AN EVALUATION OF USE OF E-RESOURCES IN INDIAN INSTITUTE OF TECHNOLOGY LIBRARY, GUWAHATI

A Dissertation submitted in partial fulfillment of the requirement for the Degree of Master of Philosophy in Library and Information Science

Submitted by

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CHAPTER - 1

INTRODUCTION

1.1 Introduction

Rapid technological developments and its application in different spheres including service sectors have altered the magnitudes of information gathering, and need among the user communities in the present day of digital environment. Multidisciplinary researches have precipitated various ways and means for libraries and information centers to acquire multifarious information sources to provide authentic, reliable and constructive resources to the user communities. The emphasis in the digital environment has been primarily focused to develop core knowledge in multidimensional disciplines which requires sound skills to deliver of the same with worthy, legitimate and trustworthy at the door step of the user communities including on the desktop in the library. Internet has become the uniquely identified component to provide the wide array of e-resources to the use in the relevant disciplines with quickest access. It is been recognized as the most powerful and indispensable tool for global communication and exchange of information. E-resources, the only option left out for proliferating research encompasses both documentary and non-documentary forms in electronic formats that provide a pointer including exhaustive information relating to the area of research that can be seamlessly accessed through computers. E-resources comprises Databases, e-Journals, e-Magazines, e-Books/ Wiki Books, e-News, e-Images, Data/GIS, Digital Library Projects, Electronic Exhibitions, e-Subject Guides, portals, e-Newsletter, e-White Papers, e-Conference Proceedings, e-Reports, e-Studies, e-Interesting Development, e-Directories, Web Search Tools on a wide range of topics.

Indian Institute of Technology (IIT) Guwahati, commonly known as IIT Guwahati (IITG) is an autonomous engineering and technology-oriented institute of higher education established by the Government of India in the state of Assam in India. To give a brief outline about the historical pepectives of IITG, it happens to be a sixth member of the IIT fraternity in India and officially has been recognized as an institute of national importance by the Government of India. The institute consistently ranks amongst the top engineering colleges in the academic sphere of Indian colleges offering various engineering education surveys like India Today, Dataquest etc. The history of IIT, Guwahati traces its roots to the 1985 when Assam Accord was signed between the AASU and the Govt. of India, which emphasized for the general

improvement in education facilities in Assam and specifically the setting up of an IIT. Education in Assam witnessed a new scenario in the technology sector with the establishment of IITG in 1994 by an act of parliament and it commenced its fit academic programme in 1995 with fit batch of students into Bachelor of Technology programme. It is one of the primitive organization in the field of science and technology in north-east, India offering a wide range of courses to satisfy the ever growing demands of the north-east as well as both national and international.

In the present days, IITG functions completely as a state-of- the- art and generously endowed campus both in infrastructure and natural beauty. IITG has continued to develop in diversified way each year by way of maintaining its stated aim for improving standards in education and research. Owing to its establishment in the early 1990s, the institute is boosted by providing the best and the latest engineering and computing resources in the entire country. Currently IITG is housed with the following 11 (eleven) academic departments offering various courses such as, B.Tech, B.Des, M.Sc, M.Tech, and Ph.D. programs in the relevant disciplines.

- Department of Biotechnology
- Department of Chemical Engineering
- Department of Chemistry
- Department of Civil Engineering
- Department of Computer Science and Engineering
- Department of Design
- Department of Electronics & Communication Engineering
- Department of Humanities and Social Sciences
- Department of Mathematics
- Department of Mechanical Engineering
- Department of Physics

The strength of the institute like other IITs in India has an exceptional undergraduate (B. Tech) program which produces world class engineers excelled both in technology and leadership positions in India, including recognized researchers and entrepreneurs worldwide. IIT Guwahati was also the fit technological institute to launch designing course as one of the disciplines at undergraduate level. The Department of Design (DoD) at the institute awards the degree of B.Des. (Bachelor of Design) on

completion of the undergraduate academic program. Presently there are about 2300 students on rolls, 215 faculty members and 300 support staffs at IITG.

1.2 Research Centers at IIT, Guwahati

IIT Guwahati (IITG) has rapidly assembled the necessary infrastructure for carrying out advanced scientific and engineering research and is equipped with state-of–the-art technical equipments and teaching aids. Research continues to be a thrust area at IITG as the identified policy of Govt. of India is to develop graduate programs in IITs so as to replicate the success in graduate level. As of now, IITG is recognized as a centre of research mainly in following six different areas.

- Centre for Educational Technology
- Centre for Nanotechnology
- Centre for Mass Media Communication
- Central Instruments Facility
- Centre for Energy
- Centre for the Environment

Further, IITG has the distinction among the IIT fraternity of having accomplished this without assistance or collaboration from any foreign government.

1.3 IITG Central Library

Both Library and Information are two words of equal importance. While the importance of traditional library will continue in all time to come, multi-directional and multi-dimensional fabrics of information today are also prolific and on the fast increase. In the context of the sporadic changes in the information technologies, it is hardly possible to limit information within a particular precinct. Since the fabrics of knowledge have been steadfastly expanding in different dimensions and directions, the libraries have been taking new shape not confining itself with the precinct of published domain but beyond it. Up-gradation of information technologies at rapid paces has corollary been forcing the libraries to take new shape with both published and unpublished mandate for these changes spheres. The IITG Central Library under study is reckoned as a source of knowledge center and sharing of knowledge in multidimensional ways to its clienteles. Apart from more than one lakh volumes collections in shape of textbooks, reference books, conference proceedings, back

volumes, standards, and non-book material such as CD-ROMs, audio tapes, video tapes, slides, the library also is subscribing 414 current periodicals both Indian and Foreign.

IITG Central Library records more than 1 lakh books in its collection database covering all the subject areas. It is also equipped with one computer center having about 200 latest configured computers which are used to provide training and internet facility round the clock to the students and staffs including research of the institute. The Central Library of IITG is completely automated and thereby, all operations of the library activities are being taken through an integrated software package. The collection databases for the institute are amenable through On-Line Public Access Catalogue (OPAC) to the use via campus network. Now this facility is also available through Institute's Intranet as a Web enabled OPAC.

IITG Central Library is also a member of INDEST (Indian National Digital Library in Science and Technology) Consortium, under the aegis of the MHRD (Ministry of Human Resources Development) which provides online access to few important science & engineering abstracting database services, such as COMPENDEX & INSPEC, MathSciNet, SciFinder Scholar, Web of Science etc and several full-text journals and Indian Standards. The Central Library Intranet Page provides the IP based online accesses to these resources.

1.4 E-Resources

E-resources are the electronic products that deliver a collection of data through various means such as, full-text, e-journals, image collections including other multimedia products, numerical, graphical and the products are being marketed by the vendor, publishers etc. on Internet platform. Further, e-resources available through various modes include, CD-ROM, tape etc. E-resources have become imperative in libraries due to the spiraling cost of publications, shrinking budget allocations, constraints in acquiring international publications, expansion of staffs, space problems, and above all information explosion. Availability of plethora of e-resources has dramatically altered the nature of collection developments, management and dissemination of services in libraries. Acquisition, organization, dissemination and use of e-resources have altered the magnitude of traditional library system by giving birth to the digital library.

Application of technologies has a considerable impact in libraries and information center. Virtually most of the academic and special libraries, at least in the most developed countries, are now member of networks and different consortia that greatly facilitate the location of sources of information in electronic form and gaining access to them. Card catalogues and other form of services in the libraries have largely been replaced by online catalogue and on-line services respectively. Access to databases of various kinds including e-resources has become a routine job for many libraries. Further, most of the libraries both academic and public have also started adding electronic resources to their collection development through CD-ROM or other forms. According to Baker, digital resources can be broadly grouped into three types such as:

Types	**Description**
►Static	Static are the most basic, they contained fixed information and never change their form (such as traditional online data).
►Dynamic	Dynamic documents contain fixed information but also able to change their outward form, the way embedded materials is presented to use, (such as multimedia CD-ROMs).
►Living	Living documents are able to change both their form (outward appearances) and this embedded information (such as information contain on the web).

According to IFLA ISBD (ER) 1, 'an electronic resource consists of materials that are computer-controlled, including materials that required the use of a peripheral (e.g. a CD-ROM player) attached to a computer' and the items may or may not be used in the interactive mode. There are two types of e-resources:

- Data (information in the form of numbers, letters, graphics, images, and sound or a combination thereof) and;
- Programs (instructions or routines for performing certain tasks including the processing of data and programs. e.g. online services, interactive multimedia) (Bavakenthy et al., 2003).

According to AACR2, an electronic resource is, "material data/program encoded for manipulation by a computerized device. This material may require the use of peripheral directly connected to a computerized device or a connection to computer network".

1.5 Types of e-resources:

There are several types of e-resources whish can be recorded as follows:

- e-journals
- e-book
- e-report
- e-paper
- e-reference sources
- databases
- e-contents
- e-learning materials

➢ Electronic Journals (e-journals)

E-journals refer to journals which are available in electronic format. E-journals are also referred to as 'electronic publishing', 'electronic serials', 'online journals' and 'electronic periodicals'. Electronic journal is defined as the grouping of information that is sent out in electronic format, which is produced, published and distributed electronically. Electronics journals are electronic vision of printed journals accompanied by extensive hyper linking. They can be read both through online and offline. It is the principle source of information and fastest growing segment of the digital collection in most libraries. E-journals can be obtained freely, through subscription, pay per use of through license for access. A physical, printed version also is available in e-format.

➢ Electronic Book (e-book)

An e-book has electronic text and that text is represented to the reader visually. The electronic text is saved to a floppy, transferred onto a CD-ROM, downloaded from the Internet or built into a palm-sized digital reader. In general manner e-book describes two different types of electronic books. On the one hand, it could refer to the e-book

which requires a piece of hardware, a handheld e-book device created specifically for this purpose, on which to read the digital text. An e-book can also refer to electronic texts which are read on a PC, usually via the Internet. Amazon.com, SomonSays.com, O'Reilly.com are the best known e-book publishers, suppliers and sellers.

- **Electronic Report (e-report)**

Reports are of two types which are produced at the end of the work. The two types of reports include popular reports and technical report. The research report is one of the major components of the research study, which includes hypothesis and well designed and conducted research studies. The technical report is used whenever a full written report of the study is required whether for record keeping or public dissemination whereas, a popular report is used if the research results have any policy implications. The reports are available both ongoing and completed projects electronically which allowed the researcher to generate new concepts concerning to his area of research. E-reports of any type are profusely available which can be accessed through Internet. These act as a substantial tool to promote research activity. E-report is generally aimed at setting up a communitarian repertory to reference material which regard to the development of innovative method in the field of e-learning system for distance learning. It refers to activities of research, experimentation of analysis with regard to the development of innovative methods and contents in the field of e-learning, aiming at setting up a method of distance learning system, combining the use of ICT with tutoring activities, learning groups and transnational virtual study circles.

- **Electronic Thesis & Dissertation (ETD)**

Electronic thesis and dissertation or ETDs are defined as those thesis and dissertations submitted, archived, or accessed primarily in electronic formats, which include traditional word-processed (or typewritten and scanned) documents made available in Portable Document Format (PDF), as well as less-traditional hypertext and multimedia formats published electronically on CD-ROM or on the World Wide Web (www). Many libraries are now in the process of digitizing information in an effort to preserve it and to make it more widely available. The Networked Digital Library of Theses and Dissertations (NDLTD), funded by a grant from the U.S Department of Education, is a collection focused specifically on digitized visions of theses, dissertations and technical papers that began in 1996 at Virginia Tech. The NDLTD

reports that more than twenty universities around the world have become official contributing members of the Initiative within just the past year, and nearly twice that number have expressed interest or are taking steps to participate.

- **Electronic-Reference (e-reference) Tools**

Today vendors and publishers are providing use with various reference sources through their website and databases, such as dictionaries, yearbooks, encyclopedias etc. viz, Dictionaries online (www.dictionay.com, www.m-w.com, www.dict.leo.org, www.batleby.com). Handbook online (www.uia.au), etc. In reality electronic reference tools such as encyclopedias, dictionaries, atlases, almanacs and the like offer more and, at the same time, less that their print counterparts. It also offers words games, transcripts from a radio programme about language, and a brief history of English language. It does not offer the reader on opportunity to brows the dictionary, nor does it offer the front and end matter found in its print dictionaries, including how to use dictionary, a guide to pronunciation and a short style guide.

- **Electronic Encyclopedias (e-encyclopedias)**

E-encyclopedias and almanacs also offer search capabilities and even hyperlinks leading the leader to a related article, but such tools do not always anticipate use' needs or habits. While updating can be as often as desired, economics rather than a desire to be up to date is more often the driving force. An almanac's print vision, for example, may be more up to date and easier to use than some online visions of the same title may vary depending on the company offering access to the title. Online atlases, including those provided by the National Geographical Society, offer up-to-date maps accompanied by related flags and demographic information. The viewer must wait for the graphic to load-a substantial period as compared with the time taken to turn the pages of print atlases, a weakness mitigated by the free content offered online. In the present scenario, e-encyclopedia is supplemented with webopedia, wikipedia etc. which add substantial value to promote research work.

- **Electronic Magazine (e-zine)**

E-zine is the abbreviation for electronic magazine. A periodical application that is stored on a file server and that may be distributed or accessed via a computer terminal is regarded as e-zine. It is also called web-zine. Some sources of e-zine are

www.indiatoday.com, www.musicindia.com, www.bestindiansites.com, www.news.sify.com, etc.

- **Databases**

Database is a collection of records or a file or a collection of files brought together as a single file commonly accessible by a given set of programs. It is an organized, integrated and often inter-related collection of data, records, files or information. Databases can be divided into three types, i.e. bibliographic database, numeric database and full text database. Bibliographic databases contain bibliographic citation to a document which may include an abstract. Numeric database contain numeric or statistical data and full text databases contains the full text of the publication. The power and value of searchable databases have been developed by the introduction of DIALOG, MEDLINE/MEDLARS etc. Unlike CD-ROM, online indexes and abstracting services can be updated on a daily basis and are often linked to the complete text of the article that has been indexed.

- **Electronic Newsletter (e-newsletter)/ Electronic Bulletin Board (EBB)**

E-newsletters are offered by companies and organizations around the world. These newsletters are actually e-mail sent from e-serve, generally as text that the individual's mail reader may convert to another format. The obvious advantage of an electronic newsletter is that it can be sent to thousands of reader at once without postage. Electronic newsletter will likely grow in number and popularity as ease of access to the internet increases and the related cost decrease. They may be house organs, or they may contain individual contributions brought together by an editor or moderator. There are also electronic newsletters that are not subscription-based but that are available only on the web. These publications are usually less elaborate in design that online newspaper and magazines but recognizable as distinct publications. These online newsletters differ from web pages in that they are serial in nature and generally have archives of past issues. Electronic Bulletin Board (EBB) displays through Liquidified Crystal Displayer (LCD) the current information in a very short form which is mean for general awareness of the public at a large.

- **Electronic Newspaper (e-newspaper)**

E-newspapers, may copy the typography of their printed counterparts, even though they are not laid out as the print s are, and they used frames or sidebars to the list contents, on which reader may click in order to go straight to that section. There are photographs and other graphics in online newspaper, and often there are photo archives available online as well. Political and other cartoons are available in the online s of some newspaper and there are often links to other sites where more of the same cartoons can be viewed or the cartoonist's home page may be visited. Crossword and other puzzles are also available for solving online or for printing and solving the old-fashioned way with a pencil. Online newspaper offer web advertising that is link to the site so that advertising can see the site visitor's location and make some real connection between the advertising and responses to it. Demographic information about the user may also be available.

1.6 Use of e-resources

Libraries now rely increasing on e-resources as many of them are not supported with sufficient print versions due to the above mentioned facto. Since the inception and induction of electronic materials through the technologies libraries have practically become flooded with digital resources which are a continuous process. Digital preservation in this juncture has become imperative to maintain and organize for sustainability for a good time. It is a process by which data is preserved in electronic form in order to ensure the usability durability and intellectual integrity of the information contained therein.

Use of e-resources has changed the whole structure and working environment of the library. In the present day context, automation is called for in library and information center because of the following reasons.

- Difficulties in handling large amount of increasing information in print form.
- Sharing of resources with other libraries.
- Availability of information in machine readable form.
- Multiple accesses to machine readable record by the use for various purposes.
- Access to information round the clock.
- Seamless access to information without geographical limitations.
- Unlimited access to information.

- Getting relief from stress and tension of repetitive work.
- Easy processing of data and retrieval of information.
- Lending a hand to the research scholars, teachers and students to access the pin-pointed, authentic, and reliable and up-date information in their relevant subject or to support the academic and research work.

Moreover, the user communities especially the faculties and research scholars including the library and information center find Internet as a viable platform for multifarious reasons such as,

- Internet resources are very easy to access,
- It can be accessed to full text through open-access from remote place,
- Internet resources are very much user friendly interface,
- E-resources are convenient to use.
- It is cost-effective.
- Seamless access to digital libraries without any geographical restrictions.
- Internet as a proper media for sharing of library resources,
- To meet the changing needs and expectations of user.

