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STATUS OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) IN SOME SELECTED UNIVERSITY LIBRARIES AND SPECIAL LIBRARIES OF ASSAM: A COMPARATIVE STUDY

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STATUS OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) IN SOME SELECTED UNIVERSITY LIBRARIES AND SPECIAL LIBRARIES OF ASSAM: A COMPARATIVE STUDY

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Abstract: The aim of this paper is to show the status of information communication technology (ICT) application in some selected University libraries and Special Libraries of Assam. The paper focuses on the application of ICT and the ICT based services to the libraries. This paper discusses about different ICT tools and their use in the library operations, how the library services are developed with the use ICT have discoursed in the study. The present study discusses various library operations using ICT. The purpose of this study is to express the usefulness of the different ICT tools and techniques for making the access of information quicker and accurate to the user community as well as efficient management of the systems and services of the library.

Keywords: *Information communication technology (ICT), University library, Special Library, Assam.*

Introduction

Library is the essential center for any academic setting. Libraries supplement the instructional work of classrooms and carry forward the ideals of education thus real education can only be achieved through the libraries. Dr. S. Radhakrishnan, Chairman of University Education Commission (1949) described the role of university library as “the library is the heart of all university’s work, directly so as regards its research work, and indirectly as regards its educational work, which derives its life from research work. Scientific research needs a library as well as laboratories, while for humanities research the library is both library and laboratory.” Information communication technology (ICT) entered into libraries, especially academic and research during the 1960s. ICT is applied into the libraries to speed up their daily activities and reduce work pressure and operating costs too. ICT helps in merging the activities of library and increase efficiency and enables users to access information from remote areas in a very easy and

quick way. The University is the pivot in the process of higher education and library is the core of the university. University library occupies the central and primary place in teaching, research, and transmission of learning and creation of new knowledge. As such, it has to provide facilities not only for teaching and research but also for education, coursework and the study of research fields.

Modern University libraries provide a large array of services using ICT. Almost all traditional services i.e. Lending, Reprographic, Reference, CAS, Abstracting & Indexing, has been transformed to ICT platform. With the application of ICT in day to day works of library the work of library staff becomes easier.

The users of traditional libraries have spent more time for searching the required documents or information and they have to depend on the library staff. In the age of ICT, the computers are being used for day today housekeeping activity of the library. It also helps to save the time of the readers as well as library staff and avoid duplication of work and extending the library service effective and smooth.

Over the past four centuries the transfer of information has been affected primarily through the printed word. Application of ICT for information transfer leads to the development of a highly structured and complex system for the production and distribution of information. This lead to an innovative media that superseded structured system of print and publication.

In the present context of globalization, all the special libraries should have easy access to information. Information is essential for any industrial organization so that they can develop themselves and they can actively contribute more to the national economy. So, applications of ICT in libraries have become the most important issues now. The reliable, accurate and up-to-date information should be provided by the special libraries and information centers.

The use of computers for library operations saves time in routine jobs' thereby reduces pressure on staff and also saves considerable amount of time of users. It also speeds up technical processing and information services. ICT has been a means to bring quality services. Systematic planning of its introduction and application will assure that the technology based information services are unsustainable, and enhance the ability of library. The special libraries in Indian setup have been preparing themselves on a corporate basis for a platform of ICT based information services. The internet has transformed the ways and means of information services. Breaking the

distance barrier, internet has emerged as a boon to the information seekers as well as libraries. It has become popular, easy to use and inexpensive teaching and search tool.

During the last decade the discussion about changes in special libraries focuses most frequently on the automation of the library mainly information and communication technology (ICT) developments, the implications of ICT in digital format, new learning and teaching concepts and the new economic models, legal frameworks, etc. Resources continue to spring up. Librarians are becoming indispensable counselors in themselves. The growth of library is synonymously associated with the size of the library which has a great impact in the libraries in the ICT environment. The emerging Information Communication Technologies (ICT) has brought many changes in the libraries. These technologies have facilitated LIS professionals to work together to acquire, share and provide better services to the user community. As a result, ICT is gaining increased attention in the library service. Library services in general and a reference and information service in particular refers to be personal assistance provided to users in pursuit of information.

There is a great impact of ICT on the functioning of all types of libraries. There are various prospects in the application of ICT in library activities to provide pinpointed, exhaustive and expeditious information flow from within and outside sources to the users in anticipation or on demand. It has become imperative to have an understanding of the prospects of application of ICT in the libraries. By the application of ICT in the process of library work, the job of the library staff becomes easy, interesting and pleasurable.

Scope of the study

The study is confined to the state of Assam. The scope of the study is limited to five University libraries and five Special libraries of Assam.

Objectives

The main objectives of the study are as follows:

- To find out the status of use of ICT application in both university libraries and special libraries of Assam.
- To suggest the measures for improvement of services, facilities, information resources to

meet the needs of users.

Methodology

Following methodologies have been adapted to collected data and necessary information for the study. These are:

- By providing Questionnaire;
- By observing the in-house library activities and operations;
- Through interview of the library personnel and
- Using e-mail or telephone.

In order to collect the required information and data an organized questionnaire was designed and distributed to the selected libraries.

Present status of University Library and Special library in Assam

University Library:

A university library plays a significant role in instructional programs of an academic institution as well as some amount of research work. There is obviously a holistic relationship between the objectives of the library and those of the institution of which it is a part. In building up the resources of a university library, collection development determines the quality of its services. In any university library the services cannot be better than its collection. The use of the services of a university library is circumscribed by the nature and scope of the collection which should be related to the needs of the student and the faculty. The library should define its book acquisition policy and programs responsive to the need of the potential users.

