

Database Management Systems and Use of Digital Resources in Some Selected Public University Libraries of Bangladesh: An Overview

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Abstract

This paper Discusses present status of database management practices and use of digital resources of five selected Public University Libraries of Bangladesh. Survey has been carried out on the names of used software, number of databases for the dissemination of library resources with total number of records, subscription of online journals with other digital and electronic resources, number of current/bound journals, computers, CDs and audiovisual materials etc. The objectives, methodology for collection, presentation and analysis of collected data for this study and highlights the meaning, need, main considerations, components and domain of library automation in the context of surveyed libraries also have been described. The development of digital technology combined with the evolution of Internet has prompted significant changes in library services and operations within the last few years. The study tries to focus on the availability of hardware and software in the respective library, examine types and forms of library collections, various house keeping operations, management, services, and library administration etc. It has also put forward some suggestions for the future development of the surveyed libraries.

Keywords: Database Management System, Digital library, Electronic resources, Library automation

Introduction

We know that traditional library system is laborious, tedious and time consuming. So, to get rid of these problems and save the valuable time of the reader library automation, database management and uses of electronic resources have come forward. Now a days standard of a university can be judged by up to date collections and satisfactory online and other services to its clients. A quality education cannot flourish without a resourceful library along with proper services to its clients.

Many academic libraries are actively involved in building institutional repositories of the

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institution's books, papers, thesis, and other works that can be digitized or were 'born digital'. Many of these repositories are made available to the public with few restrictions, in accordance with the goals of open access, in contrast to the publication of research in commercial journals, where the publishers often limit access rights. Institutional, truly free, and corporate repositories sometimes referred to as digital libraries.

It should be the goal of the university library to take care of the informative needs of the academic community. A university library, which occupies the central primary place in teaching and research, has to meet the diverse and growing needs of educational program at the graduate, post-graduate and research levels. The primary task of a library is, therefore, to collect, store, and distribute the reading materials keeping in view the user requirements (Mostafa and Bandyopadhyah, 2004).

Up to end of 2009, there are 31 public and 51 private universities are providing education and conducting research in Bangladesh on various fields to keep pace with modern worlds. Therefore, an effort has been made in this article to show the present situation of the library database management practices and uses of digital resources especially in the Bangladesh Agricultural University (BAU), Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh University of Engineering & Technology (BUET), Dhaka University (DU), and Shahjalal University of Science & Technology (SUST) Libraries of Bangladesh.

Objectives of the Study

The university library has its own aims and objectives 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. This study highlights the meaning, need, main considerations, rational, main components, measure the status of database management system and uses of digital resources in the selected public university libraries of Bangladesh. The objectives of the article are as follows:

- To exploit the information dissemination services including in-house computerized information, available digital resources and network with different similar library resources;
- To develop and maintain an effective database management system;
- To enhance automated library services;
- To subscribe and use digital resources effectively;
- To know the awareness of users about the different services provided by the libraries;
- To identify the problems faced by the readers as well as by the library professionals in harvesting the benefits of library resources and services;
- To adhere international standards.

Methodology

Present study has been undertaken to determine the existing scenarios of database management and uses of online resources in some selected public university libraries in Bangladesh. Survey has been carried out by sending questionnaire and personal visit method. For this purpose, a short questionnaire has been prepared to collect necessary information regarding status of

be digitized or were 'born digital'. Many of these repositories are made available to the public with few restrictions, in accordance with the goals of open access, in contrast to the publication of research in commercial journals, where the publishers often limit access rights. Institutional, truly free, and corporate repositories sometimes referred to as digital libraries (Wikipedia). The past technological developments in recent years, particularly in the area of telecommunications, multimedia, and digital technologies, have significantly changed the way we generate, collect, organize, present, disseminate, share, and use information. It is a collection of documents in digital form that allows users to generate as well as to use information electronically, while to others it is a virtual library on the Internet with all its information available in digital form, unlike traditional library systems, does not reside in a building or at any particular location. It is distributed virtually all over the world, and users can get information, as needed, on their computer screens. In addition to traditional text based information, data accessible through the digital library system could include:

- Non-text information (such as photographs, drawings, illustrations, art etc.)
- Streams of numeric data (such as satellite information, chronological data, meteorological data, etc.)
- Digital sound and moving visual images
- Multidimensional representation of forms (e.g. holograms), and
- The integration of these data into new representation drawn from many different sources (Chowdhury, 1999).