1.7 Advantage of e-resources

The emergence of electronic resources has drastically revamped the status of all the libraries and information center across the world during the last decade. There has been a rapid urge of the user community to get more and more information from electronic resources. With the advancement of the information and communication technology applications, Internet and WWW, Library and Information Center (LICs) have also shifted their collection from print to electronic resources. Electronic resources offer tremendous possibilities and advantages over print media which includes the ease of use, shareable nature, and availability of internet and universal acceptance of web technology. The enhanced features of online access provide value-addition to these sources.

- **Multi-access:** A networked product can in theory provide multiple points of access (offices, homes, classrooms, etc.) at multiple points in time (often called '24/7', referring to the fact that the resource is available 24 hours a day, 7 days a week) and to multiple simultaneous use.

- **Speed:** An e-resource often as being a lot quicker to browse or search, to extract information from, and to integrate that information into other material and to cross-search or cross-reference between different publications.
- **Functionality:** An electronic version will allow the user to approach the publication and to analyze its content in new ways (for e.g. with a dictionary one would no longer be restricted to searching under headword).
- **Content:** e-content acts as a solution for developing, managing and publishing content on the web which can be accessible on the Internet platform. Designed for enterprise, government and educational institutions, e-content provides ultimate flexibility through open source. E-content integrates content management, resource management, workflow, collaboration and personalization. With comprehensive support for managing content stored in databases, Extensible Markup Language (XML) repositories, and static files. E-content provides team-based enterprise-wide collaboration, reducing IT burden.
- **Management:** The management of e-resources otherwise known as Electronic Resource Management (ERM) refers to practices and software systems used by libraries to keep track of important information about electronic information resources, especially internet-based resources such as electronic journals, databases and electronic books. The development of ERM became necessary in the early 2000s as it became clear that traditional library catalogs and integrated library systems were not designed to handle metadata for resources as mutable as many online products are.
- **Interoperability:** It is a property which refers to the ability of systems and organizations to work together (inter-operate). The term is often used in a technical systems engineering sense, or alternatively in a broad sense, taking into account social, political and organization facto that impact system to system performance. Interoperability becomes a quality of increasing importance for information technology products as the concept that "The network is the computer" becomes a reality. Hence, it is a combination of software and hardware on different machines from different version to share data. With the advent of such standards as open Uniform Resource Locator (URL), it is possible to link to another elsewhere.

- **Storage:** e-storage provides a safe keeping for library data making sure that it can be retrieved properly at the time of need. It is also a remote site backup solution for the storage service subscribe, freeing the user from the worry of critical data loss due to the hardware crashes or unfortunate incidents from natural causes, theft, and break-ins, e-storage service allows to access personal and business data anytime anywhere with the Internet. E-storage is a remote storage at which the user can store and retrieve data via web browser or Storage Sync, a software client on the user's desktop. E-storage includes two principle functionalities such as; Online Storage Service and, Internet Back Services. The feature comprises the following :-

- ✓ Accessing of data anywhere at anytime with the Internet via the web browser.
- ✓ File Management features such as back-up, upload, download, delete, move, copy, access control etc.
- ✓ Upload and download specific files up to a maximum of 5 each time.
- ✓ Sharing of files.
- ✓ Encrypt and Decrypt features.
- ✓ Manage use (only for enterprise package), and
- ✓ Help and guidance to the use.

Electronic resources add lively substance to the modern library's collection and satisfy the varied needs of students, faculty and research scholars with minimum risk and time. Additionally, electronic resources carry the potential power to increase the learning opportunities offered to students in a particular, the interactive and multimedia elements provided by the electronic medium can offer a great variety of learning exercises and making courses much more lively and interactive. These e-resources enable instant feedback to students and facilitate students' ability to understand concept more clearly and easily by providing several supporting and supplementing resources for the courses so that students can visualize the material and its content without facing much difficulty in understanding.

1.8 Role of Library Consortia

It is an admitted fact that, neither any library nor information center can provide a full length of published documents to its use due to lack of dwindling budget allocation, user's multifarious requirements of information, price hike of print materials etc. Library consortia have become a positive solution to this blazing problem. It has proved to be a positive solution for the libraries to build up collection development in multi-dimensional way in a cost effective manner so as to provide access to the use' to a wide range of e-resources. The libraries all over the world are conforming to similar problems and therefore, the libraries through library consortia have started disseminating service to the user to promote better, faster access of e-resources. Library consortia facilitate the member libraries to strengthen the collection development at affordable cost and at the best terms and conditions and in turn the libraries allow the user to a wide range of electronic resources.

1.9 Evaluation of e-resources

Wikipedia, a free encyclopedia has defined evaluation as a means of systematic determination of merit, worth, and significance of something or someone using criteria against a set of standards. Evaluation often is used to characterize and apprise subjects of interest in a wide range of human enterprises, including the arts, criminal justice, foundations and non-profit organizations, government, health care, and other human services.

The American Heritage Dictionary of the English Language (2003, 4th Ed), however, has defined evaluation as,

- ⇨ To ascertain or fix the value or worth of.
- ⇨ To examine and judge carefully; appraise.
- ⇨ Mathematics To calculate the numerical value of; express numerically.

Evaluation research can be defined as a type of study that uses standard social research methods for evaluative purposes, as a specific research methodology, and as an assessment process that employs special techniques unique to the evaluation of social programs. Evaluation is about using monitoring and other information you collect to make judgments about your project. It is also about using the information to make changes and improvements. Evaluation aims to answer agreed questions and to make a judgment against specific criteria. Like other research, for a good evaluation,

data must be collected and analyzed systematically, and its interpretation considered carefully. Assessing 'value' - or the worth of something - and then taking action makes evaluation distinctive. The results of an evaluation are intended to be used.

Evaluation of resources assumes a greater importance due to the proliferation of e-resources which include e-journals, database, e-text, e-book etc., available on the Internet. Authority, currency, intended audiences, ease of use, accuracy etc. are some responsible for evaluation of e-resources. Moreover extensiveness of the content, accessibility, quality of technical support, cost, conditions of licensing agreement are also other responsible facto which should taken into account in evaluation.

Collection evaluation is a part of collection management, planning and performance. Whatever may be the objectives of the library, academic support, research, recreation, community service and development, instructions, support of corporate activity, or a combination of these or anything else, evaluation is one of the mandatory factor to determine the collection development whether it is in tune to its objectives, number of beneficiaries i.e., the use, areas of deficiencies etc.

1.10 Significance and Scope of the study

Central Library, the nucleus of information centers provides support for learning, teaching and research needs to the user communities by way of allowing access to scholarly literature though various e-resources. Growth and change have always been predominant characteristics in the libraries which opened new vistas for collection developments including organization and imparting of services by the library. In view of proliferation of information and its effective dissemination, the library needs to be adapted to the latest technological innovations and its applications as well because it responds both to the changing need of the users' communities and collection developments including its organization in the ambit of information technology. Hence, collection of information must remain flexible enough to support to the causes of the information requirements of the use in the IITG Central Library in a changing technological scenario. In the present days, adoptions of information technology compelled the library to be dependent upon digital materials which could be collected through Internet and other electronic devices. The significance of the study is that it happens to the fit and pioneer library in the field of science and technology with a national status in Assam to provide e-resources services to its clienteles. Moreover, the work aims at evaluating the flexibility of this library in this fluid environment as

well as their capabilities in developing a process to integrate the changes in to a standard library practice to meet the current and update demands of the use' communities. IITG happens to be a special library where apart from technical teaching, research and development has been predominantly acknowledged. The research scholars and faculties of various departments of the institute under study require manifold information through e-form as traditional documents are not sufficient to meet their need. IITG Central Library comprises 11 Departments as discussed and presently there are 2815 users comprising 2300 students on its roll, 215 faculty members and 300 support staffs. The work under study deals extensively about the use and need of information resources in e-form including an evaluation of electronic resources used by the users in the library. However, the present study is limited only to Central Library, Indian Institute of Technology, Guwahati and no other IIT Central libraries or any other special libraries at Guwahati have been taken into account to make the study more authentic and microscopic.

1.11 Review of Literature

The scholar made an extensive survey of literature available in the relevant area of the study to make update with information both available through documentary and electronic including internet. The scholar also has taken proper care to scan the published literature in the concerned area and some of them are included here.

- Beard, J., Dale, P. and Hutchins, J. (2007), "The impact of e-resources at Bournemouth". *Performance Management and Metrics.* 8 (1). pp. 7-17. (Available at: www.emeraldinsight.com) (Accessed on September 1, 2007).

The author in their study on, "The impact of e-resources at Bournemouth University 2004/2006" observed that the use of, and enthusiasm for, electronic resources is widespread amongst students and staff of Bournemouth university (UK).

- Bharati, M.S.Z. & Zaidi, S Mustafa. (2008). Use of E-Journals and E-Databases of UGC-Infonet Consortium by Faculties Member and Research Scholar of Aligarh Muslim University: A Survey. *6th International CALIBER-*

2008, University of Allahabad, Allahabad, February 28-29 & March 1, 2008. pp.529-538.

The author conducted a study in order to examine what is the extent of influence the UGC Infonet has on the user community in universities. The study deals with how much are our scholars and professors are benefiting from UGC-Infonet and identify the extent of awareness of UGC-Infonet among the use. The study indicates that most of the respondents are not aware of the UGC-Infonet. This is due to lack of training and orientation and proper internet connection. Most of the uses of the library prefer to use the printed documents.

- Chand, Prem, Th. Satyabati Devi & Chauhan, Suresh K. (2006). Assessment and Evaluation of Usage of UGC-INFONET E-Journal Consortium in North East Universities. *4th Convention: PLANNER-2006*, (Mizoram University, November 09-10). pp.351-356.

The author pursued a study on the growing importance of usage statistics of electronic journals, their increasing use, and in particular universities in North East region. The major result of the study shows that the highest usage is from American Chemical Society, the second from Springer and the third from American Institute of Physics/American Physical Society and the usage is highest in Tezpur University. The author is of the opinion that in order to increase the usage of UGC-Infonet e-journal consortium, it is necessary to increase the bandwidth to all the universities to 1 mbps.

- Chandel, A.S. (2008). *E-Resources and their Management*. Prof. Alaka Buragohain Festschrift Volume: Changing Library Scenario in Digital Era. Assam College Librarians Association, Guwahati, 2008. pp.210-224.

The author explained a study on the management of different electronic resources. The study explores the problems associated with electronic collection building, their pricing policies, archiving problem etc.

- Kaur, Baljinder & Verma, Rama (2006). Use of Electronic Resources at TIET Library Patiala: A Case Study. *ILA Bulletin*. XLII (3). pp.18-20.

The author while conducting a study on use of electronic resources at TIET Library, explored the period of time since the user have been using the Internet, the place and type of electronic resources which they prefer to use to access information they need. The study reveals that almost all the users use online information and about 34% use are using online services daily and 37% user use electronic resources for their preparing their project/essay.

- Korobil, S., Tilikidou, I. and Delistavrou, A. (2006). Facto that influence the use of library resources by faculty members. *Library Review*. 55 (2). pp. 91-105. (Available at: www.emeraldinsight.com) (Accessed on September 1, 2007).

The author found that, the great majority of the faculty of Technical Educational Institution (TEI), Thessaloniki, Greece use printed sources more than e-sources, but they also use e-sources quite frequently. The results of this study further indicated that the use of e-sources is higher in the School of Business Administration and Economics among those who hold a PhD degree.

- Madhusudhan, Margam (2008). Use of UGC-Infonet e-journals by research scholars and students of the University of Delhi, Delhi: A study. *Library Hi Tech*. 26 (3). pp. 369-386.

In this paper the author has focused on the use of e-journals by the research scholars and students in general and Department of Library and Information Science (DLIS) in particular. The study shows that e-journals perform an increasingly important role in research at DLIS. There is an ever increasing demand for subscriptions of more e-journal titles in LIS. There appears to be some need for academics to be provided with training in using e-journals.

- Prem Chand, Arora, Jagdish, Naga, Moses M., Pradhan, Dinesh Ranjan. (2008). Access to E-journals through UGC INFONET Digital Library

Consortium: A Study of Usage Trends among the Universities of North East India. 6th Convention: PLANNER – 2008 (Nagaland University, November 06-07). Pp. 387-399.

The authors have conducted a study on the usage trends of access to e-journals in ten universities of North East India. The result of the study shows that there is an upward trend for using e-resources in these universities. An attempt has been made by the author to calculate the 'cost recovery factor' and the 'average cost per download' of e-resources.

- Ravikumar, S. (2008). Preservation and Management of Digital Resources Strategy for Building Electronic Resources Designed for Electronic Libraries. Seminar Proceeding: Changing Role of LIS Professionals in Digital Era. 29-30 Sep. Mizoram University .pp.18-26.

The author in his paper presented a study on the growth of electronic resources and changing collection development policy and storage environment of the libraries with response to changes of the information resources. He has discussed about the selection guidelines, strategy for building electronic resources for electronic libraries.

- Singh, S.P. & Sharma, A.K. (2002). Electronic Information Resources in Academic Libraries: Some Key Issues. *Library Progress*. 22 (1). pp.43-52.

In the age of Internet, the electronic information sources are very popular and highly cost effective. These are having an edge over the print sources. The author discussed some key issues related to the collection development of electronic information sources in an academic library environment. However, the output of the present study altogether added another representation to the existing literature.

1.12 Statement of the Problem

The library under discussion is at present maintaining two parallel collections of reading materials such as both traditional and electronic resources to meet the growing demands of the use. It is also a requirement for the library to the accessibility

of a wide range of information resources including formats available through digital full-text, sound, graphics, images, multimedia and hypertext. In view of the shrinking budget allocation and price hike of the printed materials, none of the libraries are able to get hold of sufficient reading and research materials both in traditional and e-form for teaching and research purpose. Moreover the mounting volume of available publications has also created confusions for the library to acquire all the titles within the allocated budget which cause enormous problems for the user for pursuing their teaching and research work. This causes the academic communities including students and researchers to move from print to electronic format of information because of its availability on the web profusely which is flooded with e-resources including consortia and subject gateways.

The problems associated with the library under study rests on the fact whether the e-resources could help the user communities to overcome the problems and whether the users are used to the Information Technology to find out their need-based information from a vast array of resources available electronically.

Therefore, the present research topic has focused to find out the use of e-resources available in the IITG Central Library by the user community. This facilitated the researcher to find out the relevance and length of the e-resources services provided by IITG Central Library. Further, this has become a pioneer work of the researcher which made possible the Librarian to compare usage statistics from different versions, derive useful metrics such as cost-per-use, make better-informed purchasing decisions and plan infrastructure more effectively. All these facts prompted the scholar to take this as a research topic.

1.13 Objectives of the Study

The objectives of the study with regard to library under study include to:

- Ascertain the availability of different types of e-resources;
- Study the purpose, service available in the library to the use;
- Determine the frequency of use of e-resources by the use of the library;
- Evaluate the type of services based on electronic platform provided by the library to its use

1.14 Research Methodology

The present study is based on the literatures and records available in IITG Library. A total number of 2815 users comprising 2300 students on its roll, 215 faculty members and 300 staffs of the university are the bonafide members of the library under study as already discussed. As a method of study of the above research problem, a stratified sampling technique was used to obtain a representative sample as the samples constitute a heterogeneous group. The scholar divided the total population into several sub-population groups which are individually homogenous and the scholar selected the items from each stratum to constitute a sample. The total sample size for the present study, obtained from each stratum is 300 comprising 220 students, 50 faculty members and 30 research scholars. The scholar prepared two structured questionnaires, each one for the user constituting relevant variables to the study for all types of users of IITG Central Library to assess the need of the use of electronic-information resources to meet their information requirements and another for the librarian to find out the infrastructures developed in the library for disseminating e-resources services to the user. A total number of 300 questionnaires were distributed among the students, faculties and research scholars out of which, while, 238 filled in questionnaire in total were received which constitute from the 170 students, 50 faculties and 18 research scholars, remaining 62 questionnaires were not received and this constituted 79% and 21% respectively.

Further the scholar applied both observation and interview methods with the user to ascertain the viability of use of e-resources, which helped the scholar to obtain primary data concerning to the research problem. The scholar also explored URL sites of IITG including other IITs in India to draw relevant information pertaining to the study.

The Secondary source of information such as unpublished dissertations, research articles, peer-reviewed journals, open access journals, consortium and books also have been consulted to make the study more exhaustive and authentic.