Universities are imparting formal education within a particular geographical jurisdiction through structured curricular program pertinent to different subjects. It is an institution with teaching learning facilities leading the degrees and diplomas at various academic levels. The University has been described by Karl Jasper (1883) as “a community of scholars and student engaged in the task of seeking truth” (Jayanthi, 2014, p.2).

A university library is considered as an important and integral component of any high quality research institution. Information needs and expectations of library user are continuously changing in the rapidly changing information scenario. University libraries of Assam need to re-orient their collections, services and facilities to keep pace with these advancements. A shift to a user – oriented approach is quite evident from the recent library evaluation studies. User feedback is considered as a more reliable factor in measuring the utility and effectiveness of any library collection development.

In the recent years significant developments have been taken place in library and information services and the university libraries are shouldering newer responsibilities in higher education. As higher education in Assam has evolved in recent decades, university libraries also have forged pathways to serve faculty and students more effectively. University libraries have been adopting digital technologies and showing leadership and training.

Special Library:

Libraries which came to an existence in ancient and medieval period were built up in a disordered way though they hold very huge and rich collection of royal reports, letters, manuscripts, etc. this culture is maintained in Namgharas, Satras and some other sacred institution or organizations of Assam, but in few number. So the British paved the structure of the special libraries in Assam in the 2nd decade of the 20th century on the basis of western model.

Meanwhile the British administration in Assam has created departments among which the P.W.D. came first in 1868. Creation of Local Board (1880) was another contribution of the British in their administration. Gradually they introduced the western education in Assam. In this respect the Christian Missionaries took the leading part in the spreading of western education in Assam. The American Baptist-Missionary established at least 14 schools at Sivasagar in 1844 and created a revolutionary age of “Arunoday” by publishing a weekly paper in Assamese the first of its kind. In the beginning of the 20th century, the establishment of the cotton college (1901), the Earl Law College and the Barie white Medical school were the significant venture in the line. The students educated from these institutions felt the need of libraries. So, the “Assam Student Association” established in 1916 came forward to set up some rural libraries in the 2nd and 3rd decades of the 20th century which later on evolved the public libraries during 1950-60’s. Along with the growth of educational institutions in different parts of these institutions had to be

established on the recommendation of Radha Krishnan education Commission (1948) and Kothari Commission (1966). The needs were not confined to these libraries but emphasized on *special libraries* due to the growth of tea industries, new land revenue policies, cultural preservation, administrative policies and other diverse fields of research activities. Consequently the Toklai research Centre (1911), the Assam research society (1912), the Assam survey and settlement training Centre (1913), the Assam legislative council (1926), the Department of historical and antiquarian studies in Assam (1928) had set up libraries to cater to the needs of the users. The demands became more effective after the World War I and II.

The world wars I and II had disturbed the commercial policies in Assam. Yet the war accelerated the process of the industrial development backed by the scientific and technological researches especially in the tea-industries, oil and natural gas commission, transport communications and military activities with administrative units. Though the growth and development of the special libraries were very slow during this period, yet this process helped the organizations to set up more special libraries after independence.

With the development of different institutions, organizations, departments, learned bodies/associations etc. the special libraries in Assam have occupied an important position in the dissemination of knowledge and information. Just after independence, the establishment of Gauhati University (1948), the Gauhati high court (1948), the All India Radio (1948), the Engineering College at Guwahati, the Medical College at Dibrugarh etc. had increased the necessity of these libraries in their relevant fields. Gradually the necessity was expanded to other fields with the plan and program of 1952. Consequently Small Industries Service institute (1959), Ramie research station (1960), North East Institute of Science & Technology (earlier known as Regional research/laboratory) (1961), Assam Productivity Council (1962), Assam industrial development corporation Ltd. (1965), Defense research laboratory (1965), Oil and Natural Gas Commission (1968) and Forensic science laboratory (1969) set up libraries before the beginning of the seventh decade of the present century. This growth has impacts on different research institutes, revenue boards, financial corporations, ASIDC, NISIET (NOWIIE), Associated industries, Lalit Kala Academy, geology, archives etc. till the last decade of the present century. Moreover the introduction of library science to the Gauhati University in 1966 is the main agency to realize the position and need based demand.

ICT based services and its impact on the selected libraries

Information and Communication Technology (ICT) have brought significant changes to our day to day life. Today we are living in the information age. Information plays an important role in economic and social development of our society. The amount of valued literature is being published at a greater pace. So, applications of ICT in libraries have become the most important issues now. The university libraries and special libraries in Indian setup have been preparing themselves on a corporate basis; a platform for ICT based information services. The internet has transformed the ways and means of information services. Breaking the distance barrier, internet has emerged as a boon to the information seekers as well as libraries. It has become popular, easy to use and inexpensive teaching and search tool.

ICT has impacted on every sphere of the library activity especially in the form of the library collection development strategies, library building and consortia. ICT presents an opportunity to provide value-added information services and access to a wide variety of digital based information resources to their clients. Furthermore, libraries are also using modern ICTs to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, implement management information systems, develop institutional repositories of digital local contents, and digital libraries: and initiate ICT based capacity building programs for library users.