In the digital library, information resources are kept in computer processes form to perform effective functions of acquisition, storage, preservation, retrieval, access and display. To render digital, electronic or online services as per satisfaction of the users need trained professional staff as well as latest configuration of computer for better performance i.e. internet with broadband/Fiber Optics Cable (high speed capacity). Library that contains digital materials using different types of formats such as: .doc (document), .pdf (page description format), .html (hypertext markup language) with professional manpower to render the required services may call digital library. In case of download files from Internet, some files can be viewed directly using html format, other can be in pdf or doc format. There are different types of the materials such as text, data, maps, films etc. but computer readability is important criterion here. A digital library is a collection of documents in organized electronic form stored in Hard Disk or on CD-ROM disks or can be available on the Internet. Using Internet library user may be able to access magazine, journal articles, books, papers, reports, theses, images, sound files, videos, online resources such as online books and journals, free as well as by subscriptions. Some university libraries have begun the task of converting thesis and other resources to electronic format to disseminate on the Internet and in house uses in the library.

Internet Strategy

Internet provides instant access to millions of information sources, which includes books, journals, reports, video films and sound recordings on various topics. Online refers to successful connection with computer server network through telecommunication linkages. Now a days, quality and success of any activity including management, teaching, learning and research depends on effective use of Internet, which enable retrieve, and incorporation of relevant up-to-date information existing in any part of the world. Website can provide useful

and most necessary information for any kind of research. Digital services of libraries are now turning into a centre for providing access to e-resources day by day.

Scenarios of Database Management System and Uses of Digital Resources in the Public University Libraries of Bangladesh

Up to now there are 31 Public Universities in Bangladesh. In every University, there is a library for study and research of its students, teachers and researchers. The application of computer in the library has enormous uses. Computer technology has opened a new dimension for information dissemination from various types of computerized databases and online resources. It has reduced operating cost and time, generated various types of report on library activities, send over due notice to the clients etc. Computer-based information management systems are the need of the day and require the appropriate uses of computer applications for collecting, maintaining, processing, retrieving and disseminating records and search results. Several benefits may be derived from the computerized database management systems, such as:

- Database Management (i.e. Books and Monographs, Serials, Circulation etc. types of databases)
- Communication (i.e. Networking and Resource Sharing)
- Online Searches Using Internet (News Bulletin, News Group, Electronic Journals and Conferences etc.)
- Digital Library (Databases even Books or Journals in text form are found on CD-ROM, MOD, Electronic Books)
- Multimedia (Training, Resources & Educational Materials on Audio & Video Projection)
- Large storage facility and reducing time for searching relevant key field
- Retrieval and Dissemination of Information efficiently and speedily etc. (Chowdhury and Hanif Uddin, 2000).
- Computerization of Library is in the preliminary stages in most of the libraries in Bangladesh. Recently libraries and information centres have become more interest to computerize their operations and services. Here discusses overall status statistics, database services, library resources and present computerization status of 5 selected Public university libraries of Bangladesh.

Bangladesh Agricultural University (BAU) Library: With a view to cater to the information needs of teachers and students as well as extension personnel of the country, the library has been providing various services such as reference services, CAS, SDI, Inter library loan, CD-ROM and online search services from various databases. This library possesses 40 computers, 8 printers, 1 scanner, 30 UPS, 1 Barcode Reader, 10 CCTV, using 19 computers for LAN along with online browsing facilities. It has 1,93,614 volumes of books, 37,724 bound journals, 10,961 theses, 1,639 reports, 1,209 CDs and 1,783 Audio Visual Materials. For database management using CDS/ISIS, WIN/ISIS and in different databases such as Thesis, Cata, Cata®, FAO, WHO etc. total accumulated records are 13147. Its floor area is 66,000 sq ft. The centrally air-conditioned library building has two separate spacious reading corners for students and teachers, and it has audio-visual facilities along with database services. The library has been providing computer search services from CD-ROM & Online Databases.

Electronic journals available to the Bangladesh Agricultural University (BAU) is via the Bangladesh INASP-PERI Consortium (BIPC) can now be accessed through the links from BAU website within the institutional network without any password.