1.15 Chapterisation

The present work has been chapterised into 7 (seven) chapters. While Chapter-1 of the work concerns to introduction which, apart from the research methodology such as,

significance and scope of the study, review of literature, statement of the problem, objectives of the study, also include research centers at IIT, Guwahati, central library, e-resources, its types and use etc., Chapter-2 of the study primarily focus on the threadbare discussions on the activities of the central library of IIT, Guwahati, and other facets of the library such as, library committee, administrative organization, manpower, clienteles, information resources, ICT infrastructures, networking system etc. Chapter- 3 of the study deals with the growth and development of e-resources of the library under study including its components such as, library automation, need, areas of automation in libraries, software etc. Chapter-4 of the study is concerned with the services of e-resources provided by the central library under study which include the use of e-resources, library consortia, benefits of e-journal consortium, information literacy, library orientation etc. Chapter-5 focuses on evaluation of e-resources which comprises evaluation of library collection, purpose, evaluation process, measurement of usage statistics for full text access etc. Data analysis and findings derived out of the filled-in questionnaires have been discussed in Chapter-6 including suggestions and conclusions.

1.16 Conclusion

The present research problem is described, analyzed and interpreted in an organized way based on different approaches including findings, suggestions and conclusion. The application of ICT in libraries today is indispensable. It not only extends the scope of acquisition, processing, organization and dissemination of information and knowledge but also raises speed, reduces cost and over come space, time, language and media barriers and links knowledge sources with researchers and creates knowledge networks. The librarians in academic and research institutions have to apply the tools and techniques of ICT to meet the changing requirements of the use by innovating its procedures and systems. Librarians play a significant role in ensuring that the use to get the latest information as quickly as possible and especially, in the era of knowledge economy use needs to achieve faster accesses to information and knowledge.

Today Library and information Centers (LICs) are functioning in a highly dynamic and frequently turbulent technological environment. ICT is the driving force for change in libraries. Effective utilization of the technologies enhances the capacity of

the LICs to deliver high quality of information services to meet the growing expectations of the use. The development of technology is so fast that its impacts in different aspects will be greater in the coming days. Today more number of information is available in electronic or digital format. These changes have influence in the acquisition, storage, access, dissemination and management of information. Emergence of Internet has provides the use unlimited of information. The vast amount of information sources which the library access to not only the item held by or owned by the library but also gives access to remote information sources and handling the resultant requirement to authenticate and authorized use. Among the different form of e-resources like e-book, e-journals, e-reports, e-thesis and dissertation etc. e-journals and databases are widely used. Now a wide number of e-journals and databases are accessible through consortium mode. But effective use of these e-resources need the library and information professionals to act as technological gatekeeper and equip with new skills in the use of latest techniques, tools and strategies and the use to be information literate. To educate the use, the LICs are providing opportunities for the development of information skills, in enabling all use to make the most of their interactions with information resources. Libraries prefer digital collections for many reasons, including, but not limited to the following : digital journals can be linked from and to indexing and abstracting databases; access can be from the use home, office or dormitory whether or not the physical library is open; the library can get usage statistics that are not available for print collections; digital collections save space and are relatively easy to maintain substance to the modern libraries collection and satisfy the varied need s of students, faculty and research scholars with minimum risk and time. Additionally, electronic resources carry the potential power to increase the learning opportunities offered to the students in particular, the interactive and multimedia elements provided by the electronic medium can offer a great variety of learning experience then those offered by text on paper. Teaching material in electronic form greatly enhances teaching possibilities, a giving the students a greater variety of exercises and making courses much more lively and interactive. These e-resources enable instant feedback to students and facilitate student ability to understand concepts more clearly and easily by providing several supporting and supplementing resources for the courses so that the students can visualize the material and its content without facing much difficulty in understanding.

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CHAPTER - 2

LIBRARY RESOURCES IN IITG

CENTRAL LIBRARY

2.1 Introduction

The Central Library, IIT Guwahati, established in 1994 and a gateway to knowledge resources is being built as per the international standards and spreads over four floors with centrally air-conditioned, well protected with fire alarm, bar-coded circulation counter, specialized collections of Books, Journals & Non-book materials as well as online resources. The library has computerized all its operations using LibSys 4 software and provides open access to the collection through OPAC, Web OPAC and library web page. It is equipped with good furniture, sufficient stacks and ICT infrastructure. The infrastructure facilities available in central library are: - 16 computers, 3 photocopiers, 5 scanners, 10 telephones, 3 barcode readers, 3 printers. This is the very much used library among all the surveyed libraries. There are 5 nos. of OPAC for use inside library. The computer lab is in the same building equipped with 130 nos. of terminals for use for accessing Internet and online resources. JCCC-J Gate Custom Content for Consortia, is a portal for accessing and sharing journal literature subscribed by IITs, IISc and IIMs, individually and collectively through INDEST Consortium. This is a common gateway to access 6326 e-Journals from 1309 publishers. The library LAN is connected to the institute intranet, thus providing accessibility of library resources to all parts of the campus including students' hostel, faculty wing and residential area.

2.2 Central Library, IIT Guwahati

The Central Library established in 1994 is one of the important central facilities of the institute having currently a collection of more than 1,17,000 items (documents) including 2605 subscribed online journals and magazines. IITG Central Library records more than 1 lakh books in its collection database covering all the subject areas and it is equipped with one computer center having about 200 latest configured computers which are used to provide training and internet facility round the clock to the students and staffs including research scholars of the institute. The Central Library of IITG is completely automated and thereby, all operations of the library activities are being taken through an integrated software package. The collection databases for the institute are amenable through On-Line Public Access Catalogue (OPAC) to the use via campus network. Now this facility is also available through Institute's Intranet as a Web enabled OPAC.

As already discussed earlier, the IITG Central Library is a member of INDEST consortium under auspices of the Ministry of Human Resources and Development. It provides a wide spectrum of information services through on-line access to various abstracting databases on science and engineering. It gives links to the COMPENDEX & INSPEC, MathSciNet, SciFinder Scholar, Web of Science etc databases including allowing to access several full-text journals both Indian and international. The Central Library Intranet Page provides the IP based online accesses to these resources.

2.3 Library Committee

The Library Committee has come to be recognized as an essential agency that is needed for the governance of a library. The size and composition of membership of the Committee differ from different library. The normal functions of these Committees are: 1) formulating library policy in relation to the development of resources for instruction and research; 2) advising on the allocation of book-funds to the library and the various departments and schools; 3) advising on the policy of reproducing unique materials; 4) collaborating on decisions regarding the allocation of library space needed for the departments of instructions; and 5) developing a general programme of library service for all the interests of the Institution.

As universities in India are differing in their organizational set-up, the composition of their Library Committee also differs from university to university. The Library Committee at IIT Guwahati consists of 26 members having Director (Chairman), the Deputy Librarian (Member Secretary), 2 Assistant Librarian, 3 Assistant Library Information Officer and 7 Senior Library Information Assistance, 1 junior Assistant, 1 faculty from each 11 department of the institutions.

2.4 Administrative Organization of Central Library

There are different principles relevant to the administrative organization of a university library which includes hierarchy, unity of command and management, equity, span of control, line and staff, centralization vs. decentralization, division of labour and departmentalization. The organization of any institution is related to the objective which intends to achieve. Organizational structure and governance need to be compatible with the culture and traditions of the larger organization or community that the library serves. The institution has constituted a library committee as an apex

body to make major policy decisions. The organizational structure chart of Central Library of IIT Guwahati is placed in Fig.-1 below.

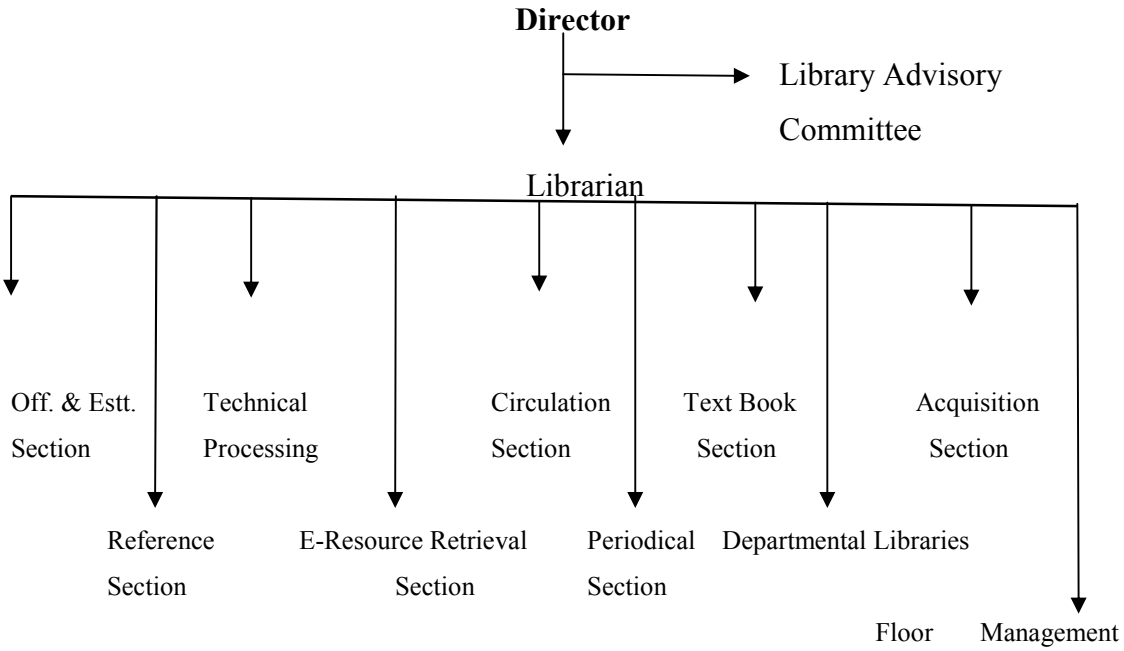


Figure 1: Administrative Organization of Central Library, IIT Guwahati

2.5 Manpower

The ultimate objective of a library is to provide maximum service to its clientele. Human resources play a prominent role for the successful management of any library. For functioning efficiently, a library requires qualified, able and energetic personnel. Library personnel constitute an important component of the library trinity. All the personnel of the library are divided into three categories such as, a) professional, b) semi-professional and c) non-professional. The professional staffs are engaged in performing professional duties. The semi-professional staffs of the library are those who perform the library routine and technical works under the guidance of professional staffs and some non-professionals and unskilled staffs are also appointed to perform non-technical and other official works in the library. A detailed account of the organizational structure of various positions in IITG library has been placed below in Table 1:

Name	Designation	Section	e-mail Address
Dr. B. Saibaba	Deputy Librarian	In-Charge of the Library	sai@iitg.ernet.in
Mr.R.K.Rajbangshi	Assistant Librarian	Circulation	ranjit@iitg.ernet.in
Dr. T.K. Guha	Assistant Librarian	Periodicals	tam@iitg.ernet.in
M.C. Dutta	Assistant Library Information Officer	Technical Processing	chandrik@iitg.ernet.in
M.G. Bordoloi	Assistant Library Information Officer	Technical Processing	gitasri@iitg.ernet.in
M.S. Mahajan	Assistant Library Information Officer	Periodicals	sewali@iitg.ernet.in
Mr. C.K. Goswami	Senior Library Information Assistant	Periodicals	goswami@iitg.ernet.in
M.M. Bina Devi	Senior Library Information Assistant	Circulation	bina@iitg.ernet.in
Mr. S.K. Deka	Senior Library Information Assistant	Technical Processing	skdeka@iitg.ernet.in
Mr. C.K. Das	Senior Library Information Assistant	Reference	ckdas@iitg.ernet.in
Mr. N. Barua	Senior Library Information Assistant	Technical Processing	nbar@iitg.ernet.in

Mr. P.K. Thakuria	Senior Library Information Assistant	Circulation	pranjit@iitg.ernet.in
Mr. D. Barman	Senior Library Information Assistant	Floor Management	barmand@iitg.ernet.in
Mr. M. Dutta	Junior Assistant	Office	mintud@iitg.ernet.in

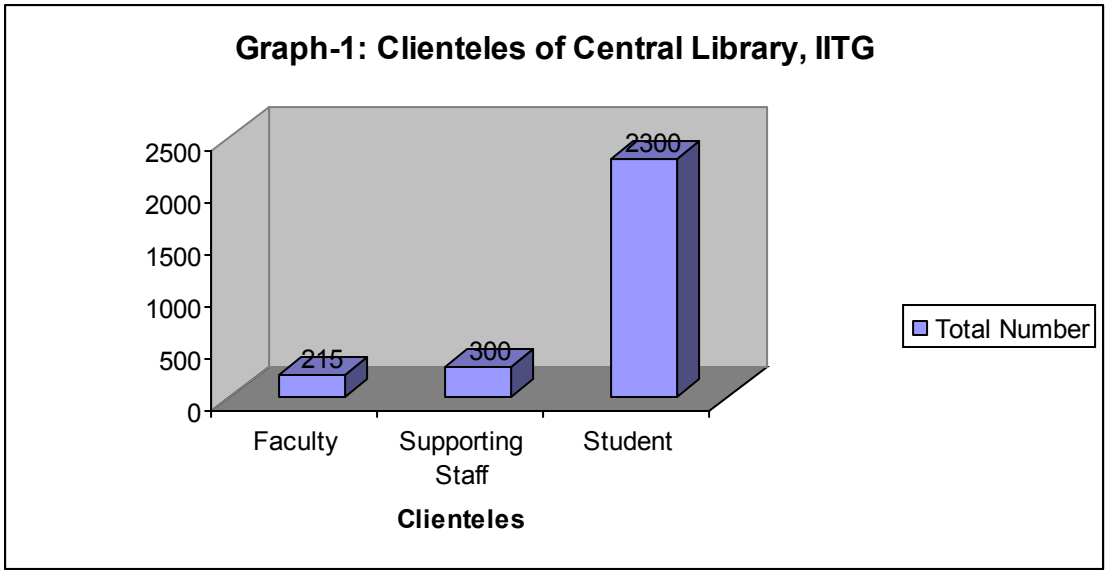
Table 1-: Staff of the Central Library, IIT Guwahati

2.6 Library Clienteles

The clienteles are the focal points in a library system that in an academic library constitutes faculties, research scholars, students and other educational administrators. Clientele irrespective of the categories are the real hub of the library that requires information for promoting teaching, research and development. The Library under study extends its facilities to 1600 regular members. About 250 visitors from different parts of the country have availed the facilities of the Central Library. About 2 lakh documents transacted during 2003-04 through newly introduced bar-coded circulation system. The clienteles of the library under study constituting of faculties, staffs and students are 2815 as of now and have been shown in Table-2 supplemented with Graph-1 for clear understanding.

Sl. No.	Designation	Total Number
1.	Faculty	215
2.	Supporting Staff	300
3.	Student	2300
	Total	**2815**

Table 2 -: Clientele of Central Library, IITG



2.7 Membership

The following categories of persons can register themselves for the membership of the Library.

- All the faculty members of IITG.
- All the regular students and research scholars of IITG.
- All other regular employees of IITG.

Provided that a person other than the above categories may be allowed to become member of the library as a special case on a request in writing from the peon concerned. The decision of the Librarian in this regard shall be final. If a person is allowed to become a member of the library he/she shall pay an annual membership fee and security deposit.

All eligible members shall fill up and sign a membership registration form available at the circulation counter of the library.

2.8 Sections

The Central Library, IITG comprises of various sections and the same have been discussed briefly below.

✓ Acquisition Section

The acquisition section takes care of document selection, procurement of documents, placing orders, physical verification of documents after receiving, stamping, accessioning of documents in the accession register, verification of bills and processing the same for payment.

✓ Technical Section

Technical Section deals with the technical works of the library. These are called as the services behind the screen. The technical section of Central Library performs the function of classification, cataloguing, identification of Subject Headings and transcribing works.

✓ Circulation Section

Registration of membership, collection of membership fees, deposits, charging and discharging, reservation of books, recall of books, stack verification, display of new collection, collection of overdue charges are the main functions of this section.

✓ Periodical Section

This section deals with all the works related to the serials and periodicals. Selection of periodicals, receiving and registering of periodicals, payment of bills, display and reminder are the major functions of this section.

✓ Reference Section

This section is one of the very important sections of every university library. This section of the library contains the various kings of reference books like encyclopedia, dictionary, guide books, bibliography, etc. The library provides reference service to its use by using these documents.

✓ Text Book Section

The text book section of the library is in the ground floor. It consists of books of both Indian and foreign publishers to support the academic and research works of different departments of the university. The Libsys software is used for issuing of books to the use.

✓ Reprography Section

This section is also in the ground floor of the library and this is mainly for the use of the library. Library uses are very much beneficial by this service as they can get their desired materials on the spot by paying a nominal rate.

✓ Back Volume of Journal Section

The back volume section of the library looks after the back volumes of the journals for their future use.

✓ E-resource Retrieval Section

As most of the information is available in e-form the library is trying to give all the facilities to make its use comfortable to access the e-resources. The e-resources

retrieval section of the library equipped with 10 computer terminals with Internet connectivity and the use can access the e-collections/resources of the library including the e-resources subscribed through consortia such as, UGC-Infonet and INDEST.