Information and Communication Technology has brought unprecedented changes and transformation to libraries and information services, conventional services such as OPAC, users services, reference services, bibliographic services, current awareness services, document delivery, inter library loan, audio visual services and customer relations can be provided more efficiently and effectively using ICT, as they offer convenient time, place, cost effectiveness, faster and most-up-to-date dissemination and end users involvement in the library and information services process. The impact of ICT characterized on information services by changes in format, contents and method of production delivery of information products. Emergence of internet as the largest repository of information and knowledge, changed the role of library and information science professionals from intermediary to facilitator, new tools for dissemination of information and shift from physical to virtual services environment and

extinction of some conventional information services and emergence of new and innovational web based services.

Following are some of the services provided through ICT in the libraries:

Document delivery services: Through this service, library delivers copies of journal articles and book chapters from participating libraries.

Inter library loan: It is a cooperative arrangement among libraries by which one library may borrow materials from another library.

Indexing and abstracting services: It is a method which is used to retrieve information from a table in memory or a file on a direct access store or the art of compiling an index. The preparation of abstracts, usually in a limited field, by an individual, an industrial organization, and these are being published and supplied regularly to subscribers.

Chat services: Online chat may refer any kind of communication over the internet. Online chat may address as well point to point communication as well as multicast communications from one sender to many receivers.

CAS: The purpose of the current awareness services to inform the users about new acquisition in their libraries. For this display boards and shelves are used. Some libraries produce complete or selective lists for circulation to patrons.

SDI: SDI refers to tools and resources used to keep a user informed of new resources on specified topics.

Scanned Copies: A scanning service for material not available electronically, which is held by the library. This includes articles from journals and chapters from books.

Bulletin board services: It is a computer system running software that allows users to connect and login to the system using a terminal. Once logged in, a user can perform functions such as uploading and downloading software and data, reading news and bulletins and exchanging messages with other users.

Electronic services and E-resources: these are mainly CD_ROM, OPACs, E-journals,E-books, ETD and internet which are replacing the print media. These are found to be less expensive and more useful for easy access.

Digital Library: A digital library in which collections are stored in digital formats and accessible by computers. Digital contents may be stored locally, or accessed remotely via computer networks.

Electronic mail (E-mail): This medium can also be used to send and receive mails. This is commonly and widely used with the internet facilities. E-mail is useful for sending messages to and from remote areas with enhanced network. Further, it is also useful in various aspects of library environment. Thus, it may be stated that e-mail may play a significant role in information dissemination services.

Fax (facsimile transmission/ Tele fax): Fax, sometimes called as telecopying or telefax, is the telephonic transmission of scanned printed material. It is used in some libraries for delivery of documents and other academic communications. It is a method of converting an image into electronic signals that can be transmitted over a communication link and converted back into an image at the receiving end.

Institutional repositories: An institutional repository is an online archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution. For a library, this includes materials such as journal articles, both before (preprints) and after (post prints) undergoing peer review, as well as digital versions of theses and dissertations.

Library management software package: Software consists of the step-by-step instructions that tell the computer what to do. In all types of libraries, the most common computer software used is library automation software, database management software, antivirus software and application software. Many software packages for various applications in the field of library & information services and management are CDS/ISIS, SOUL, LIBSYS, KOHA etc. used for automation purposes.

Library retrieval systems: This involves using Compact Disc Read Only Memory (CDROM) technological mechanism of acquisition of specialized CD-ROM databases in various courses such as sciences, law, technology, agriculture, social sciences, medicine, humanities etc. They are available commercially.

Library website: A library website provides a library with the functioning of the website to make aware its community about its services. In most of the library website online catalogue is included. A library web page or Universal Resource Locator (URL) facilitates single window access to various web enabled library services.

Micrographic & reprographic technology: These technologies are still widely used technology in libraries globally. Most of the research libraries have reprographic machine and provide photocopies of any document on demand. Microform is a generic term for all information carriers which use microfilm or similar optical media (including study) for the high-density recording and storage of optically encoded information in the form of micro images of printed document, bit patterns or holograms.

Networked electronic information resources: Networked electronic information resources are new vision of information of the future. These are the mainstay and life blood of present day information centers. Libraries are providing their users with access to networked information resources, i.e. databases, electronic scholarly journals, encyclopedias, public government information, etc., provided by various publishers or suppliers.

Networking technology: The important function of network is to interconnect computers and other communication devices so that data can be transferred from one location to another instantly. Networks allow many users to share a common pathway and communicate with each other. The networks include the local area network (LAN) in library housekeeping and resource sharing and wide area network (WAN) that covers wide geographic area such as a country or state, that covers limited geographic area such as campus, or building e.g. - DELNET, INDONET, INFLIBNET, MALIBNET, NICNET, ADINET etc. are major WAN in India.

NPTEL services: NPTEL provides E-learning through online Web and Video courses in Engineering, Science and Humanities streams. The mission of NPTEL is to enhance the quality of engineering education in the country by providing free online courseware.

Online full text service: A full-text database is a compilation of documents or other information in the form of a database in which the complete text of each referenced document is available for online viewing, printing, or downloading. Libraries are also implementing online based bibliographic or library use programs. These include online tutorials on searching online resources and virtual tours of library collections.

Online public access catalogue (OPAC): It is the computer form of library catalogue to access materials in the library. OPAC is an online database of materials confined by a library or group of libraries. It is a computerized library catalog available to the public. Most OPACs are accessible over the Internet to users all over the world. Libraries are implementing Web based versions of readers' advisory services and reference services. It helps to find the right information/reading material for the right person at the right time and provide the best information that matches their needs, interests, and reading level.