The library is open from 8:00 am to 8:00 pm. From administrative and functional point of view the Bangladesh Agricultural University Library may be organized into seven operational units: i. library office and common services section, ii. acquisition section, iii. technical processing section, iv. readers' services section (with six sub sections e.g. a. stack, b. textbook rental library, c. counter, d. reserve section, e. reference section, f. periodical section), v. audio-visual section, vi. binding and repair section, and vii. seminar library section (UGC Annual Report 2008, Filled up Questionnaire, Website and G. Mostafa and Bandyopadhyay, 2004:p.73-79).

Bangabandhu Sheikh Mujib Medical University (BSMMU) Central Library: This University has a well equipped modern academic library known as "BSMMU Central Library" situated at Block-A (8 Storied building) with 22,000 sq ft floor area comprises 4th and 5th floor located at Shahbagh, Dhaka. The library can accommodate over 750 users at a time in its well-furnished reading area. The library is open from 8:00 am to 10:00 pm. On an average 1,500 doctors, researchers and faculty members/teachers use the library every day. The Library uses Computerized Library Management System for its database management system. It has 23,929 volumes of books on health and allied disciplines, 5,273 volumes of Bound Journals along with 77 local and current 137 foreign periodicals, 2,205 copies of theses, 1011 copies of reports, 336 CDs, 137 Audio-Visual Materials. Recently introduced Digital Library has 17 computers, 3 printers, 2 scanners with internet browsing facilities.

The Library also supports 3,500 online full-text biomedical journal's using HINARI web site, about 1200 different types of journals using AGORA (Access to Global Online Research in Agriculture) online database. This library provides online services from 2007 joined the 'Bangladesh INASP-PERI Consortium (BIPC)' for getting access to journals articles, abstracts and bibliographical information of different publishers on different disciplines using website: www.inasp.info/peri. Bangladesh Academy of Sciences (BAS) is acting as the coordinating body of this consortium in Bangladesh. Through University Local Area Network (LAN) all departments has access (more than 150 connections) with the Central Library. This library is the depository library of the World Health Organization (WHO) Publications. One can obtain library information and browsing database records by using website: www.bsmmu.org.

Bangladesh University of Engineering & Technology (BUET) Library: The library is housed in a 4-storied building of its own having approximately 20,000 sq ft floor space and stands close to the academic buildings. It is a compact library with built in facilities to provide various services to students, teachers and researchers and to perform administrative and technical jobs. Approximately 200 students can use reading facilities at a time. There is also provision for 60 individual study areas for researchers, faculty members and post-graduate students in the first floor and in a broad room sets 40 computers for web browsing. Moreover searching of CDROMs of books, journals, encyclopedia etc. using micro-computers are available in different floors of the library. Members of the faculty are eligible for issuing CDROMs on request. The library collection consists of over 1,40,000 volumes of books, 17,849 volumes of Bound Journals and 218 current periodical subscriptions covering the

subject areas corresponding to the academic programs and activities of the different faculties, centres and institutes. Total no of records in BUETLIB is 78,556. Regarding online database this library is also member of BIPC Consortium and subscribe INASP-PERI for getting access to journals articles/abstracts and bibliographical information.

BUET has already undertaken a programme of computerization of its library activities and services in order to accurately, timely and speedy process of its information materials and to provide right information to the right person at the right time which is the main objectives of the library and information work. Internet search facilities are available in the library to facilitate research and academic activities of students and faculty members.

The library provide the following services to its clients: document delivery, current awareness service (CAS), selective dissemination of information (SDI), referral, literature searches, and response to individual queries, reproduction/photocopying services, interlibrary loans, and lending. Besides, the library has rental library facilities for the student that is unique of its type in the country. It provides all textbooks of foreign origin to the students at a charge of 10% of the original price for an academic year/session.

The library is open on all days except during declared public and weekly holidays and during the annual break. Library Reading Area remain open from Saturday-Wednesday: 9:00 am to 10:00 pm and General Area: 9:00 am to 5:00 pm and on Thursday from 9:00 am to 9:00 pm (Website: www.buet.ac.bd and UGC Annual Report 2008).