2.9 Services

The quality and variety of services offered in a library greatly decides extent of use of their library collection. It also brings status and popularity to the library and its staff. Most academic libraries offer some specialist services which are designed to meet the needs of particular user groups or which relate to particular parts of the stock. Such services must be designed to meet local requirements and conditions, but again they must present a coherent approach to the user. The main objective of Central Library, IITG is to support academic and research activities by establishing, maintaining and promoting the library services both quantitatively and qualitatively. To meet this objective the library offers a wide range of services to its use. At present the library is providing the following services to the user.

➢ OPAC Service

Online Public Access facility is available near circulation counter of the library and use can also access the OPAC from any terminal within the university campus. The online search facility enables the use to

(i) Search by author, title, subject or keyword

(ii) Check the titles issued against your name and the due dates

(iii) Check the titles reserved by you and the due dates

(iv) Read e-resources, new arrivals list, library notices etc.

➢ CD Search Service

CD Search Service is the provision of special aid by library staff trained to query bibliographic or other information contained on an electronic storage medium, usually to meet the research needs of the library's clients. In Central Library, IITG users may contact Information Scientists or the Librarian for computerized services, CD ROM-based search services and web-based electronic journals.

➢ Access to Electronic Resources/ Journals

The Central Library, IITG is making necessary arrangement for accessing electronic resources/ journals.

➢ Photocopy Service

The library of IITG is providing photocopy service at subsidized rates to the bonafied member of the library. The reprographic section of the Central Library, IITG is equipped with two Xerox machines. It is created to cater to the information need of use of the library.

➢ Reference/Information Service

Reference service is the service rendered by a library staff in aid of some sort of study. It is not the study itself that is done by the reader. The help given to a reader engaged in research or any sort is what means by reference work. Readers may approach the Reference Desk for information or any assistance in the use of the Library Collections and Services. In Central Library, IITG the reference services are provided to any of the user who approach for it. It ranges from short on the spot service to long search through available documents and on INTERNET.

➢ Reservation of Titles Service

Reservation of title service is very helpful service to the users of the library. Under this service, books which are on loan as well as the new arrivals can be reserved by the users. There are two methods of reserving a book against one's name.

i) Online through search catalogue: here the user search the book record from any of the terminal within the campus and use the reserve button facility,

ii) Users can personally go to the library issue desk and give the details of the books.

➢ Circulation Service

The library is providing home lending of books facility for registered members of the library. The Library extended facilities to 1600 regular members. About 250 visitors from different parts of the country have availed the facilities of the Central Library.

About 2 lakhs documents transacted during 2003-04 through newly introduced bar-coded circulation system. The borrowing facility of Central library IIT Guwahati is as discussed in Table-3 below.

User Category	Maximum Books issued	Issue Period
B.Tech/B.Des Student	7(Seven)	30 Days
M.Tech/M.Des/M.Sc./M.A. Student	9(Nine)	30 Days
Research Scholar	12(Twelve)	60 Days
Faculty Member	15(Fifteen)	One Semester
Project Staff	5(Five)	30 Days
Officer: Gr A & B	5(Five)	30 Days
Staff Member: Gr C & D	5(Five)	30 Days
Preparatory Course Student	5(Five)	30 Days

Table 3: Borrowing facility of Central Library IIT Guwahati

Non-Issueable Items: Current Periodicals on display, Journal CDs and CDs accompanying Reference Books will not be issued to any user. Such CDs are to be used within the Library premises only. The Library has made separate arrangement for reading and printing the contents of such CDs at the rate of Paise 75 only, against Xerox coupons.

Issue of Bound Volume of Journals: The bound volume of journals will be issued for a period of **03 (Three) days** to all categories of use.

Issue of Reference Books & Current Periodicals: Reference Books and Current Periodicals (except those on display) will be issued for a period of **03 (Three) days** to Faculty Members only

CDs & Diskettes: The CDs and Diskettes accompanying textbooks will be issued to all categories of use for **01 (One) day** only.

For Overdue Charges a Demand Slip is issued from the Circulation Desk for Payment at Accounts Section of the Institute. The LIBSYS Software Packages is used to maintain the record of Overdue Charges in case of all users. Students will be required to pay the fine before Registration in the next Semester. The collections of overdue

charge are different from each item. Table-4 shown below shows a detail account of the items with regard to the levying fines as overdue in the library.

Item Details	OVERDUE CHARGE
Book	` 1/day
Back Vol.	` 1/day
Reference Book / Current Periodical (issued to faculty members only)	` 2/day
Non-book Materials	` 20/day

Table 4: System for collecting overdue charge in IITG Central Library

- **Reading Room Facility**

The library has two spacious reading rooms, one in the journal section and other in the book section with adequate light, furniture etc. The accommodation is such that a reader need not carry the bulky volumes of back volumes of journals to a distant table. It also helps the library staff in recharging the volumes back to the shelves.

- **Cataloguing**

Cataloguing includes the job of description, recording and displaying details of library holdings. It is the procedure for listing of books which are arranged on a definite plan. It is the list of holdings of library. For cataloguing, there are several cataloguing codes. Some of them are classified Catalogue Code (CCC) and AACR II etc

- **Classification Scheme**

The Library Classification is the process of putting books and other reading materials on a subject in a logical sequence on the shelves which could be helpful to the use. It is one of the most important steps in the organization of libraries and has been rightly called the foundation of the librarianship. Many classification schemes are used in libraries for classifying the books and give a proper class number. Some of the classification schemes are Dewey Decimal Classification (DDC), Colon Classification (CC) and Universal Decimal Classification (UDC), etc.

- **Working Hours**

The Library remains open from 8.00 a.m. to 11 p.m. on all working days, and from 9.30 a.m. to 5.30 p.m. on Saturdays and Sundays. The Circulation facility is available between 9.30 a.m. to 5.00 p.m. on all working days.

➢ SDI Service

Selective Dissemination of Information (SDI) Service is that service which helps the library to keep its users aware of the new developments in their respective areas of interest without overburdening them with non relevant and unwanted documents. If the newly arrived primary document or information matches the profile of the user the library gives notification to the user to visit the library and consult the relevance of the document.

2.10 Resources

Encyclopedic Dictionary of Management defines resources as a concept which includes:

- A material or an abstract quality that a peon or organization uses to perform work (e.g. Tools, stocks, time, employees).
- Something one can turn to in case of needs especially financial backing.
- Any part of a computer system or configuration, which can be regarded as a separate unit for the purpose of allocation for the use of specific process.

Thus, the concept of resources has very wide range of applications which include Manpower, Funds as well as Tools. The term library resources include the materials, Human, Equipment, Furniture and the Funds. The materials include both macro and micro literature- retrospective, current and nascent and all forms of traditional and non-traditional items including documentary and non-documentary forms. Human resources cover the peon- skilled and unskilled, working in the library. Equipment and furniture mean bookshelves, tables, chairs, filling cabinet, counter, computer, reprographic machines, audio video equipment etc. Fund is the major resources that help to strengthen the library. Thus the library resources is a collective term used to organize and disseminate the information to the needy users and moreover to fulfill the aims and objectives of the library.

Information resources are the recorded knowledge, in whatever format it is and these forms the collection of the library. Information resources of a library are of two kinds, namely documentary and non-documentary sources. Documentary source is a record of work on paper or other material for easy physical handling, transportation across

space, and preservation through time. The documentary sources may be available in various physical forms and media, such as, print and non-print. The documents are of two types, i.e. macro-document and micro-document. Macro-document includes books, monograph, thesis, dissertation, report, etc. and micro-documents include articles in a periodical, journal etc. The non-documentary sources of information include, institutional sources, human sources, which includes colleagues, pee, information gatekeepers, guides, advisors, consultants, vendors, contractors, collaborators, etc. The information resource of a library and information centre is mainly related with the documentary sources. As the main objective of library and information centre is to serve the information needs of a given group of users therefore development of a healthy information resources collection is one of the fit functions of it. Library collection forms a sound foundation for efficient library services. Indeed it is the collection which gives the library a character and identity more so than either staff or building. Unless a library possesses adequate documents supplemented with latest references and bibliographical tools including electronic sources of information, it cannot impart effectual services in the present environment to its clienteles. Collection symbolizes to the sum of total library materials which includes books, journals, manuscripts, Govt. publications, pamphlets, microfilms, theses, dissertations, reference books, CDs, DVDs etc. Importance of a library collection lies in the following functions, which include,

- Collection and dissemination of information is the most importance function of a library;
- Importance and success of library collection lies in the satisfaction of user's information needs;
- Educational reading in a formal sense is the concern of academic, special and teaching libraries. Such libraries should have such a varied collection so that they are able to fulfill these needs;
- Providing higher learning provision of syllabi study and research material in the institute; and
- Making provision of information material for cultural and recreational reading which is another important aspect that enhances the importance of library collections.

The various resources of the library under study have been discussed below.

- **Books**

Books form one of the primary sources of information. They provide a cohesively organized (thought content) information on a specific subject of optimum depth. Books form useful repositories of information both for teachers and learners in a particular field as they contain a crystallized presentation of ideas helpful to the majority of readers. The librarian including the other authorities of the library requires paying maximum attention to develop a sound and healthy collections of books which could be collected through evaluation techniques, and consultation of identified selection tools. The Central Library, IITG has total 90,000 number of book collection related to the needs of different departments of the institution.

- **Periodicals and Serials**

Periodical publications form an important part of today's information world. It is one of the often chosen forms of research communication. A periodical publication is that which appears in parts or volumes at regular intervals with the intention to continue its publication forever. Besides the element of periodicity and continuity, a periodical publication has a distinguishing number for each successive volume, known as its volume number. A serial is also a periodical publication but each volume embodies more or less similar information but updated, mainly relating to its year or period of coverage. Periodicals and serials including magazines and journals present unique collection challenges in libraries. Since periodicals are published on a continuing basis, they require an ongoing financial commitment and large amount of space on library's bookshelves. The Central Library subscribes to 20 Indian and 20 International journals to provide the researchers of the institution the nascent thoughts of the discipline and interest area.

- **Theses and Dissertations**

Another important type of library resources are post-graduate dissertation and doctoral theses submitted to the universities for degrees. These are valuable primary sources which report original work in specific fields. Besides yielding invaluable unpublished information on a specific subject, place of peon, these documents have extensive bibliographies and footnotes which are usually of immense use to researchers. These documents often remain unpublished. Since they do not appear in any trade or national bibliography, their existence remains unknown. This creates

difficulties in their selection and procurement. The Central Library has total 300 theses submitted to the institution from different departments.

☞ Standards and Specifications

Documents which are formulated by agreement, authority or custom of sponsors to define a product, material, process or procedure, quality, construction, operating characteristics, performance, nomenclature, and other like facts are called standards. Specification, on the other hand, are documents that contain descriptions of the technical requirements of a product, material, process or service which are designed to meet the purchaser's particular needs. The purpose of Standards and Specifications is to simplify production and distribution, to promote standardization and quality control, to ensure uniformity and reliability, and to eliminate wasteful variety. Libraries serving an industrial society much have these documents in its collection.

☞ Electronic Resources

E-resources are defined as material (data and/or program(s) encoded or manipulated by computerized device and which are not location specific and can be accessed off campus from everywhere where Internet facility exists. Today e-resources have become so popular among the library community that most of the libraries prefer to have more and more e-resources in their collection. E-resources have a pragmatic value in promoting the use for quick and instant retrieval of information from ocean of information. E-resources comprises of e-book, e-journal, e-reference materials available in shape of e-encyclopedia, e-dictionary, e-digest, e-report etc.

❼ Audio-visual materials

Audio-visual documents today form an important part of any library collection. These documents consist of slides, gramophone records, phonotype, cassettes, motion pictures, video records, etc. Through the use of these documents, one can hear the original voice or can see the incident as it happened. These documents are being extensively used as teaching aids these days. The process involved in the selection of audio-visual materials is different from that of books. Librarian should give importance in the selection tips and criteria for audiocassettes (particularly audio books), videos. Presently the central library IIT Guwahati has 200 audio/video cassettes.

2.10.1 Information Resources

Library collection forms a sound foundation for efficient services. The Central Library, one of the important central facilities of the Institute, currently has 1,18,000 volumes, including textbooks, reference books, conference proceedings, back volumes, standards, and non-book material such as CD-ROMs, audio tapes, video tapes, slides. The Central Library procured several e-books in different subject areas. The Library also subscribes to about 401 current periodicals including both Indian and Foreign. The Library has a rich collection of books on science and technology including chemistry, mathematics, physics, chemical engineering, civil engineering, computer science, electrical and electronics engineering.

The library is the hub of all academic activities. It is the library and laboratory which support the university so that it can perform its functions in an efficient way. The future will give recognition and remember the University for the Result oriented quality research work. Hence to build up the library collection with latest books and journals is of utmost importance. The print collection of the library consists of books, thesis and dissertation and journals. The library has e-journals, bibliographic databases, subject gateways, CD-ROMs and audio/video cassettes. The Central Library collects primary and secondary publications, bibliographic and reference sources in the format best able to support the educational and research needs of students and faculty in all academic fields.

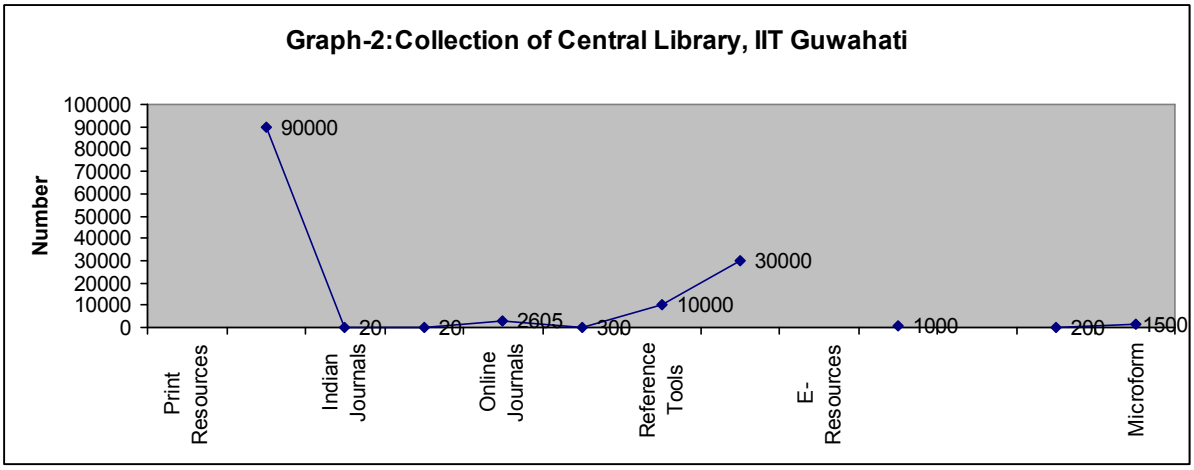
- **Collection Development of e-resources**

Developing collections and its proper scientific management enhance the use of library materials profusely. The need based collection is one of the primary facto which develop the use of reading materials and access to electronic sources. The library under study develops its collection development with regard to book is that it collects clothbound editions except when items are available only in paperback editions. Textbooks, workbooks, study guides, etc., translations of English titles into foreign languages, or of foreign titles translated into non-English languages are collected only by exception. Books of a very popular nature or self-help books are collected only when justified by some educational consideration. At present it has a stock of 90,000 volumes of books including a good number of foreign books. The

total collection of the Library as on 2010 is placed here with in Table-5. Which is supplemented with Graph-2.

Print Resources	
Books	90,000
Indian Journals	20
Foreign Journals	20
Online Journals	2,605
Theses	300
Reference Tools	10,000
Bound Volumes	30,000
E-Resources	
CD-ROM	1,000 (This includes only the Databases available in CD-ROM)
Audio/ Video Cassettes	200
Microforms	1,500

Table 5 -: Collection of Central Library, IIT Guwahati



⊕ Electronic Resources

The library recognizes the importance of the new media in support of education and research at the institution. The institution is a member of UGC Infonet Digital Library Consortium and is getting the access facility to its 40 number of Journals, databases and Knowledge Portal. Different other e-resources subscribed by the library include

401 numbers of periodicals which includes journals, magazines, newsletters and transactions.

⊕ **Audio-Visual materials**

The Library holds a small selection of audio and video cassettes, CDs, and DVDs with listening, recording, or viewing facilities. Items are held in the Library Office and may be requested from the Library staff. Recordings requested by faculty members in support of teaching and research, recognized classic recordings, and recordings to fill gaps in sets or series are given preference in acquisitions. Sound quality is the prime criterion for collecting sound recordings other than the spoken word. Compact disc is the preferred format, with cassette tape being the next most preferred format. Video materials which are expected to be of significant long-term value in support of teaching or research are collected by the Central Library with an effort made not to duplicate Educational Media holdings. The Central Library, IIT Guwahati has total 200 numbers of Audio-visual cassettes for the users.