Open source software (OSS): Open Source Software or the OSS is freely available computer software, which allows altering the source code and customizing the software to anyone & for any purpose. In the last few years we have seen the development of a number of ILS products in the open source world such as Integrated Library Systems (ILSs) like Koha; Digital library software, like Greenstone; Digital Repository Software, like DSpace; Content Management Software, like Moodle, etc.

Printing technology: A printer is a device that converts computer output in to printed images. There are a number of different kinds of printers used in library such as Dot Matrix Printers, Laser printer, Inkjet, Bubble-Jet etc.

RFID Technology: RFID (Radio Frequency Identification) is the latest technology being used in modern libraries to prevent theft the library materials. Radio frequency identification is a term used for technologies utilizing radio waves for identifying individual items automatically. It is a fastest, easiest, most efficient way to track, locate & manage library materials and being used in the libraries for automatic check-in and check-out circulation process and also in stock management. It is an emerging, more effective, convenient, and cost efficient technology in library automation and security. RFID is used very similar to bar codes. Developments in RFID

technology continue to yield larger memory capacities, wider reading ranges, and faster processing.

Smart card for member identification: A Smart Card is a polyvinyl plastic card (like a regular credit card) with an embedded chip on which data is stored. Smart cards can provide identification, authentication, data storage and application processing. Smart card readers are used to read smart cards. It can store multi applications and can be used for services like electronic purse/ debit card/ credit card/ health/ insurance/ loyalty etc.

Storage technology: Optical disc storage technology is the most recent computer technology to enter the library community. CD ROM developed in 1985 has ability to represent various media such as text, graphics and animation, video clips and sound files into a digital environment. Digital video disk or digital versatile disk (DVD) is the next generation of CD. The main feature of DVD is the compression technology and storing data on multi-layer 24 sides, stores 17 GB data is currently the only credible true multimedia format.

Tele Text services: Tele text is a television information retrieval service developed in the United Kingdom in the early 1970s. It offers a range of text-based information, typically including national, international and sporting news, weather and TV schedules. Tele text information is broadcast in the vertical blanking interval between image frames in a broadcast television signal.

Teleconferencing: Teleconferencing is a generic term that denotes the combined use of telecommunications and electronic technologies as an alternative to in-person meetings.

Video conferencing: Videoconferencing is a method of holding conferences by transmitting and data communication networks, so that participants can both see and hear each other. It is convenient and less expensive for conducting a conference between two or more participants situated at different remote locations.

Videotext services: Videotext is a newer technology, but as in the online information retrieval, the information is stored in computer files and accessed through a telecommunication link. Videotext is any system that provides interactive content and displays it on a visual device, typically using modems to send data in both directions.

Voice mail: Also known as voice mail, voice message or voice bank is a computer based system that allows users and subscribers to exchange personal voice messages. Voice mail acts like a telephone machine that digitizes the incoming voice message and store for retrieval later. It is an alternative system of e-mail.

Web technology: The World Wide Web was developed in 1989 by Tim Berner Lee and by 1995 web has expanded to global proportions. The World Wide Web (WWW) is a client server based, distributed hypertext, and multimedia information system on the Internet.

Data Analysis:

Collected data are tabulated and analyzed for comparison.

Selected University/ Institute libraries for the study:

The study is confined to total ten (10) libraries of all over Assam. Among them five are University libraries and rests five are Special libraries. The study has been delimited to the application and use of ICT services in the particular area of some selected University libraries and Special libraries of Assam. A systematic survey has been conducted and collected different information and data related to the effectiveness of ICT application towards the development of library services. Data are organized in a tabular form and analyzed below. In the tabular form, institution names were abbreviated for convenience.

Table 1 given below shows the selected institutions for this present study. It used some short form like AU, TU, GU, DU, AAU, IASST, TISS, IIBM, DHAS and NEIST denotes Assam University, Tezpur University, Gauhati University, Dibrugarh University, Assam Agricultural University, The Institute of Advanced Study in Science & Technology, Tata Institute of Social Science, Indian Institute of Bank Management, Department of Historical & Antiquarian Studies and North East Institute of Science & Technology respectively.

Table 1: Selected University/ Institute libraries for the study			
Sl. No	Name of the University/ Institute	Place	Year of Establishment
1	Assam University	Silchar	1994
2	Tezpur University	Tezpur	1994

3	Assam Agricultural University	Jorhat	1969
4	Dibrugarh University	Dibrugarh	1965
5	Gauhati University	Guwahati	1948
6	The Institute of Advanced Study in Science & Technology (IASST)	Guwahati	1979
7	Tata Institute of Social Science (TISS)	Guwahati	2012
8	Indian Institute of Bank Management (IIBM)	Guwahati	1982
9	Department of Historical & Antiquarian Studies (DHAS)	Guwahati	1928
10	North East Institute of Science & Technology (NEIST)	Jorhat	1961

General information about the library:

Table 2: General information about the library

University/ Institute	Name of the librarian	Librarians gender	Total staff	Total collection	Separate library building
AU	Dr. Arun Kumar Sarma	Male	22	128449	Yes
TU	Dr. MukeshSaikia	Male	18	86004	Yes
GU	Mr. W. S. D. Nath	Male	50	271861	Yes
DU	Dr. Utpal Das	Male	38	231226	Yes
AAU	Dr. P. Talukdar	Male	16	175000	Yes
IASST	Dr. Tarini Dev Goswami (Asst.)	Male	5	34600	No
TISS	Dr. Satish Kanamadi	Male	6	9704	No
IIBM	Dr. Rupali Sharma (Asst.)	Female	2	10900	No
DHAS	Pradip Kr. Choudhury	Male	4	85303	Yes
NEIST	Prodip Hazarika	Male	NA	23000	No