Dhaka University (DU) Library: DU Library began with 18,000 books inherited from the libraries of the former Dhaka College and Dhaka Law College. The library is housed in over 1,52,000 sq ft floor area consists of Library Administration Building, Central Library Building, Science Library Building can accommodate over 870 students at a time in its well-furnished reading rooms. The library is open from 8:00 am to 9:00 pm (except Thursday: 8:00 am -5:00 pm and Friday: 3:00 pm – 8:00 pm). On an average, 650 students use the library every day. Currently the library possesses over 6,37,000 books, 300 current and 1,00,000 bound journals, 30,000 rare manuscript with a large number of Tracts (booklets, leaflets, pamphlets, and puthis) has procured and received as donation as hard as well as in microfilm form. In the same way, rare books and reports, puthis, Bengali Tracts and private collection of Buchanan on Bengal have been acquired from the British museum. This Library provides a wide range of scholarly electronic resources to its members, but for licensing reasons, most of them have to be restricted. This Library is also a member of BIPC Consortium and subscribes INASP-PERI journals. It renders photocopying services for its users too.

The authority of the library has taken initiative to computerize the library activities uses GLAS, MySQL, Apache etc. as library management software. Total number of records in DU library along with old and new databases accumulated over 3,01,000. The CDS/ISIS has installed earlier for serials controls and indexing to articles. Internet services to faculty members, research and students have started from December 1998. There is a microfilming unit with a reader, which has inherited from the Atomic Energy Commission since late 1960s. Catalogue of the resources is maintained in card format and can be approached by author, title and subject. There is also an historical 'sheaf catalogue' for older materials (Website: www.du.ac.bd, Questionnaire, UGC Handbook 2009 and Golam Mostafa and Bandyopadhyay, 2004: 50-62p.).

Shahjalal University of Science & Technology (SUST) Library

After a long struggle and movement, the Shahjalal University of Science and Technology was established in 1987 and started academic function in the session of 1990-91. Now the University has 8 faculties and 21 departments. The university has 3 affiliated medical colleges under the School of Medical Science and one affiliated Veterinary College under the School of Life Sciences.

To support the academicians and students SUSL Library was established in 1991 with 4 storied building and total floor area is 29,300 sq ft. The library conducted its function with the following 6 sections: i. Administration, ii. Acquisition & Processing, iii. Reference, iv. Circulation, v. Stack & Reading Room, vi. Computer & E-mail. There are 11 computers and 4 printers to provide better services to its clients. Library Management Software Developed by SUST itself but database of books has not been prepared yet. Computers have Internet search facilities to facilitate research and academic activities of students and faculty members. This library, also subscribe INASP-PERI databases as a member of BIPC Consortium. The Library is open from 8:00 am to 8:00 pm. It comprises 57,600 books, 6,350 bound volumes of journals. (UGC Annual Report 2008, Filled up Questionnaire, and Website).

Public University Library Resources

Library collection is the accumulation of total library materials available in a library. It makes up the strong holdings of a library.

Table 1. Available Study Resources in the Five Selected Public University Libraries of Bangladesh.

Name of University Library	Books	Periodicals (Bound)		Thesis/ Dissertations	Reports	CD/DVDs	AVM	E-Journals/ Online Databases	Expenditure (in Lakh)
		Local	Foreign						
BAUL	1,93,614	37,724		10,961	1,639	1,209	1,783	AGORA , PERI	36.00
		195	35						
BSMMUL	23,929	5,273		2,205	1,011	336	137	PERI, HINARI, AGORA	12.92
		77	135						
BUETL	1,40,000	18,628		774	450	655	180	PERI	115.00
		-	218						
DUL	6,37,000	1,00,000+		1,500	30,000	-	-	PERI	84.00
		140	160						
SUSTL	57,600	6,350		-	-	-	-	PERI	6.00
		5	60						

Source: Filled up Questionnaire, Respective University Website and UGC Annual Report 2008

Above table shows that, all the five Public university libraries have materials in printed forms such as books, current and bound volumes of journals, theses, reports, as well as non printed form of resources such as: Electronic, Audio, Video and CD-ROM materials. In the light of problem being faced by the public university libraries, certain recommendations could be made. Digital library would accelerate the day to day functions of the library and this service enhance the status and increase the importance of library. In future there would be more uses of CD-ROMs and on line access databases.