⊕ **Machine readable materials**

These types of materials are collected when that format is most effective in support of teaching and research and when the Libraries can provide adequate facilities for their use. CD-ROM, laser discs, floppy discs, and data tapes which can be mounted on the institution compute may all be collected, according to priorities established by subject collection development policies and availability of funds. Presently the Central Library has total 10,000 number of CD-ROM in its collection.

⊕ **Journals**

The Central Library of IIT Guwahati subscribes 2605 online journals and magazines and journals are normally acquired only through subscription. In addition to collecting journals that support the teaching and research programs of the institution, it acquires periodicals of more general interest to the academic community. Among the facto that will be weighed in the selection of general interest periodicals are: the substantial nature of articles in the periodical and their intellectual content; degree to which the periodical reflects thoughtful assessment of contemporary trends in society; inclusion of the periodical in indexing and abstracting services; strength of demand combined with lack of ready availability elsewhere; and cost.

2.10.2 Networking infrastructure available in IIT Guwahati

IIT Guwahati has a unique distributed networking arrangement spread through the length and breadth of its campus, virtually enabling all the users to access the available electronic resources. The entire computing infrastructure is maintained and monitored by the computer centre of IIT Guwahati. The centre has all the flavors of UNIX and Windows operating system.

The centre possesses the HP workstations and Sun server, which are used for high-end computation. A powerful system called "Silicon Graphics" is used for generating high-end graphics. There is also a large number of Intel based Linux serve used as computer server, mail server, and proxy server, and name server etc.

Currently the institute has the campus-wide network on optical fiber backbone to all the departments, offices and hostels which terminates at the central network switch housed in the computer centre. In order to provides a total download-bandwidth of 3 Mbps, of which 2 Mbps leased line from ERNET and 1 Mbps leased line from Software Technology Park of India, Guwahati.

- **Server set-up**

The present Central Library Web-page is hosted on a WIPRO NETPOWER SERVER having a dual CPU Pentium III processor, 2 GB RAM, 8X4 GB Hot Swap SCSI hard disk. The web-page, designed by the Central Library, is an integrated part of the Institute's intranet and internet Home Page, written in HTML and JavaScript. The central library web-page provides the basic information about the activities of the library, its collections and links to its Web-OPAC and other associated services.

- **Links**

The library web-page provides links to all subscribed online journals. In addition, it's also provides links to all E-resources available through the INDEST Consortium. The publishers'/service provide' URLs are linked through the library web-page. It provides download links to different client software, e.g. COMPENDEX & INSPEC, MathSciNet, SciFinder Scholar, Web of Science etc databases including allowing to access several full-text journals both Indian and international.

- **Accessibility**

The library users are provided with a secure and hassle-free log on procedure. The user can access all the E-Resources through the Institute's IP Ranges. This arrangement helps the user to access the resources immediately and provides a fool-

proof system of security. They are free from memorizing user ID, password, publisher's URLs etc.

2.10.3 ICT infrastructure and Network system in Central Library, IIT Guwahati

IITG has its own campus LAN with Star topology and the Central Library of the institution is a part of the Campus network. The campus LAN/ Library network is compatible to the Internet and follows the TCP/IP protocol. The ISP (Internet Service Provider) of the library is ERNET and the type of Internet connection is V-SAT (Very Small Aperture Terminals), Leased and Wi-Fi. V-SAT is a new development in the communication satellite world is the development of low micro stations. These tiny terminals have 1-meter or small antennas and can put out about 1 watt of power. All the 16 computer of P4 type including more than 600 PC's of the institution are connected by using Optical Fiber Cable (OFC) and CAT-5 cable. All workstations are connected to Proxy Server through Firewall and Router. The proxy server has direct connection to Mail Server, Web Server, Software Backup Server, and Control Storage Unit. To solve the problem of virus attack the Internet bandwidth is connected to a server called Anti-Virus Server followed by a Hardware Firewall. The institutions campus LAN is spread out to all departments, Central Library, all Labs/Centers/Units, individual rooms of all the students, all faculties and office residences including all the hostels. The campus network and library network connected to Internet by the Internet Service Provider- ERNET. The library software has been installed in the local (library) server and Information Scientist of the library with other library and information professional is managing the software. The institution has its own website hosted by ERNET. The institution updates the website as monthly. There are lines of bandwidth of library network which are 3Mbps, of which 2Mbps leased line from ERNET and 1Mbps leased line from Software Technology Park of India, Guwahati, A 512 Kbps leased line to Guwahati University (GU), A 128 Kbps leased line to Assam Agriculture University (AAU), A 128 Kbps leased line to Central Inland Fisheries Research Institute (CIFRI), A 256 Kbps leased line to National Research Centre on Pigs (NRCP) and it gives links to the Central Library and its e-resources. The library is also a member of INFLIBNET, INDEST and UGC-Infonet Digital Library Consortium. More than 300 users of the university access the library website per day.

The basic network architecture and hardware components and cables used for LAN connection in Central Library, IIT Guwahati is a server on a network is any computer that can be shared by other computers working on the network. A server is any combination of hardware or software designed to provide services to clients. When used alone, the term typically refers to a computer which may be running a server operating system, but is commonly used to refer to any software or dedicated hardware capable of providing services In many cases, the server has to be the most powerful computer on the network, because it is shared among so many users or clients. The server can be categorized in three types, i.e. file server, print server and communication server.

Cable is the medium through which information usually moves from one network device to another. There are several types of cable which are commonly used with LANs. In some cases, a network will utilize only one type of cable, other networks will use a variety of cable types. The type of cable chosen for a network is related to the network's topology, protocol, and size. When signals are sent through a hard-wired network, they are sent along a common set of wires or cables, the network's circulation system. Thus, Cables are the data transmission media and Cabling is the process of connecting one media with another. Three types of cables are used to connect the devices. These include twisted pair, coaxial and fiber-optic. Twisted pair cabling comes in two varieties: shielded and unshielded. Unshielded twisted pair (UTP) is the most popular cable. The quality of UTP may vary from telephone-grade wire to extremely high-speed cable. The cable has four pairs of wires inside the jacket. Each pair is twisted with a different number of twists per inch to help eliminate interference from adjacent pairs and other electrical devices. A disadvantage of UTP is that it may be susceptible to radio and electrical frequency interference. Shielded twisted pair (STP) is suitable for environments with electrical interference; however, the extra shielding can make the cables quite bulky. Shielded twisted pair is often used on networks using Token Ring topology. Coaxial cabling has a single copper conductor at its center.

In networking concept a node is a connection point, either a redistribution point or a communication endpoint. It is a piece of hardware on the system that can be addressed by a message from another node, that is, a computer, printer, fax, modems or CD-

ROM drive. In a network, a node is a connection point, either a redistribution point or an end point for data transmissions. A node has the capability to recognize and process or forward transmissions to other nodes. In data communication, a physical network node may either be a data circuit-terminating equipment (DCE) such as a modem, hub, bridge or switch; or a data terminal equipment (DTE) such as a digital telephone handset, a printer or a host computer, for example a router, a workstation or a server. A sixteen-node (16) Server Farm with 1.5 Tera-Byte of shared storage is used for the Storage & Computation needs of the Students as well as the Faculty members of all the departments. The server Farm works in High Availability Load Balanced Cluster mode. This server Farm is used for general-purposed computation. In order to meet the high-end computational needs a 136 CPU high performance computer cluster (HPCC) is available. Each node of the HPCC has 32 GB main memory and the total storage space is 6 TB. The HPCC is also connected to the GARUDA grid with a 100 Mbps fibre link. GARUDA is a nation wide computational grid that interconnects the high-end research labs of the country.

2.11 Library Finance

Finance is the lifeblood of any organization. It plays an important role in the organization and administration of a library. The authorities should guarantee stable and adequate financial support to the institutions created by them and it becomes all the more important if the institutions are expected to render helpful, satisfactory and efficient service to the community. In case of libraries, the expenditure is always more then their income. Thus, libraries are considered to be spending institutions. The expenditure of libraries goes on increasing with the improvement of services. Their financial demands are recurring. Therefore the library should be assured of sound finance otherwise it cannot discharge its services. Annual budget is an important indicator of financial commitment of any library.

The governing authority of the university is responsible for providing adequate library funds and the university librarian is responsible for administering them. From the point of view of financial administration, librarian is concern with the officials responsible for academic, financial, and business affairs, the source of library funds, preparation, and administration of the budget. The institution gets special grants from

the UGC and the State Government which are passed on to the library for various purposes such as building, furniture, equipment, purchase of books, etc. For the purpose of establishment, i.e. salaries and wages, for stationary, binding, postage etc. the university has to make allocations for the library out of its own budget. The governing authority of the university is responsible for providing adequate library funds, and the university librarian for administering them effectively.

2.11.1 Library Budget

The term budget may be considered as a statement of the estimated revenue and expenditure of an organization for a definite period. In other words, budget is an estimation of probable income and expenditure for the ensuing year. In general sense it may also mean a plan or the coordination of revenue and expenditure and also the amount of money, which is assigned to particular purposes. It is the statement of financial position of the library. Like other institutions, IITG library has its own budget which includes the sources of income and items of expenditure.

Budget for Book and Back Volume Booking and Expenditure in Central Library, IITG during the year 2009-10

Department/ Center	Approved Books & BV Budget for the F.Y.2010-11	Booked Amount	Balance of Booked Amount	Bills sent for payment	To be spent by 31.03.2011
	A	B	C=(A-B)	D	E=(A-D)
Biotechnology	23,89,000	13,25,444	10,63,556	5,80,617	18,08,383
Chemical Engineering	23,07,000	7,69,278	15,37,722	2,85,368	20,21,632
Chemistry	26,04,000	12,45,097	13,58,903	2,74,396	23,29,604
Civil Engineering	28,07,000	2,21,453	25,85,547	24,000	27,83,000
Computer Sc. & Engg.	25,92,000	2,08,390	23,83,610	23,637	25,68,363

Design	16,22,000	2,86,990	13,35,010	2,62,148	13,59,852
Electronics & Comm. Engg.	30,70,000	13,29,485	17,40,515	2,99,458	2,77,0542
Humanities & Social Sc.	19,86,000	3,80,993	16,05,007	1,63,679	18,22,321
Mathematics	21,15,000	8,22,732	12,92,268	1,49,906	19,65,094
Mechanical Engineering	29,68,000	2,68,243	26,99,757	1,07,983	28,60,017
Physics	22,95,000	1,00,319	21,94,681	39,484	22,55,516
General	1,60,000	1,45,385	14,615	0	31,45,363
Center for Energy	1,60,000		1,60,000	0	1,60,000
Center for the Environment	1,60,000	31,420	1,28,580	0	1,60,000
Center for Nano-Technology	1,60,000			0	1,60,000
Center for the Edu. Tech	65,000	2,64,776	65,000	0	65,000
Preparatory Courses	40,000		40,000		
Total	**2,75,00,000**	**71,35,229**	**2,03,64,771**	**22,10,676**	**2,52,89,324**

Table 6: Budget for Book and Back Volume Booking and Expenditure in Central Library, IITG during the year 2009-10

2.11.2 Budget Preparation

Preparation of a budget takes as much time as its implementation. Generally, during the middle of the current financial year, the budget estimates for the next financial year are called for by the university office from the institution librarian. At this time the librarian submits the budget estimates for the next year, and the revised estimates for the current year. Estimates are prepared on the basis of past year's experience,

present year's demands and future year's expectations of requirements. The Central Library does not have its own earning sources. It solely depends upon the budgetary allocations made by the parent institutions every year. For the approval the librarian presents the budget to the library committee for discussion and approval. The library budget, with the approval and recommendations of the institution library committee, is sent to the institution office to be incorporated in the total institution budget. Plan requirements of the library are assessed by the UGC Visiting Committee which visits the library and discusses the library requirements with the librarian. The approved recommendations are consolidated and submitted for sanction to the UGC.

2.12 Conclusion

LICs provide a mechanism for storing, preserving and sharing documentary records of various types of human endeavor. The types of information that they contain and various media used to store this information influence the properties of LICs. As information is a commodity, individuals use this resource to build sophisticated knowledge structures in their heads. LICs are pre-eminent vehicles for mass distribution of information directly to users. In the past, wide ranges of paper-based products have been used to provide access to information. The emergence of new information handling technologies have significantly influenced the basic nature of conventional paper-based LICs and have created a need for a new type of library systems as electronic, digital and virtual LICs.

The Central Library, IIT Guwahati holds its goal to achieve the height as an ideal library in the region as well as in the country. The objective ahead is to serve the community in the sphere of literature and information services both in qualitative and quantitative terms in a sustained manner towards attainment of the academic and research pursuits as set by the institution. The library makes coordination between the documents, students and research scholars together and encourage reading for pleasure, self discover, personal growth and sharpening of intellectual curiosity. For revamping education and enhancing its quality and above all for a total quality management in higher education it is imperative to utilize the tools and facilities of ICT to the maximum possible extent in the libraries. The Central Library, IIT Guwahati acts as a conserver and disseminator of knowledge through variety of

services. LICs in their effort to provide a broad array of resources to meet the needs of their use collect resources in various sizes and formats over a period of time. These resources can include manifestations of the printed word, audio and video recordings, microforms, visual and electronic resources, and generations of requisite equipment for accessing, viewing or listening to data stored on them. At present, LICs and users are familiar with electronic forms of resources in the form of reference books, periodical indexes and abstracts, and full-text electronic journals. These resources were easily adapted to electronic format and are now readily accepted by users

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CHAPTER - 3

GROWTH AND DEVELOPMENT OF E-RESOURCES AT IITG LIBRARY

3.1 Introduction

Technical library being the foremost institution for growth and development in the field of science and technology requires developing its multi-disciplinary, multi-mode, multi- media collections as the users demand to support their education and research. Achieving effectiveness in library services is a basic strength and responsibility of library management. Added to this, the user satisfaction has become challenging in the service organizations like library and information centers. Significant impact of technology especially in the academic libraries has faced a numerous changes in recent yea. Users have more options than ever for obtaining their information needs. The role of library is becoming less that of collecting and more that of a knowledge navigator, a facilitator of retrieval and dissemination. Due to the internationalization of higher education the role of library is becoming very much crucial in respect of information availability and its retrieval. The technical libraries except few in Assam are facing two major threats such as, (1) a global digital environment and (2) increasing competition. They must improve the quality of their services in order to endure. The need to understand what library customers expect in terms of service quality is now necessary for good management. ISO 9001 is one of the possible ways to manage quality in a library which emphasize the continuing improvement of services, a process oriented approach and user oriented focus.

The library environment is currently undergoing a rapid and dynamic revolution leading to new generation of libraries with an emphasis on e-resources. Now library and information centers have been extended to facilitating access to electronic resources such as e-journals, e-books etc. through innovative technologies. The rapid growth in popularity and availability of e-journals has left libraries struggling to adapt to the new demands imposed by this new form. Indian Institute of Technologies was investing in infrastructure and libraries have started to explore various e-journal access models and consortia based resource sharing opportunities. Technology has been an important driving force for change. In library environment traditional services of classification, cataloguing, and other technique usage are changed by day by day. Now the resources of the library are placed in a scientific way of new concept, a concept of virtual. Electronic Resources using helps the library services efficiently in many ways of cost effectiveness, manpower reducing, retrieving, storage space and

time consuming. Card catalogues have largely been replaced by online catalogues and these are being expanded through the addition of materials not previously included. It is no longer seen as a tool bounded by the collections of a single library but one that revels the availability of resources in a network of libraries is essentially a gateway to a universe of Information resources in printed, electronic or other forms.

3.2 Comparative study of all IITs

The Indian Institutes of Technology (IITs) in India have a group of 15 autonomous engineering and technology-oriented institutes of higher education established and declared as *Institutes of National Importance* by the Parliament of India. The IITs were created to train scientists and engineers with the aim of developing a skilled workforce to support the economic and social development of India.

Each IIT is an autonomous university, linked to the other through a common IIT Council, which oversees their administration. They have a common admission process for undergraduate admissions, using the Joint Entrance Examination (popularly known as IIT-JEE) to select around 8,000 undergraduate candidates a year, who will eventually receive a B. Tech. degree in Engineering. The equally coveted graduate level program that awards M. Tech. degree in engineering is administered by the older IITs (Kharagpur, Bombay, Madras, Kanpur, Delhi) and the Indian Institute of Science, Bangalore. M. Tech. admissions are done on the basis of the Graduate Aptitude Test in Engineering, (popularly known as GATE test). In addition to the B. Tech. and M. Tech. programs that IITs are mostly known for, IITs also award other graduate degrees such as M.S. in engineering, M.Sc in Math, Physics and Chemistry, MBA and Ph.D. through tests such as JMET, JAM and CEED. About 15,500 undergraduate and 12,000 graduate students study in the IITs, in addition to research scholars.

IIT alumni have achieved success in a variety of professions. Most of the IITs were created in early 1950s and 1960s as the *Institutes of National Importance* through special acts of Indian Parliament. The success of the IITs led to the creation of the Indian Institutes of Information Technology (IIIT) in the late 1990s and in the 2000s.