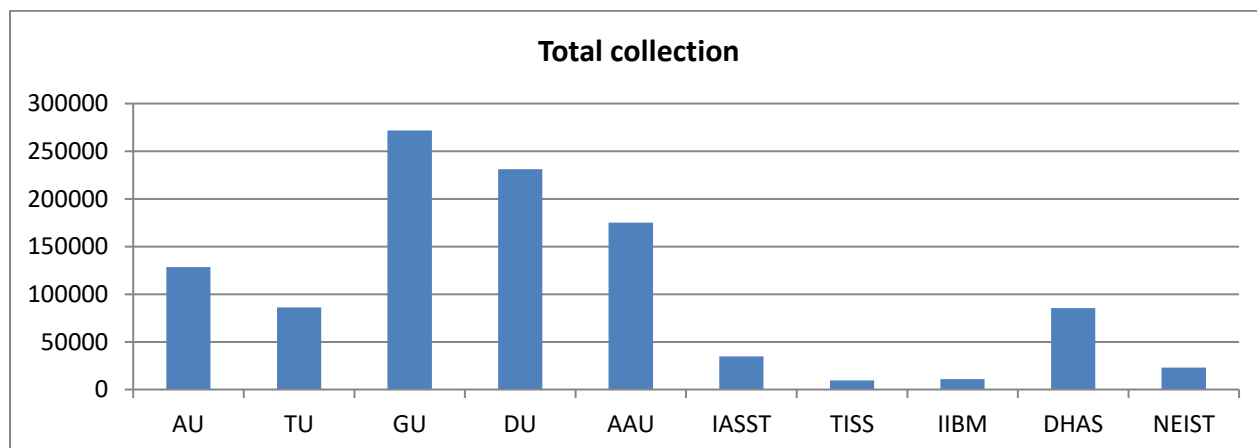


Figure 1 Total collection

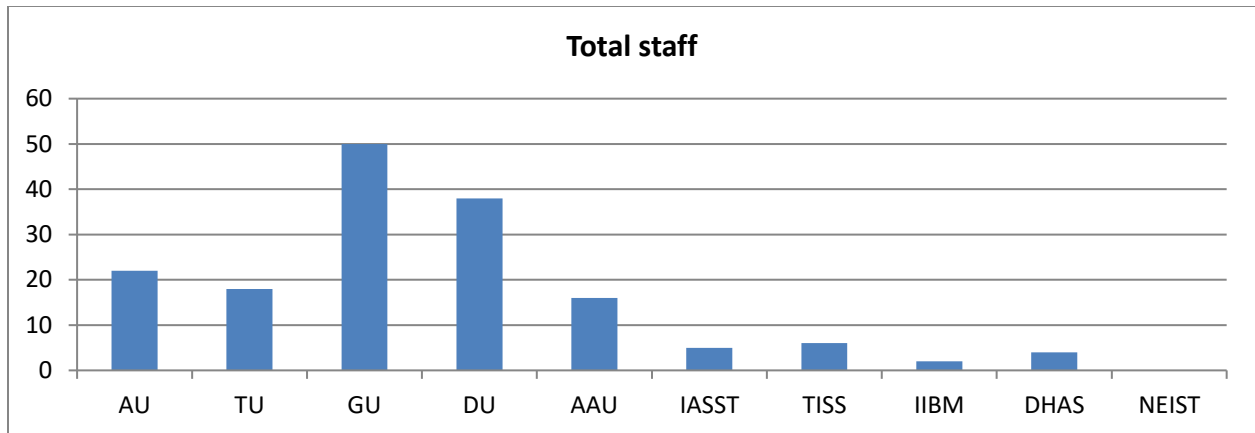


Figure 2 Total staff

It is seen that all the librarians under the study is male except IIBM library. Gauhati University library has highest number of staff and lowest number of staff is found with DHAS Library. Highest Collection found with Gauhati University is 271861 and lowest collection found with TISS Library is 9704. 60% libraries of the study are having separate building for library and 40% do not have, they are Knowledge Resource Centre (IASST), TISS Library, IIBM Library. KRC of NEIST is found to be suffering from poor staff strength due to lack of appointment of staff in various positions vacated due to superannuation of staff in last decade.

Library governance:

University/Institute	AU	TU	GU	DU	AAU	IASST	TISS	IIBM	DHAS	NEIST
Library committee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Frequency of Committee meeting	NA	Six Month	Six Month	Six Month	One year	As per requirement	Monthly	Quarterly	NA	Monthly

It is seen that 90% libraries have their library committee and they conduct meetings frequently for library development and management. 10% library do not have its library committee.