Hardware Facilities

Computer facilities are of two types such as hardware and software. The libraries are not fully equipped with necessary hardware and software to render effective services to the users.

Table 2. Hardware facilities in the Public University Libraries

✓ = Existing - = Not Existing

Name of University Library	Computer	Printer	Scanner	UPS	Barcode Reader	Speaker/ CCTV/ Web Camera	Internet/ LAN Facility
BAUL	40	08	01	30	1	10	✓ / ✓
BSMMU L	17	03	02	15	01	- / - / 1	✓ / ✓
BUETL	61	08	01	13	04	01 / - / -	✓ / ✓
DUL	52	08	1	52	-	01 / - / -	✓ / ✓
SUSTL	11	04	-	04	-	-	✓ / -

Source: Filled up Questionnaire, Respective University Website and UGC Annual Report 2008

Table 2 shows that all the selected Public university libraries under study have installed micro-computers, printers, scanner, and network facilities. Among the surveyed libraries, BUET University Library has found to have the largest number (61) of computers. On the other hand, other university libraries have necessary computers, printers and library users can use Internet along with online databases in all the libraries.

Software Facilities

Software helps to bring hardware establishment into activation and real use. There is acute shortage of effective software to handle user service and library house-keeping operations.

Table 3. Software used by the Public University Libraries

Name of University Library	Windows XP	MS Office	Software Used	Name of Databases	No of Records
BAUL	✓	✓	CDS/ISIS, WINISIS, MS Office, & others	BAULIS, Thesis, Cata, Cata®, FAO, WHO	13,147

BSMMUL	√	√	MySQL Server, Apache, WINISIS	LMS, Thesis, Issue	7,550
BUETL	√	√	Oracle	BUETLIB	78,556
DUL	√	√	GLAS, MySQL, Apache etc.	DULMS	3,01,000
SUSTL	√	√	Software for Circulation only	Library Management Software Developed by SUST	Database of books has not been prepared. Books are circulated using accession no.

Source: Filled up Questionnaire, Website, UGC Annual Report 2008

The software facilities available in five libraries are presented in Table 3. It shows that all the above university libraries have acquired CDS/ISIS as the first library package now most of the libraries switch over to self developed software databases in their libraries. It shows that almost all the surveyed university libraries have acquired software. All these libraries have started automation by creating bibliographic databases. Still these libraries are facing problems for creating database of books other than English language. Therefore, multilingual facility in the library software is most important for university libraries.

Uses & House-keeping Operations of Computer in the five Public University Libraries of Bangladesh

Computer application in five university libraries can be divided into three types of functions i.e. Housekeeping operation, Retrieval services and administration/ management.

Table 4. Analysis of Computer used in the housekeeping operations of Public University Libraries of Bangladesh.

√ = Existing - = Not Existing

Name of Uni. Libraries	Adminis -trative Works	Acqui -sition	Cata -loging/ Classi -cation	Serial Control	Circu -lation	SDI/ CAS	Index -ing/ Abst -racting	Litera -ture Search	E-Mail/ Internet	LAN/ WEB	Number of Operation
BAUL	√	√	√	√	√	√	√	√	√	√	10
BSMMU L	√	√	√	√	-	√	-	√	√	√	08
BUET L	√	√	√	-	√	-	-	√	√	√	07
DUL	√	√	√	√	√	-	-	√	√	√	08
SUSTL	√	√	√	-	-	√	-	√	√	√	07

Among the surveyed libraries, statistics shows that no library could perform all activities by using computer except BAUL. All the above libraries have been using computers in

administrative works, acquisition, cataloguing, literature search, e-mail and internet browsing. All the libraries are using LAN. Among five surveyed libraries only three libraries have been applying computers in serial control and SDI services.