All 15 (Fifteen) IITS in established in India till 2009 have been mentioned below in Table- 7.

Name	Abbreviated name	Year of Establishment	City/Town	State/UT
IIT, Kharagpur	IITKGP	1951	Kharagpur	West Bengal
IIT, Bombay	IITB	1958	Mumbai	Maharashtra
IIT, Madras	IITM	1959	Chennai	Tamil Nadu
IIT, Kanpur	IITK	1959	Kanpur	Uttar Pradesh
IIT, Delhi	IITD	1963	New Delhi	New Delhi
IIT, Guwahati	IITG	1994	Guwahati	Assam
IIT, Roorkee	IITR	2001	Roorkee	Uttrakhand
IIT, Ropar	IITRPR	2008	Rupnagar	Punjab
IIT, Bhubaneshwar	IITBBS	2008	Bhubaneshwar	Orissa
IIT, Hyderabad	IITH	2008	Hyderabad	Andhra Pradesh
IIT, Gandhinagar	IITGn	2008	Gandhinagar	Gujarat
IIT, Patna	IITP	2008	Patna	Bihar
IIT, Rajasthan	IITJ	2008	Jodhpur	Rajasthan
IIT, Mandi	IIT Mandi	2009	Mandi	Himachal Pradesh
IIT, Indore	IITI	2009	Indore	Madhya Pradesh

Table 7:- List of Indian Institute of Technologies in India

3.3 Library Automation

The automation of library and information centers in India started in middle of 1950s till the concept of automation was centered on the use of computers for housekeeping

operations and information services by individual libraries. There are some convincing facto accountable for library automation which include information explosion, increased users' demand, labour intensive nature of work, changing concept of documents and application of modern management techniques and those could precipitate the predominant elements such as , reducing response time and resource sharing. Computer based automated facilities are now recognized as the most effective system and obligation. The role of computers and associated peripheral media are being increasingly used in library and information services for acquisition, storage, management, manipulation, processing and repackaging of information, dissemination, transmission, and improving the quality of products and services of library and information centers.

Library automation refers to use of machine basically the computer systems to promote the library services and to save the time of the users. The utilization of computer and related techniques make the provision to provide the right information to the right reader at the right time in the right personal way. Automation helps the library and information centers to provide their services in an efficient, economic, adequate, rapid, and effective way.

3.3.1 Need for Library Automation

The invention and increasing use of computers in various field of human activity is witnessing the fact that the computer is considered as essential component for all round developments. The several aspects of library management, the demand for more and faster information services and the decline in library resources are compelling librarians to appreciate the role of computers with their operations. The improvement in computer peripherals programmes and telecommunication maximizes the benefits of automation. So, to create efficient services, to provide accurate service, to help capabilities of satisfying the users and to have abilities for being operated by all users, automation has become indispensable in library and information centers. Further, the following reasons were essential for implementing automation in the library and information centers.

- ❖ Need have computed is present in all areas depending upon its usage.

- ❖ They range from acquisition control, serial controls, cataloguing and circulation control.
- ❖ They are also used for library manage evaluation of reports, statistics etc.
- ❖ For the good administration of library computers are used in all levels of workflow.
- ❖ Conducting retro-conversion of data.
- ❖ Providing access to online catalogue.
- ❖ Providing access to local library resources outside the library.
- ❖ Networking with libraries having common interest.
- ❖ Networking and resource sharing facilities are possible only in automated environment.
- ❖ It can accommodate increased workload.
- ❖ Computers are used in marketing of library services.

3.3.2 Essential for Library Automation

Library automation is the computerization of house keeping operations of the library to operate a computerized library management system. It offers new services based on the technologies and also integrate the traditional library operations in the era. The following are the essential things for the library automation:-

❖ Healthy Collection

Computerization is not just for the sake of computerization. Computerization of the library collection and other library services is to serve the users better and it provide access to information. For this purpose, fit of all the collection of the library should be good and comprehensive. If the collection is not good what is the use of automation.

The library should have a book acquisition policy and norms for the building up of a good collection. Collection building is much more difficult task than purchasing a computer system. Computer can supplement and enhance the quality of the library collection but it cannot altogether replace the library collection.

❖ Finance

Finance is the backbone of any venture. UGC norms stipulate that the university library be allocated 10% of the institution budget. Finances are required in the university library for;

- The collection building

- Computer System
- Recurring Expenditure

For collection building every university in view of the rising cost of reading materials and the declining purchasing value of rupee, should provide at least 15% of the university budget annually. Then only it can be felt that the university administration is really interested in the university library. Secondly, the university library would require a minimum non-recurring amount of 10-12 lakhs for establishing a computer system. Thirdly, the university library would need an amount of the 3-5 lakhs for annually for the maintenance of the computer system and its updating and uninterrupted power supply etc.

❖ Computer Hardware

Selection and purchase of a computer is a complex procedure. The library should decide fit what type of computer is suitable for its work. There are varieties of computers and computer make. There are mini-frame computer to main frame computer.

There are different types of firms and organizations to supply computer hardware and parts, such as;

- Computer manufacture
- Independent terminal and peripheral manufacture
- Selling companies
- Brokers
- Leasing companies
- Retail shops

❖ User Friendly Computer Software

Computer software are generally expensive, software includes,

- Utilities format, conversion programmes
- Application Software
- Database management system and data dictionary software
- Dated communication software
- Programming aids, testing aids etc.
- Additional system software.

Software is generally a package. It is invisible and unverifiable till it is acquired. There are many library need-based software packages today in the market. Some of

these are CDS/ISIS, WHIZKID, TULIPS, LIBSYS, LIBRIS, OASIS, BASIS PLUS, TECHLIB plus, etc. Though it is not possible to evaluate exhaustively all these software packages.

3.3.3 Areas of Automation in Libraries

The information scientists have been very much potential in bringing out the effectiveness of library automation in to reality mostly in academic and research libraries. All out efforts to bring automation in to practice, they play a crucial role. Automation to different areas of library services has been discussed threadbare.

- **House keeping operation**

In libraries, the house keeping operations play a major role in providing the reading materials including electronic materials with the help of technology and thereby, the primary objectives of the library are fulfilled including imparting satisfaction among the users. More over, the technology applications have a far reaching effect in the house keeping operations which how ever, is not limited to only circulation, serials etc rather it has extended its boundary to provide services like WebOPAC, down loading of information through hyper linking etc. Various house keeping operations of the libraries include acquisition, cataloguing, circulation control, serial control etc. The Basic functions related to house keeping operations in a library irrespective of type or size may be grouped which has been discussed in Fig.2 as under:

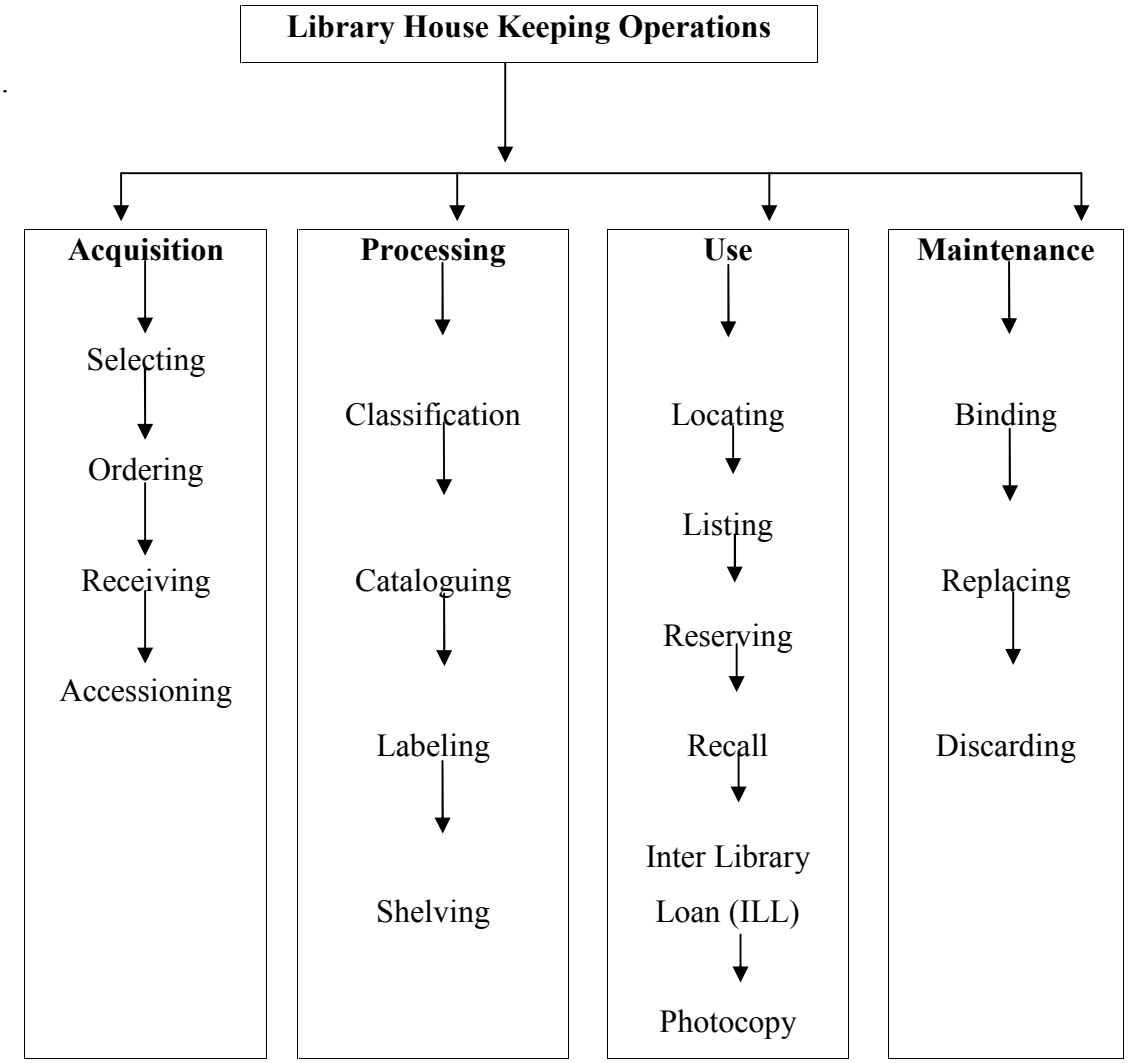

Figure 2: Divisions of Library Housekeeping Operations

(i) Acquisition

Acquisition is the process of purchasing books and other documents including serials for a library collection. Acquisition encompasses all aspects of the procurement of all types of library materials, whether by purchase, gift or exchange, from the request stage through transfer of materials to cataloguing. These work procedures are usually both manual and offline. All operation relating to Acquisition can be computerized. The computer can perform better file creation, updating and maintenance of files, financial management and monitoring of the receipt and passing of the documents through various stages very easily. In automated environment, the library can make an order through online and allow vendors to offer data online immediately. As compared to traditional method, it saves on many costly, time-consuming, labour intensive jobs and shortens the time of receiving data.

(ii) Cataloguing

Cataloguing includes the function of describing, recording, and displaying details of holding of the library. The automation of cataloguing process includes the retrospective conversation of existing catalogue records into machine-readable form. With the help of high speed printers library has provide the computer generated printed catalogue and also perform their timely updating. Catalogues can be produced in various physical forms including microfilm catalogues and online public access catalogue (OPAC). Online Public Access Catalogue (OPAC) is more ideal as it permits several access points through terminals, but they are costly.

(iii) Circulation Control

Circulation control is one of the important functions of library management. It keeps track of members' registration, issue, renewal, return and reservation of documents. The circulation system involves a grate deal of record keeping activities such as charging and discharging of books, overdue collection, maintaining statistics and enrolling new members to the library. Automated support for circulation control vastly improve library's ability to rapidly and accurate record the loan transactions, to monitor these transactions, to record return of lend items and to support other related circulation functions.

(iv) Serial Control

It is the process of acquiring periodicals/journals. Serial management, an integral part of library operation, has become increasingly complex over the yea. The emergence of e-journals has made it further complicated. Automated serial control serial systems can handle receipts of periodicals; send timely reminders, subscription information, claims for missing issues, binding information etc. in a more effective and economic way. There are three files which are needed for serial control-an order file, a holding file and a fund file. It makes it easy to prepare a list of holdings.

❶ Information Storage and Retrieval

Information retrieval is the process of finding some desired information in a store of information or database. The enormous increasing of published information and rapidly increasing specialized nature if the literature have resulted in serious problems in accessing information, i.e. retrieving information on a given topic or subject and in becoming aware of new pieces of information. Information retrieval systems for bibliographic applications are generally characterized by the fact that they permit very large record size, Boolean search capabilities and flexible output formatting. On-line

SDI services from CAS, MEDLINE, DIALOG and several other databases can provide a pinpoint accuracy, expeditions and exhaustive information service.

❷ **Resource Sharing**

The resource sharing helps one library to access resources of other libraries. With the applications of automation to libraries, concept of resource sharing and networking has gained wide popularity. Those libraries that have already computerized their library services can be listed with each other through a suitable telecommunication network system. The system enables the participating libraries to obtain and access information of each other by using computer terminals attached to network system.

❸ **Office Automation**

Computers can be utilized effectively for office automation. The application of IT in the libraries also enables to reduce time wasted on non-production routine work and to improve the quality of work. Financial and personal management can be done effectively and accurate using computers.

3.4 Automation of IIT Library, Guwahati

Library automation efforts began in 1930s. But during 1970s, the inventions of the integrated computer chip and storage devices led to the substantial increase in use of mini and micro computer. In 1980s the vendors offered a wide choice of integrated library software packages. Now computers are being used in most of the libraries and help the librarian to carry out their work and making it easier to manage their work. Library automation refers to the use of machines basically the computer systems to promote the library services and to save the time of users. Automation helps the library and information centers in rapid and accurate processing of information, rapid searching of information and networking services etc. So to create efficient service, to provide accurate service, to have capabilities of satisfying the users to have and abilities of being operated by all users automation is very much needed at every library and information centers having good number of collection. The IIT Central Library which is using LibSys software for the development of each database, its maintenance and use service of its documents, holding of books, periodicals, back volumes, standards , audio visual materials, thesis, dissertation, CD-ROM etc. Using LibSys automated system. All operations of the library are automated with the help of an integrated library software package. The library uses LibSys software package

which is an integrated multi-user library management system that supports all in-house operations of the library. The LibSys consists of modules on acquisition, cataloguing, circulation, serials, article indexing and OPAC. The user can access the Web OPAC through the LibSys, which is a powerful search engine for finding any cataloguing information from bibliographic database on-line. The various categories under Web OPAC are: Search, New Arrivals, Journals and Patron. The database for the entire collection has been created and available through Online Public Access Catalogue (OPAC). The database of books available in the Library is being updated on day to day basis with details of recently acquired books. Records of all the Library patron has also been created in the LibSys packages.

3.4.1 LibSys Software

LibSys is integrated multi-user and user friendly library management software that caters to the needs of an advanced library and information professionals. It is an 'integrated multi-user library information management system. A multi-user system refers to the capability of the system to allow more than one user to have simultaneous to allow them to carry out the work of their choice in any module. It provides a tree structure system with each system comprising of several sub-systems having unmatchable depth in functionally. It has a powerful and user-friendly WEB-OPAC along with windows-based OPAC. It runs on various platforms such as WINDOWS (95/98/NT/2000/XP), UNIX (various flavors), LINUX, etc. Further, it adheres to standards such as MARC and Z39.50 protocol that makes it suitable for cooperative networking and resource sharing.