Library Services:

No. of Libraries	CAS	SDI	ILL	OPAC	Reprographic	Circulation	Bibliographic	Documentation	Internet	Indexing/Abstracting	Lending	
University Libraries	5	5	1	4	5	4	5	3	4	5	3	5
		100%	20%	80%	100%	80%	100%	60%	80%	100%	60%	100%
Special Libraries	5	3	4	2	2	3	4	4	3	3	2	1
		60%	80%	40%	40%	60%	80%	80%	60%	60%	40%	20%

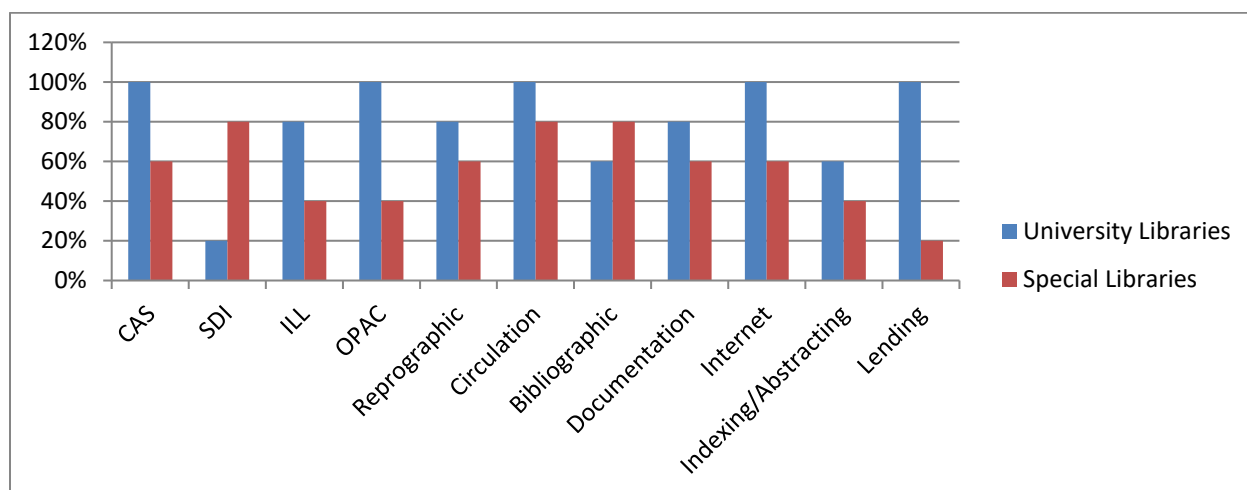


Figure 3 Library Services

It is seen that five out of five i.e. 100% among the university libraries have their library services like CAS, OPAC, Circulation, Internet and Lending on the other hand 80% libraries among the special libraries have SDI, Circulation, Bibliographic services.

Library Budget:

Library	Budget
AU	NA
TU	587.09
GU	979.72
DU	266.45
AAU	574
IASST	130

TISS	NA
IIBM	15.9
DHAS	7
NEIST	780

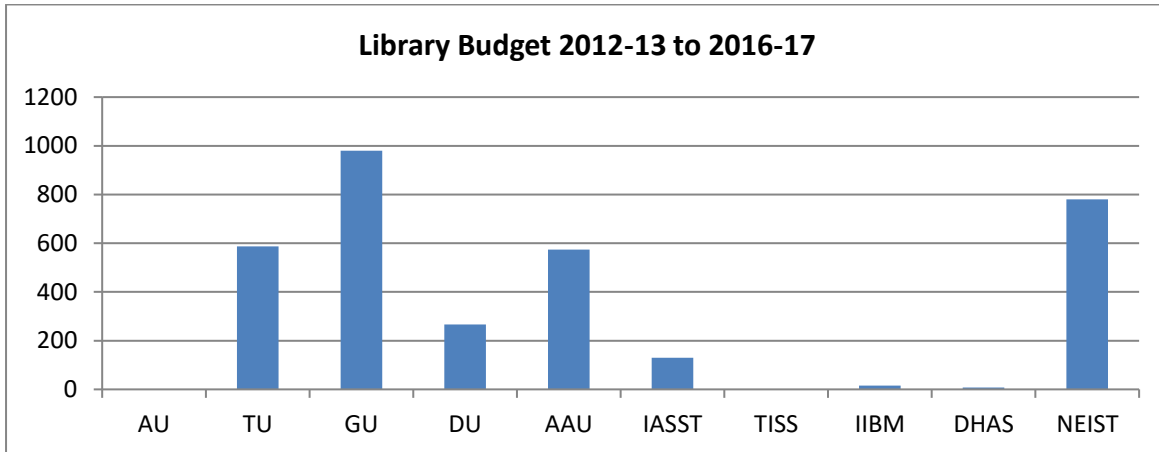


Figure 4 Library Budget

It is seen that highest budget is found with Gauhati University followed by NEIST and lowest budget found with DHAS.

Year wise collection of books:

Table 6: Total addition of printed books from 2012-2017	
Library	Printed Books
AU	NA
TU	27335
GU	9388
DU	9788
AAU	NA
IASST	13552
TISS	6800
IIBM	1273
DHAS	20680
NEIST	764