Constraints in Library Database Management Systems in the five public university libraries of Bangladesh

Human resources are the most primary and most crucial factors in determining the quality level of a library. Most of the libraries are still under the influence of scientific management, which gives more importance to manage and disseminate its resources for all purposes. Moreover, lack of staff developments programs and resistance to change in library staff are the by products of hierarchical, bureaucratic, rigid, static and seniority based system of university libraries. On the other hand, among the five universities, BSMMU has no separate library building. Other university libraries are attached to the university main building. Some libraries from space problems. Inadequate Improper training facility in library automation, routine work and collection development of libraries are being affected adversely. The constraints can be summarized as follows:

- Lack of necessary computer hardware and software.
- Inadequate data structure, computer application and telecommunication infrastructure.
- Lack of skilled manpower for developing technology based information system.
- Absence of advanced training facilities for library professionals.
- Lack of awareness about the importance of research and hence lack of interest in studying in library.
- Insufficient budget for library and no frame work for initiative and timely promotion of library stuffs.
- Lack of maintenance and computer servicing policy etc.
- Lack of adequate library and information service facilities. The Poor information delivery system often causes duplication of research studies resulting in unnecessary expenditure of time and energy of researchers (Jasim Uddin, 2004: 33-34).

Major Findings and Recommendations

Before the independence (1971) there were only 6 public universities established in the country. The prime necessity for a university is a good library with a balanced and adequate collection, which can satisfy the needs of the university faculties and help to promote advanced study and research programs. A university is rated largely by its strength of library. No university can develop effective work, in the academic sense, without a strong library at its center.

The study reveals that library computerization and implementation of databases for information storage and dissemination started in almost every library, though in some libraries it is yet in the initial stage. For research work, literature search is one of the important tasks. The researcher can get resource materials information easily if properly documented in the databases. The researchers, who can operate library databases, will find no problem in searching and locating relevant information. It is observed that all surveyed university libraries of Bangladesh are now using databases for information dissemination and retrieval purposes.

It is also seen that all the surveyed libraries use PERI online database as a consortium member by giving annual subscription through Bangladesh Academy of Science (BAS). In case of using PERI only access point is through publishers. Like HINARI and AGORA online resource databases list of PERI journals should be arranged alphabetically at least according to title and subject-wise for better and user-friendly use.

Many libraries cannot afford to keep a print version of a title mostly because of the high price. This type of Consortia arrangement can help us using online resources like surveyed libraries incorporating University Grants Commission of Bangladesh (UGC) for rest of the university and research libraries of Bangladesh. Here is a good news that UGC has taken initiatives and arranged funds from World Bank to provide these supports.

The survey findings indicate that, because of limited bandwidth, the users have to wait for a long time to get their desired search results. For this reason sometimes users lost their interest. One of the essential prerequisites for the creation and development of indigenous database is the availability of a large number of trained information professionals. It is therefore, necessary to organize intensive practical training programs for these categories of personnel. Standardization plays a vital role in effective usage of Bibliographic database. Standards are also necessary for overall co-operative endeavors with continuous necessary update. That is why libraries to organize user orientation programs regularly, for the proper use of libraries resources.

Conclusion

To be successful in the present century, libraries have to be more proactive and more customer service oriented. The complex challenges of the next ten to twenty years require creative leadership, drawing the best from both library leaders and followers in order to meet the demands of their situations and achieve goals. It is time to reevaluate service models that have functioned for years. We should attempt to reestablish standard criteria or benchmarks that are considered to be basic to quality library service. The university authorities should give more attention to automate library functions properly.

To make the library a paradise for researchers, there must be liberal provision of books of all categories and adequate funds for the maintenance of stock. To retrieve data or information quickly without wasting time; computer has no alternative. So, we should convince our authorities to allocate sufficient budget for library automation and computerization. To render speedy and prompt services to the clients, without any delay we should provide automation services in the library. Online and library databases in the field of research has become essential and we must develop information services by applying current information technology, for which conscious effort is necessary. The administrator concerned must have first hand interest in computer assistance, without which no library can develop and discharge its efficient services. (Chowdhury, LAB Souvenir, 2006)

To build up a uniform database management system, information professionals must be equipped with a wide range of new electronic/digital information environment. The successful use of digital resources depends on satisfactory use by the library clients. For this needs conducting user orientation course regular basis. These are the challenges before us, to promote a unique information system, to ensure latest facilities to the users for the development of the library and as well as the nation. If the library professionals become capable of improving existing mode of library services, the image of the library as well as

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library professionals will definitely grow up. To render speedy and prompt services to the users, without any delay we should provide emphasis on the availability of the electronic resources in the library.

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