✓ **Hardware – System Software Requirements for LibSys**

Minimum hardware and software configuration are required for the LibSys to run successfully. The Server model of LibSys software needs the following hardware for working in a networking environment:

Specification

- Dual Intel Xeon 3.0 GHz Processor
- 1MB L2 Cache
- 1GB PC3200 ECC DDR RAM
- 2 No's 73 GB 10K RPM Ultra 320 SCSI Hot Swap SCSI HDD/2No.s Simple Swap Serial ATA HDD with Integrated RAID 0 and 1

- Dual Gigabit Ethernet Card
- Dual Redundant Power Supplies
- DVD Writer
- 2 Button Optical Scroll Mouse
- Standard Keyboard
- 1.44 FDD
- 17” TFT Monitor

The Client model of LibSys software needs the following hardware for working in a networking environment:

Specification

HP Compaq D 290:

- Intel® Pentium® 4 3.0 GHz with Hyper-thread Technology 1MB L2 Cache 800 MHz FSB
- Windows XP Professional
- Intel®915G Chipset
- 512 MB DDR Ram (400 MHz)
- 80 GB Serial ATA HDD
- 52x Combo Drive
- Integrated Gigabit Ethernet
- Standard Keyboard
- 1.44 FDD, Optical Scroll Mouse
- 15” TFT Monitor

✓ **Different Modules available in LibSys Software**

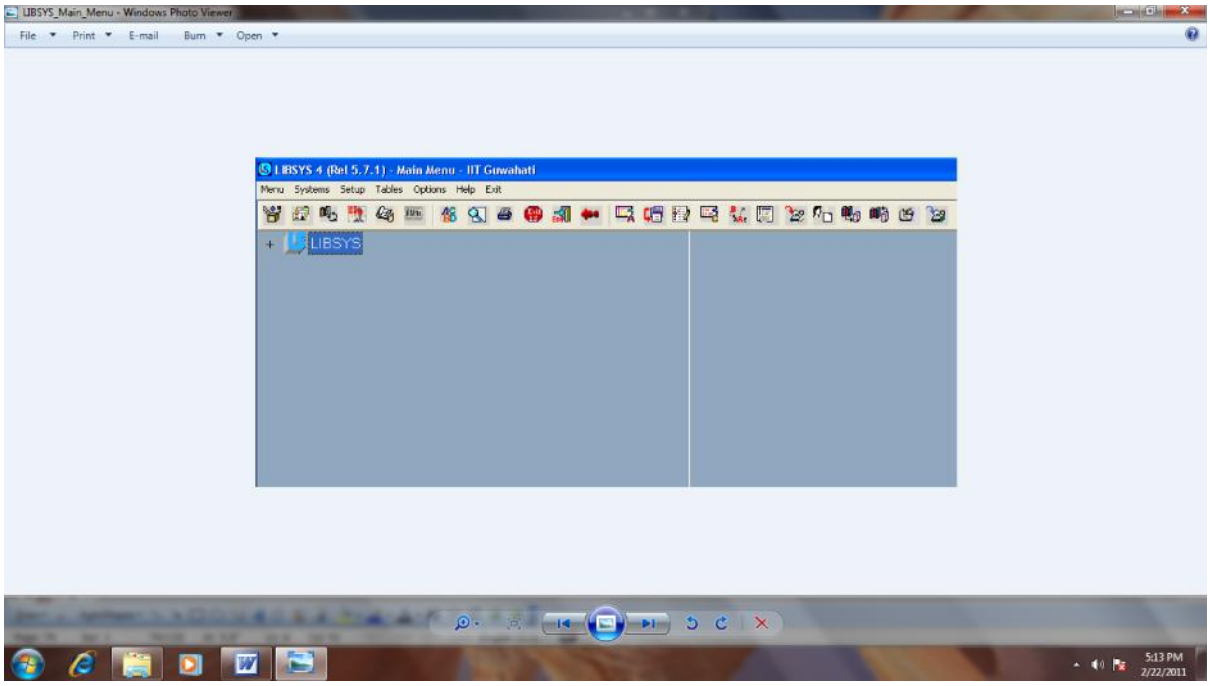

Figure 3: Main Menu of Libsys

User friendly LibSys has modules to support the library activities for both academic and research libraries. The modules available in the software are described below.
Acquisition System

- Cataloging System
- Circulation System
- Serial System
- Article Indexing System
- OPAC

Acquisition System

It deals with approval and ordering of library materials, monitoring their receipt, invoice processing and accessioning. It also maintains expenditure and budget analysis under a variety of accounts/heads.

The acquisition process consists of:

- Selecting materials for a library;
- Placing orders for the supply of books to be purchased;
- Processing materials received as gifts;
- Arranging for exchange of books;
- Receiving the books in the library;
- Accessioning them; and Passing the bill for payment for the book purchased.

Cataloguing System

It provides online catalogues in various orders maintained in traditional libraries. Additionally, it makes available instant listings under a variety of searchable fields to suit the requirements of a modern reference center. Other than data entry facility, the system has the additional facility to accept data in standard machine readable formats such as CCF (ISO-2709), MARC (ANSI-Z39.x), etc. This makes import/export of bibliographic data in standard exchange formats possible. The system provides facilities to generate bibliographies, current awareness services and selective dissemination of information (SDI); Multimedia files can be attached and viewed in OPAC, meeting the requirements of certain specific libraries.

Circulation System

It maintains up-to-date membership records as well as the latest status of the collection meant for circulation. It facilitates printing of bar-coded ID cards, along with an optional facility to attach member's photograph. It performs all the functions related to circulation, providing suitable checks at every stage. It also takes care of infrequent but routine functions such as bindery record management, books on display in the library, latest additions to the library, etc.

Serial System

It provides control of subscriptions of periodicals and subsequent monitoring of the scheduled arrival of individual issues. It maintains records of the budget sanctioned for serials under different categories, amounts spent, thus providing complete budgetary control. It also handles serials which are received gratis or in exchange.

Article Indexing System

It provides the facility to create and maintain a separate articles database. It facilitates special services such as SDI, listing of current articles, bibliographies, etc.

OPAC System

As the acronym suggest, it provides an Online Public Access Catalogue. The bibliographic databases can be accessed with printed indexes. The system includes a word-based search facility using Boolean operators that can narrow down a search to meet very specific needs. Additional features of this system are:

- Periodic listing of recent additions to the library;
- Members can find the materials checked-out to them, and
- Reserve materials that are currently in circulation.

WEB-OPAC System

In the new version of LibSys to use OPAC it is necessary to install a client program on windows. Steps to install OPAC client are as follows:

1. Download the self extracting file Isclntr4.exe to a temporary folder, say to c:\ Isclntr4.
2. Run c:\ Isclntr4\ Isclntr4.exe to extract files. Files will be extracted in c:\ Isclntr4\ Isclntr4\
3. Run c:\ Isclntr4\ Isclntr4\setup.exe to install OPAC in the PC. By default in c:\info folder [please don't change the folder name].
4. Right click on the LSOPAC4 icon and select the property and replace the "Target" field information with the follow argument: C:\INFO\LIBSYS\USR\LSCLIENT.EXE.202.141.81.18 7001 0 PA
5. Start the program by clicking Start > Programs > Libsys Applications > LSOPAC4
6. The Isclntr4.exe file and extracted folders (i.e. c:\Isclntr4) may be removed after installation.

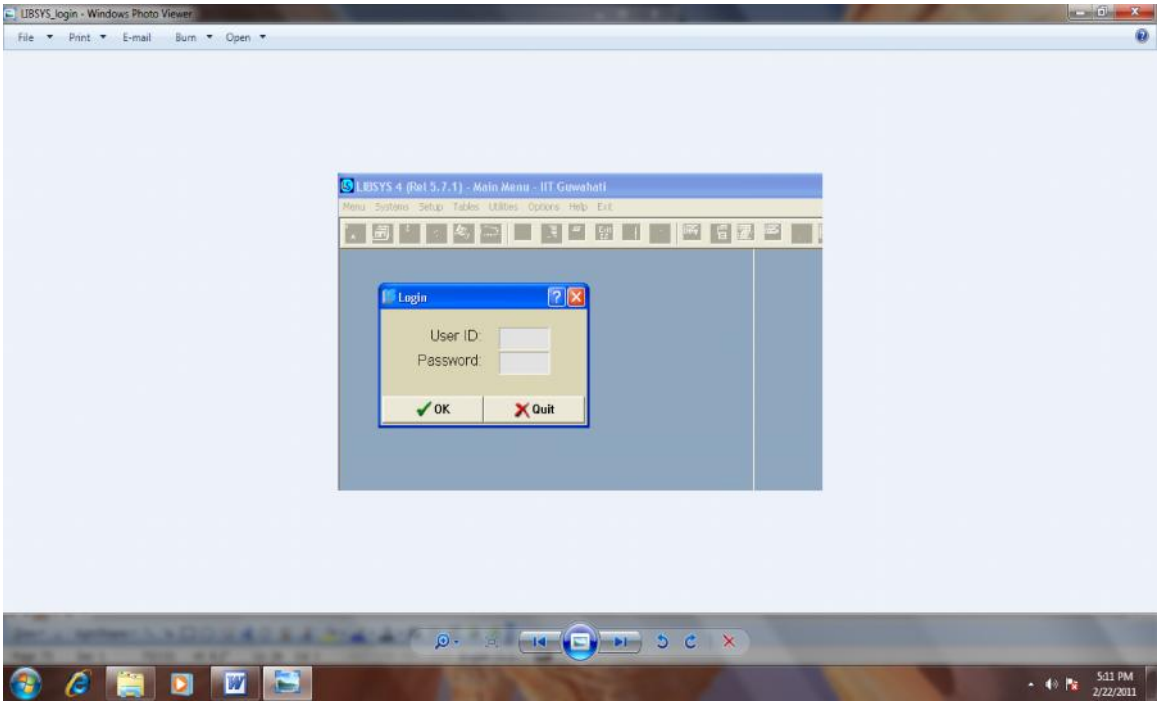

Figure-4: Login of Libsys

Library users can see their library account (transactions), browse library holding, reserved issued books, renew etc. online for their desktop in the LAN and Wi-Fi. Every user at the Central Library, IIT Guwahati has their own ID number and password with the help of which they can enter into the LibSys software.

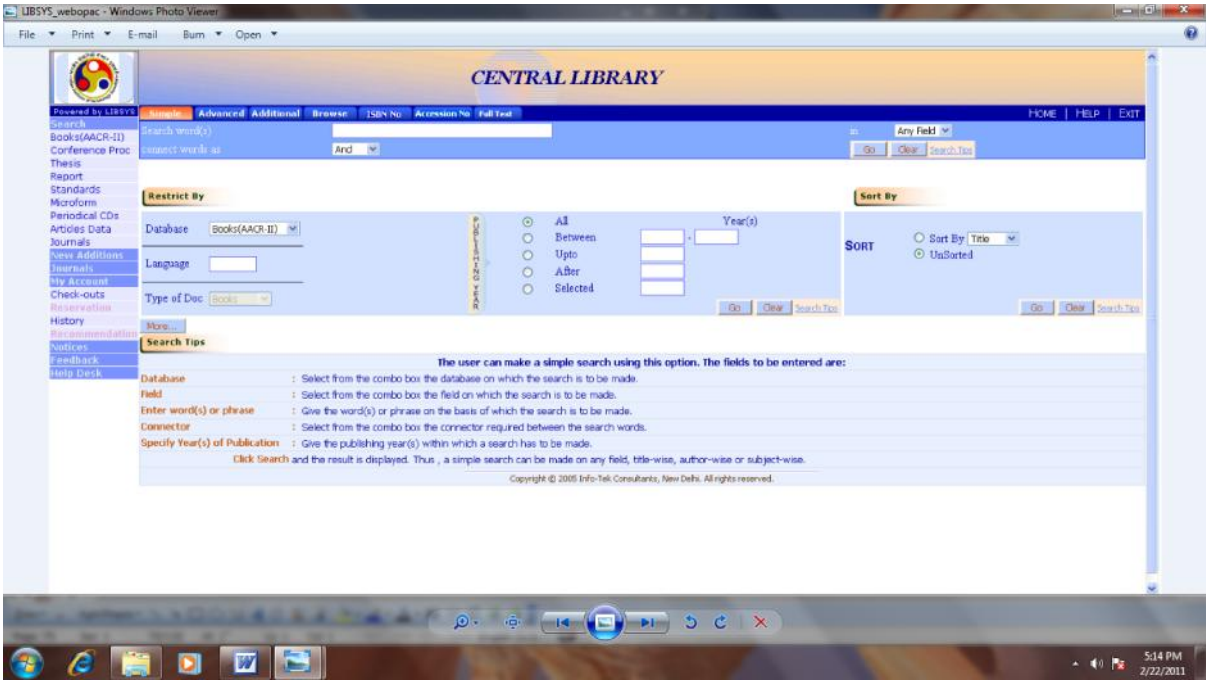

Figure-5: Libsys WebOPAC

3.4.2 OPAC and its use at IIT Guwahati Central Library

The IIT Central Library which is using LibSys software for the development of its database, its maintenance and user service of its documents, holding of books, periodicals, back volumes, standards, Audio-visual materials, theses, dissertations, CD-ROMs etc. using LibSys automated system.

Users generally come to the library with a hope to get their required documents with an easy and simple way and without losing much time. The OPAC systems with its various retrieval facilities (e.g. Author, Title, Classified, Subject, etc.) make their effort easy to find out a document with a limited time span and with an expected scientific away. The modern and up-to-date system with quick response make use more and more dependent to the system spending more time. Users basically come to the library to get their required document with the Author name, Title and sometimes only with Subject heading. Therefore the demand of Author is coming fit. Here surname of the author is using to find out a specific document. Hence demand of the Author Catalogue is more then that of the others. The fit few words of the surname are sufficient to get the exact author name from the index. If there is more than one title by the same author then the particular title has to be highlighted and then press enter to get details of bibliographical records. The same technique is also used to select through Title and Subject.

Though Title is the next important away of searching strategy use users it less then that of other options. Even then it is an important system of searching library database. User needs to be entering one word or few to get his/her specific documents and then to select it by highlighting in the same away as it was with the "Author Search System". In this search system users need not enter the article belongs to the title. (E.g. A, An, The).The next important fact is the marching of the title with the general title indexing. User can get series title as well as the volume no. etc information in details within the jurisdiction of title index. Series title are differentiate from the general title in the beginning itself by giving capital letter in each word of the title to get-rid-of from any confusion with the general title entry.

Another important and strategic search system is the Keyword of the Title. Generally users, those who do not know about the Author name, Title proper and he is just remembering a single word of the Title may get the specific Title from the database. Hence demand and use of KWIC is much more than that of the others. It fulfills the demand of both the professional user as well as the casual user to get their document without much labour.

The provision of Boolean Logic is another important technique for searching the database; user is not much interested with it. They generally come to the library with an idea of their subject as well as about the document. Hence, it can be said that the Boolean Logic is an important facility for searching the database is not the ultimate one for user and onetime it does not get much importance. There is variety of documents in the library and OPAC system is representing all, the search system and strategies are same.

3.5 Conclusion

Thus LibSys play a significant role in information retrieval in IITG Central Library. It not only guides users to get the book from the book stack or journals from the display rack but also helps users to get all kinds of information for the subject or research jurisdiction. OPAC can be accessed from the whole campus through LAN systems as well as from the outside through its WEBSITE. Now a day, OPAC is popular away of searching database of library or a group of libraries. Institution in India are investing infrastructure and libraries have started to explore various e-journal access models and consortia based resources sharing opportunities. The user communities of Central

Library, IIT Guwahati currently have access to a huge number of e-journals. The migration to e-resources helps the library to meet the expectation of unrestricted, convenient and remote access, in addition to having them benefit from the powerful searching tools and features that the printed documents could not offer. The entire collection development was executed in phase number. As a fifth phase in e-resource collection development process, library embarked into subscribing e-version of following Abstracting and Indexing periodicals along with the back files and stopped print subscription.

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CHAPTER - 4

E-RESOURCES: SERVICES

4.1 Introduction

E-resources are becoming important information resource in today's electronic environment, as they are more up-to-date, and can be accessed anywhere, crossing all geographical boundaries. Through their various search techniques, electronic resources provide extensive links to explore additional resources or related content. Such resources add value while conducting R & D activities. There has been a rapid urge of the user community to get more and more information online. The development of ICT devices, the rapid rise of electronic databases, and modern e-book technologies have altogether changed the entire scenario of informatics. The user attitude to information is gradually shifting from printed documents to electronic resources and thus, it has become an important area of research for the information professionals in India. Electronic resources are invaluable research tools which complement print-based resources in any traditional library. Electronic resources provide access to information that might be restricted to the user because of geographical location or finances. They also provide access to current information as these are often updated frequently. Through their various search techniques, electronic resources provide extensive links to explore additional resources or related content. In addition, electronic resources are convenient to use since users are able to access information from the library, internet cafe and offices or at times from the comfort of their homes at any time of the day.

4.2 Use of e-resources at IITG Library

Advances in computer applications during the past few decades have brought radical changes in the way information is gathered, stored, organized, accessed, retrieved and consumed. The application of computers in information processing has brought several products and services to the scene. The Internet and the Web are constantly influencing the development of new modes of scholarly communication; their potential for delivering goods is quite vast, as they overcome successfully the geographical limitations associated with the print media. Further, the distribution time between product publication and its delivery has been drastically reduced. The Internet can be used for efficient retrieval and meeting information needs. This is very important for university libraries since most of them call for more and more research work. This important fact is convincing many libraries to move towards digital e-

resources, which are found to be less expensive and more useful for easy access. This is especially helpful to distant learners who have limited time to access the libraries from outside by dial-up access to commonly available electronic resources, mainly CD-ROM, OPACs and Internet, which are replacing the print media.

Libraries have witnessed a great metamorphosis in recent years both in their collection development and in their service structure. Over the last several years, a significant transformation has been noticed in collection development policies and practices. Print medium is increasingly giving way to the electronic form of materials.

4.3 Library Consortia and e-resources

With the advancements of Information and Communication Technology (ICT) applications, Internet and World Wide Web (WWW), there is a shift from print to electronic resources. ICT has revolutionized the collection, dissemination and preservation of information, which are the root functions of any library. The term 'Consortia' is the plural form of 'Consortium' but is often used in place of singular form. It is derived from the Latin word for 'fellowship' – the meaning emphasizes coming together of separate groups for a purpose. Synonymously the term is used as alliance, coalition, collaboration, cooperation, partnership, etc.