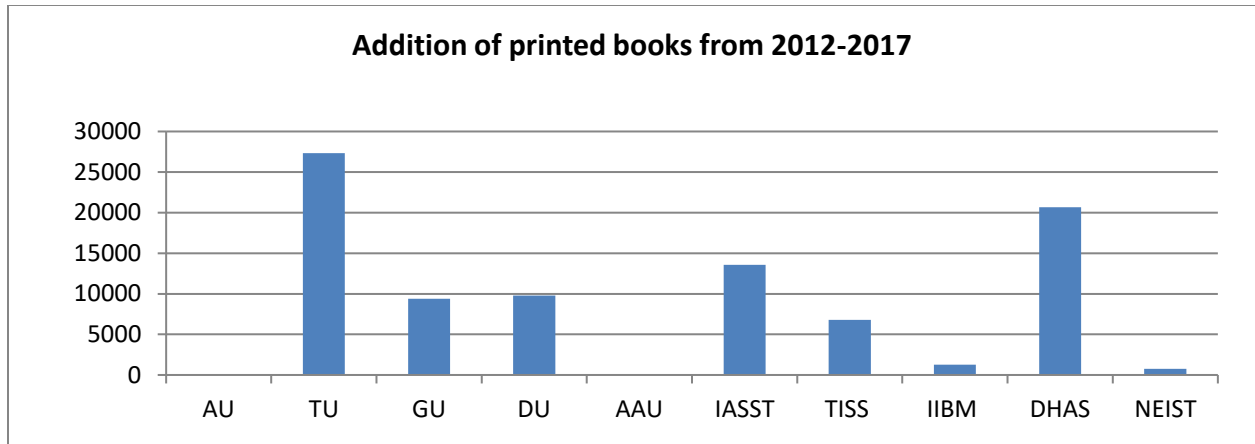


Figure 5 Addition of printed books from 2012-2017

It is seen that total addition of printed books from 2012-2017 is highest in Tezpur University followed by DHAS and lowest with NEIST.

Collection of Journals in current list of subscription:

Table 7: Collection of Journals from 2012-2017		
Library	Print Journals	E-Journals
AU	268	16000
TU	177	10600
GU	352	48000
DU	143	10500
AAU	50	5000
IASST	45	700
TISS	40	10000
IIBM	59	Nil
DHAS	700	Nil
NEIST	NA	NA

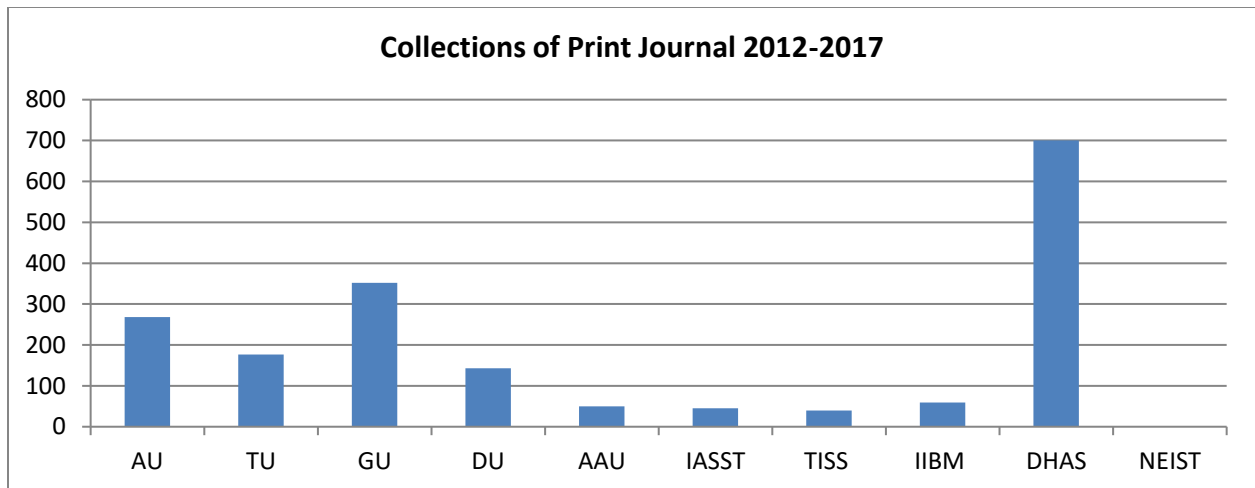


Figure 6 Collections of Print Journal 2012-2017

It is seen that highest collection of print journal is having with DHAS followed by Gauhati University and lowest with TISS.

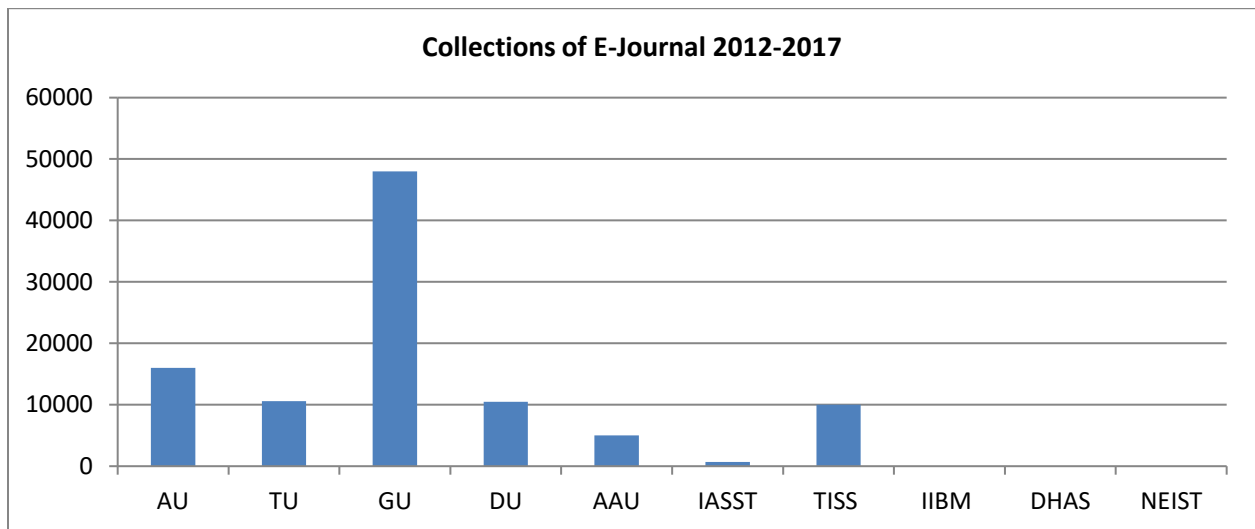


Figure 7 Collections of E-Journal 2012-2017

Highest collection of E- journal found with Gauhati University followed by Assam University and lowest with ISSAT.

