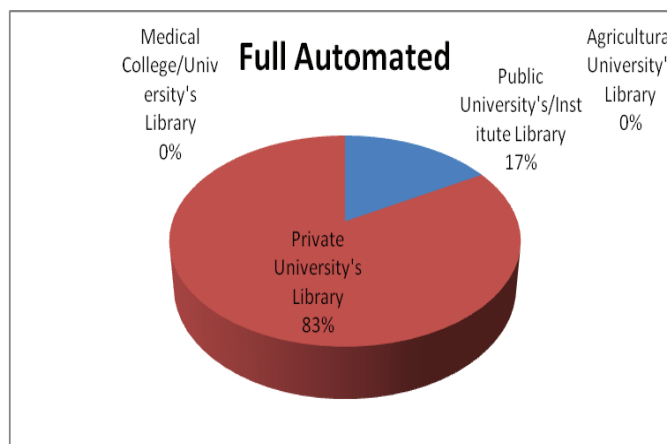
Ser	Name of Organization	Total Users	Total Collections	E-Resources	Name of ILS	OPAC	Circulation	Library Website	RFID
1	Bangabandhu Sheikh Mujib Medical University	700	33912	E-journal (INASP & HINARI)	KOHA	Yes	No	Yes	No
2	Dhaka Medical College	1500	32536	No	No	No	No	No	No
3	Sir Salimullah Medical College	1200	22600	No	No	No	No	No	No
4	Arms Forces Medical College	700	10200	No	No	No	No	No	No
5	BIRDEM	2772	7438	E-journal (INASP HINARI)	CDS/ISIS	No	No	No	No

It is observed from 5 table use of ICT application is very poor and stills there is no integrated library system in most of the medical college libraries

**10.0 PROSPECTS OF INTEGRATED LIBRARY SYSTEM IN BANGLADESH**

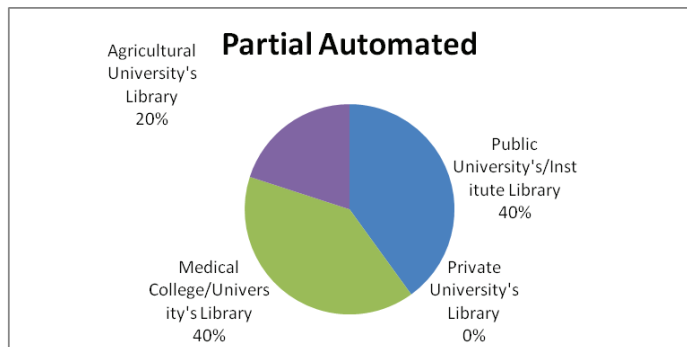
Technological revolution with internet technology has occurred in Bangladesh since the 1990s. Like other fields in library sector, a big change has occurred in the last couple of decades. With the establishment of so many public and private universities a great change has happened in the education sector. Most of the private universities have adopted recent technology in all fields including the library as they have available financial support. Many of the public universities try to upgrade their function and services including library. But they face financial drawbacks and lack of technical staff (IT and library professional). Agricultural University/organizational libraries try to develop their integrated library system with modern technologies including RFID. It is observed from table 2, 3, 4 & 5 that integrated library system practice and ICT application in Private Universities library is more advance. A graphical presentation of

automation range of Public University libraries, Private University libraries, Agricultural University/organizational libraries and Medical College/University libraries are presented as a sample in Figure 1.



**Fig 1: Full Automated**

In Figure 1 it is observed that 83% private university libraries are fully automated, whereas only 17% public university libraries are fully automated. The Medical college and agricultural university libraries are not fully automated at all.



**Fig 2:** Partial Automated

From Figure 2 it is observed that 40% public university libraries and medical college/university libraries are partially automated, on the other hand, 20% agricultural university libraries are partially automated.

Bangladesh present government has aim and objective to build digital Bangladesh within 2030, which is known as vision 2030.

But without library automation or without digitations of the information center digital nation cannot be build. A Modern library is one of a major important tool for developing knowledge base society. So for developing digital nation at first library should be digitized or automated.

**11.0 CHALLENGES OF INTEGRATED LIBRARY SYSTEM IN BANGLADESH**

The Integrated library system has been developed in university/institution of Bangladesh. However, there are numerous challenges confronting the organizations. Some of the observations on this topic that may be no longer true in some institutions but they are still evident in many cases.

11.1 Human Factors: Integrated library system and e-library project required vast knowledge in the areas of computer engineering, computer networking and software installation and training. By implication, these specialists are to be brought

together and co-ordinate to ensure success at the end. Librarians of the 21st century should brace up to overcome the gap in computer application and use which presently constitutes an integration of understanding between them and system analyst.

**11.1.1 Lack of technological knowledge of library personnel:**

Library personnel like cataloguer, classifier, and library assistant have poor technological knowledge. So, creating online cataloging, circulation of reading materials is a big challenge in the aspect of the integrated library system.

**11.2 Technological Factors**

Technological factors play a vital role in developing and maintenance of integrated library system.

**11.2.1 ICT infrastructure:** A big challenge is in the area of continue sustaining bandwidth subscription. It is a fact that internet facilities can any be sustain through subscription to the appropriate to bandwidth size that could power the number of computers and the level of internet users. Therefore the institution must be prepared to fund the facilities regardless of the revenue generation.

**11.2.2 Routine maintenance of the system:** There is the challenge of daily and routine maintenance of computers that are connected to servers. There is urgent need to employ the ICT personnel like System Analyst and System Administrator. There are many libraries which don't have any personnel to maintain the system.

**11.3 Financial Factor:** Lack of steady funding is most vital challenges to the silence of automating the library project. Without steady fund programs cannot be achieved according to the roadmap.

**11.4 Information Aspect:** Information aspect is more applicable in creating OPAC and users database.

**11.4.1 User friendliness of the software:** Library automation aims at "user-friendly" products. It depends on librarians how they can express their users' information need to the software developer.

Good enough bibliographic information has to be documented for the production of real use-friendly facilities. Scopes of documentation of information have to be embed in the system. For this understanding of librarians and IT personnel should be matched. Practically it is indeed a big challenge.

**11.4.2 Bibliographic Standards:** In process library materials, standards such as cataloging rules, the subject headings standard terminologies or names in the form of authority file are required. To create OPAC in integrated library system the issue of standard, Machine Readable Catalogue (MARC) formats, characterized and indexing methodologies should be imperative.

## 12.0 RECOMMENDATIONS

**12.1** To build up a uniform database management system, information professionals must be equipped with a wide range of new electronic/digital information environment.

**12.2** For creating OPAC and for automated circulation professional staff is required. Library personnel who do not have academic knowledge in library management cannot create OPAC using a standard like MARC- 21, AACR-2 and can not assign subject heading by using a thesaurus.

**12.3** Adequate training program of information technology should be arranged for library professionals.

**12.4** Library databases in the field of research have become essential and for this information services by applying current information technology should be developed.

**12.5** Formation a strong and active library automation committee to monitor and evaluate the automation project.

**12.6** Adequate financial support should be arranged for ICT application in libraries.

**12.7** Sustainable network and power infrastructure are the essential need for effective library automation.

**12.8** Every academic library should have its won dedicated ICT personnel to monitor and development of library management system.

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