Library organization and Technical Operations:

Table 8: Technical Operations				
Name of the libraries	Software used for library Automation	Classification Scheme	Cataloguing Code	Access System
AU	KOHA& D Space	DDC	NA	Open access
TU	LIBSYS& D Space	DDC	AACR II	Open access
GU	SOUL& D Space	DDC	MARC	Open access
DU	SOUL& D Space	DDC	AACR II	Open access
AAU	KOHA& D Space	DDC	MARC	Open access
IASST	SOUL &D Space	DDC 23rd	AACR II	Semi access
TISS	KOHA	DDC 23rd	AACR II	Semi access
IIBM	CDS/ISIS	DDC 19th	AACR II	Open access
DHAS	SOUL 2.0	DDC 19th	AACR II	Open access
NEIST	KOHA	UDC 2015	AACR I, AACR II & CCC	Semi access

It is seen that 40% libraries of the study use KOHA, 10% libraries using LIBSYS, 40% libraries using SOUL and 10% libraries using CDS/ISIS as library automation software for library organization. 60% libraries are using D Space to manage digital collections. 90% libraries are using DDC to classify the library materials, 10% library using UDC for library classification. AACR II is using as cataloguing code by 70% libraries, MARC is using by 20% libraries. 70% libraries under the study is open access and 30% libraries are semi access system.

Digital Library of E-Collection:

Table 9: Digital Library of E-Collection	
Name of the libraries	Digital Collection
AU	No
TU	Yes
GU	Yes
DU	No
AAU	Yes
IASST	Yes
TISS	Yes
IIBM	No
DHAS	No
NEIST	Yes

It is seen that 60% libraries have their digital library of e-collection and other 40% libraries do not have.

About Consortium:

It is seen that due to the ever increasing cost of resources from the beginning of 21st century the concept of consortium have come into existence. In India there are various consortium being run successfully by different organizations. Some of them are furnish bellow-

- UGC INFONET e-Journal consortium.
- UGC INDEST Consortium.
- CERA (Consortium of Electronic Resources in Agriculture)
- DELCON
- DELNET
- E- Shodhshindu etc.
- Council for Scientific and Industrial Research (CSIR) e-journal.
- FORSA (The Forum for Resource Sharing in Astronomy & Astrophysics)
- HELINET (Health Sciences Library & Information Network).
- IIM (The Indian Institute of Management).

- N-LIST (National Library & Information Service Infrastructure for Scholarly Content).

Findings:

1. Gauhati University library has highest yearly budget following with the highest number of collection and well trained staff thus comparatively it has a good ICT infrastructure facility and services than other selected libraries. Among the Special libraries some of them don't possess any separate library budget, which is bringing complications in development of the library holdings and functioning.
2. Among the institutes selected for the study, 100% of the university libraries mean all the university libraries are having their own separate building. But, in case of Special libraries only 20% are having separate building and 80% libraries do not have their separate library building. And this is not a good sign to the libraries to develop a suitable environment for the user which found only from special library category.
3. From both the category of libraries selected for the study, 60% of each category is having digital library of e-collection to serve their users.
4. All the libraries under the study are using the library automation software for library organization. They arranged and organized the library materials with ICT application to serve the users.
5. More or less all libraries are providing all most all ICT based library services.

Suggestions:

After analyzing the different areas of ICT application in the selected University libraries and Special libraries of Assam, the following suggestions has been made:

1. All the libraries should provide with separate library budget. So the libraries can develop it independently without any barriers.
2. All the libraries should give more attention to purchase/subscribe e-resources to fulfill the requirements of their clientele. Attention should be focused by the authority as well as

library for increase of the collection which is required for the academic purpose. They should purchase/subscribe more printed as well as electronic documents to fulfill the users' need. Focuses should be on e-resources collection of libraries in digital era.

3. All the libraries should have separate special fund provision for implementing the ICT application.
4. Modern and up to date technologies must be applied to the libraries.
5. Every librarian should well trained with the ICT application. For that in house orientation program must be conducted in the libraries and time duration of using ICT activity should be increased. So that they can provide current and effective services to the users.
6. In digital era all the libraries should be well equipped so that all the functions can run smoothly and the users can be able to use all the enriched resources of the libraries.

Conclusion:

It is found from the study that the status of ICT application and its development on the services and functioning are somehow satisfactory. There is much more need to develop the collection of resources, improvement of services and implementation of technologies to increase the satisfaction level of users. Librarians should pose honesty and dedication towards their duties and responsibilities. They should be fully equipped in using ICT and have awareness of recent trends and developments to serve the information seekers more efficiently. The users of university libraries especially the faculty members and research scholars are in need of extensive information and also have very limited time to search for that. So, the university libraries are bound to use ICT tools for library management to provide better and easiest services. Special libraries are known to be attached to organizations that invariably need strong and steady strategic information to facilitate their steady expansion and growth. To realize this steady growth and competitive advantage , ICT not only has to be an addition to special libraries but a critical component towards supporting provision of effective information service to the parent organization.

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