According to Oxford English Dictionary, Consortium means a "temporary cooperation of a number of powers, companies, etc. for a common purpose. It is an association of similar type of organization/institution who are engaged for producing services for a specific purpose of its use". With the information revolution brought about by the development of the World Wide Web, libraries at every level have graduated from their traditional role as storehouses of information to vigorous disseminators of information. In the second half of nineties, concept of library consortium gained significance. Traditionally, the primary purpose of establishing a library consortium is to share physical resources including books and periodicals amongst members. However, the mode of cooperation has gone under a transformation with infusion of new information technology from print-based environment to digital environment. The technology provides an unparalleled media for delivery of information with greater speed and economy. The libraries and information centers, as heavy consume of electronic journals and online databases,

stand to benefit greatly from this technology-driven revolution. The availability of IT-based electronic information products are exerting ever-increasing pressure on libraries, which, in turn, are committing larger portions of their budgetary allocation for either procuring or accessing web-based online full-text search services, CD-ROM products and online databases. The libraries with their diminishing or at the best static financial allocations have to consider new ways to consolidate global resources amongst them in order to maximize their limited financial resources. The combination of these developments has resulted in the development of "shared subscription" or "consortia-based subscription" to journals everywhere in the world. Various stages of the evolution of consortium has been discussed in Fig.6

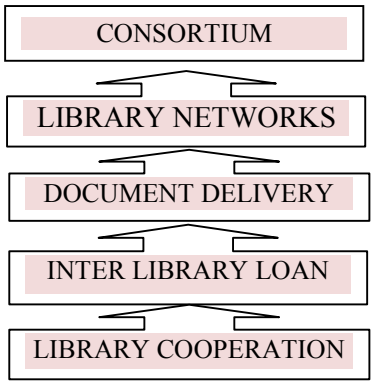

Figure 6: Evolution of Consortium

4.4 Benefits of e-journal consortium

The new concept of library consortia helps libraries to have cost effectiveness in subscribing to international periodicals. The whole world is moving towards electronic publishing and the cost of the electronic publishing is much lower than that of the print version. Due to technological developments, electronic publishing of scholarly journals has given rise to various models of consortia purchase by publishers. Many publishers offer to consortia, if their purchasing power is big enough, access to their whole range of journals collection not only to the currently subscribed but also to all the journals published by them in some cases. Subscription in consortia mode gives the library 75-90% discount as against the individual subscription. It also meets with the increasing pressures of diminishing budget, increased user's demand and rising cost of journals. The library consortia, on the basis

of sheer strength of the number of institutions, offer healthy business growth opportunities to the electronic publishers and thus attract the best possible price and terms of agreements.

➲ **Speed**

Electronic transmission saves valuable time. It also establishes network communication among authors, editors and referees. Articles can be put on the web as soon as they are ready, without having to wait may be months for a space in a journal issue. The American Chemical Society put articles on their website "as soon as possible" which can be up to 11 weeks before print. This all means that the information is much more up-to-date than can be achieved with paper.

➲ **Easily Searchable**

Searchability is one of the core advantages of a digital format.

➲ **Interactive**

The rapid turnaround time means that article can be read, commented on by the journal's readers, and amended much more quickly than can be done with print. The ease with which e-mail can be sent, or forms filled in means that there can be much greater feedback through the Web.

➲ **Accessible**

A networked product means a significant increase in accessibility, particularly for those who do not work within easy reach of the library. E-resources provide multiple accesses at multiple points to its use. Use can access a particular article or journal within minutes, or even seconds, rather than hours or days because of physical spatial constraints, provided equipment is available. Large collections of material can be searched and retrieved simultaneously and instantly.

➲ **Internal and external links**

Links are the mainstay of the hypertext format, and should be exploited. Not only can papers link to those they have cited, but with a bit of efforts, they can be linked to those that cite them. Hypertext and hypermedia formats enable linkages among sections within an article and among articles in journals and other electronic resources. Publishers, research groups, even authors can be contacted conveniently via electronic mail links. Uses have more creative ways to have their information queries answered.

➲ **Added Value**

Rather than just recreate a print journal in exact format, which many of the commercial publishers are doing, advantage should be taken of all possibilities of the Web to add value, for example by using animation, virtual reality and interactive mathematical charts. Also a large amount of supporting data can be linked to from the article if the reader wants to look more deeply into the results.

➲ **Inexpensive**

This is a hotly debated point, with Harnad claiming that a 70% saving over print costs can be made, while Whisler argues that only a 20% saving can be made as distribution coasts are a low proportion of the final journal price, and even that saving will be eaten up extra costs caused by new features.

➲ **Multimedia capabilities**

Besides the traditional plain text, tables, figures, and graphics, other innovative ways of presenting research results can be supported by electronic page layout. Interactive three dimensional models, motion video and sound are a few possibilities.

➲ **Flexibility**

E-journals are very flexible and it is very convenient to use. It however, requires the computer to read out the contents and the text. Multiple choices are generally being provided to the use to make a copy of the same for research purpose.

4.5 Library Consortia in India

✷ Council of Scientific and Industrial Research (CSIR) e-Journal Consortium

Council of Scientific & Industrial Research, a premier autonomous R&D organization, is a multidisciplinary, multi-location set-up, comprising of 40 laboratories dedicated to research and development in well-defined areas and around 100 field stations, is the major organization under DSIR (Department of Scientific and Industrial Research). Nourished, fostered and supported by successive governments, since its inception, CSIR is now recognized internationally as an institution which is moving speedily towards achieving global excellence without diluting local relevance. In India, it symbolizes a culture that links science with society through technology and industrial manufacture. Many of the laboratories have well equipped libraries and some of the act as the main information centers in different subjects functioning as

consultant libraries at national level. Access to electronic journals through the use of state-of-the art technology is possible in many of the libraries belonging to these laboratories. Each of the laboratories have a well established library and documentation center presently known as knowledge Resource Center (KRC) that is also backed up with strategic information support from the National institute of Science Communication and Information Resource (NISCAIR), a constituent establishment of CSIR formed with the merger of INSDOC and NISCOM.

NISCAIR is the central organization for developing a "Consortium for CSIR Laboratories for Accessing e-journals". The activity shall range from creation to monitoring of the access facility of scientific periodicals published by leading international institutions. To start with, an agreement has been signed with, e-journal publisher, M/s Elsevier Science for a period of four yea for 1200 journals. Under this scheme, CSIR scientists shall be able to access these journals and download material for their respected subject. Such access to world wide journal resources will play a very vital role and strengthen research and development in CSIR laboratories, thus leading to knowledge generation useful for socio-economic development of the country. The main objectives of the consortium are:

- To strengthen the pooling, sharing and electronically accessing the CSIR library resources.
- To provide access to world S&T literature to CSIR labs.
- To nucleate the culture of electronic access resulting into evolution of digital libraries.

- **Forum for Resource Sharing in Astronomy & Astrophysics (FORSA)**

With increases in prices of journals, shrinking library budgets and cuts in subscriptions to journals over the yea, there has been a big challenge facing Indian library professionals to cope with the proliferation of electronic information resources. There have been sporadic efforts by different groups of libraries in forming consortia at different levels. The types of consortia identified are generally based on various models evolved in India in a variety of forms depending upon the participants' affiliations and funding sources. The Forum for Resource Sharing in Astronomy & Astrophysics (FOA) came into existence in the year 1982 by the efforts of Indian astronomy library professionals, for sharing the resources available in astronomy

libraries in the country, which falls under 'Open Consortia', wherein participants are affiliated to different government departments. This is a model where professionals willingly come forward and actively support consortia formation; thereby everyone benefits. As such, FOA has realized four consortia, viz. Nature Online Consortium; Indian Astrophysics Consortium for physics/astronomy journals of Springer/Kluwer; Consortium for Scientific American Online Archive (EBSCO); and Open Consortium for Lecture Notes in Physics (Springer). In 2004, this group has extended its membership to Physics and Maths libraries in the country who have common interests to carry forward the aim of FOA and its activities. Currently FOA has twelve members and it works towards the goals and services which the founder members have started.

- **HELINET (Health Sciences Library & Information Network) Consortium**

A Health Sciences Library & Information Network hosted by Rajiv Gandhi University of Health Sciences, Bangalore. HELINET is the fit medical library consortium launched in the country with an objective of networking the libraries affiliated to the University to promote resource sharing, especially with reference to international medical journals and databases. The health science education in India and the status of IT and Internet access infrastructure in the health science colleges. HELINET is the fit resource sharing network and e-journal consortium in the medical education sector.

As an imperative of e-journal access, HELINET required an e-journal access gateway to act as a common search and access interface for all the e-journals that HELINET would subscribe as part of its consortia licensing and the libraries might independently subscribe for the titles not available through consortium. Further, HELINET required a mechanism to develop and maintain a common database of journal literature for all the subscribed journals of 30 medical libraries which were largely in print subscriptions. HELINET adopted an indigenously developed and locally available e-journal gateway for its need. J-Gate enables online access to all the consortia members for the e-journals subscribed by the consortia. It further enables shared access to printed journals through its customized database service.

✷ INDEST (Indian Digital Library in Engineering Science and Technology) Consortium

The "Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium" was set up in 2003 by the Ministry of Human Resource Development (MHRD) on the recommendations of an expert group appointed by the Ministry. As a consortium of libraries, it would bring together various institutions receiving financial support from major Ministries/Departments of Government of India, namely the Ministry of Human Resource Development (MHRD), Ministry of Information Technology (MIT), Department of Science and Technology (DST) and its various departments like Department of Biotechnology, Department of Scientific and Industrial Research, Department of Ocean Development and Department of Environment.

The INDEST Consortium is the most ambitious initiative taken so far in the country. It is a member of International Coalition of Library Consortia (ICOLC). The main objectives of INDEST Consortium are to:

- ◈ Subscribe electronic resources for the members of the consortium at highly discounted rates of subscription and at the best terms and conditions;
- ◈ Extend the benefit of consortia based subscription beyond the core members to other engineering and technological institutions;
- ◈ Impart training to the use and librarians of the member institutions on subscribed e-resources with an aim to optimize the usage of e-resources;
- ◈ Find more avenues of cooperation and interaction amongst member libraries;
- ◈ Augment interactions amongst member institutions; and
- ◈ Increase scientific productivity of member institutions in terms of quality and quantity of publications.

The INDEST Consortium has three types of member:

a. Core Member Institutions;

b. Members with Financial Support from the AICTE; and

c. Self-supported Engineering Colleges and Institutions.

Various electronic resources being subscribed by the INDEST Consortium has been placed below in Table-8.

Electronic Resources Subscribed by the INDEST Consortium

Sl. No.	Electronic Resources	Website
1	ABI/INFORM Complete	http://www.il.proquest.com/pqdauto
2	ACM Digital Library	http://portal.acm.org/portal.cfm
3	ASCE Journals	http://www.pubs.asce.org/journals/jms.html
4	ASME Journals	http://www.asme.org/pubs/journals
5	ASTM Standards	http://journalsip.astm.org
6	Capitaline	http://www.capitaline.com/intranet/INDEST consortium.htm
7	CRIS INFAC Indian Information	http://www.crisil.com
8	EBSCO's Business Source Premier	http://search.epnet.com
9	Elsevier's Science Direct	http://www.sciencedirect.com
10	Emerald Insight Full Text	http://iris.emeraldsight.com
11	Euromonitor GMID	http://www.euromonitor.com/gmid
12	IEL Online	http://wwwieeexplore.ieee.org
13	Indian Standards	Intranet Version
14	Asian CERC INSIGHT	http://www.insight.asiancerc.com
15	Nature	http://www.nature.com
16	ProQuest Science	http://wwwil.proquest.com/pqdauto
17	Springer Link	http://www.springerlink.com
18	Science Direct	http://www.sciencedirect.com

Table 8 -: Electronic Resources subscribed by the INDEST Consortium

UGC-Infonet

The Information and Library Network (INFLIBNET) INFLIBNET Centre was established in May 1996 as an independent, autonomous Inter-University Centre (IUC) of the University Grants Commission (UGC). Major activities and services of

the centre include automation of academic libraries and information centers, creation of union databases of resources available in academic libraries, promote resource sharing among academic libraries, promote information access and transfer, support scholarship, learning and academic pursuits. The center acts as a nodal agency for networking of libraries and information centers in universities, institutions of higher learning and R&D institutions in India with an aim to promote scholarly communication.

The technology being a driving force in the contemporary education system, the center, on behalf of UGC, has taken up a number of initiatives for the benefit of the academic community. These initiatives includes; i) UGC-Infonet connectivity programme that provides for networking of university campuses and internet connectivity; ii) UGC-Infonet digital library consortium that extends access to selected scholarly electronic journals and databases to the universities in different disciplines; iii) Shodhganga : a reservoir of Indian theses, that enables online submission of theses and dissertations by research scholars in digital repository set up at the INFLINET center; iv) Open Journals System @ INFLIBNET that facilitates faculty and researchers in Indian universities to launch there open access journals using INFLIBNET hosting facilities; and v) Access management technologies that facilitates use to access e-resources irrespective of their physical locations. Besides, the center has recently launched a project entitled "National Library and Information Services Infrastructure for Scholarly Content" (N-LIST) that provide access to electronic journals and electronic books to eligible colleges.

INFLIBNET, as already discussed, is an autonomous Inter-University Centre of the University Grants Commission is also a co-coordinating and monitoring agency in the UGC-Infonet Project which keeps liasioning among UGC, ERNET and universities. INFLIBNET and it is also responsible for providing training to university library professionals in the use of this network for providing variety of services to the use.

ERNET India, scientific society under the Ministry of Communications and Information Technology, in partnership with the University Grants Commission is setting up UGC-Infonet. Under this programme it is proposed to use information and communication Technology (ICT) and Internet to transform learning environment from a mono-dimensional one to a multi-dimensional one. UGC-Infonet has been recognized as a boon to the higher education systems in several ways such as,

- A vehicle for distance learning to facilitate spread of quality education all over the country.
- A tool to distribute education material and journals to the remotest of areas.
- A resource center for researchers and scholars for tapping the most up-to-date information.
- A medium for collaboration among teachers and students, not only within the country but also all over the world.
- An Intranet for University Automation.
- Encompass entire University Systems for most efficient utilization of precious network resources.
- Establish a channel for globalization of education and facilitate the universities in marketing their services and developments.

The mission and vision of the center concerns to the following:

- Leveraging on the latest technology, create a virtual network of people and resources in academic institutions with an aim to provide effective and efficient access to knowledge through perseverance, innovation and collaboration.
- Provide seamless, reliable and ubiquitous access to scholarly, peer-reviewed electronic resources to the academic community in all educational institutions with a focus on services and tools, processes and practices that support its effective use and increase value of this information.
- Build and strengthen ICT infrastructure in educational institutions with value-added services.
- Develop tools, techniques and procedures for secure and convenient access management enabling use to access information in electronic format from anywhere, anytime.
- Facilitate creation of open access digital repositories in every educational institution for hosting educational and research content created by these institutions.

UGC-Infonet is an ambitious programme of UGC to interlink all the Universities in the country with state-of-art technology. The Network will overlay on ERNET backbone and provide Internet and Intranet Services. As of today, it is providing Internet Connectivity to 160 universities. INFLIBNET is responsible for executing

and monitoring the entire project. UGC Infonet has obtained a mega successful project known as UGC-Infonet Digital Library Consortium.

➔ UGC-Infonet Digital Library Consortium

The UGC-Infonet Digital Library Consortium was launched by Dr. A.P.J Abdul Kalam, the then President of India during December 2003. The UGC-Infonet Digital Library Consortium provides current as well as archival access to more than 5,000 core and peer-reviewed electronic journals and nine bibliographic databases from 25 publishers, scholarly societies and aggregators including university presses in different disciplines. The programme has been implemented in a phased manner. In the fit phase that began in 2004, access to e-resources was provided to 50 universities who had Internet connectivity under the UGC-Infonet Connectivity programme. In the second phase, 50 more universities were added to the programme in the year 2005 as additional universities got Internet connectivity through UGC-Infonet programme. So far 160 universities out of 185 that come under the purview of UGC have been provided differential access to subscribed e-resources. These e-resources cover almost all subject discipline including arts, humanities, social sciences, physical sciences, chemical sciences, life sciences, computer sciences, management, mathematics and statistics, etc. The center has also initiated Inter-Library Loan (ILL) through JCCC (Journal Custom Content for Consortium). The JCCC provides article-level access to all articles published in journal subscribed by the UGC-Infonet Digital Library Consortium as well as in journals subscribed by 22 university libraries designated as ILL centers of the INFLIBNET center.

The website specially designed for the UGC-Infonet Digital Library Consortium provides in interface to search e-journals subscribed under the consortium as well as to search member institutions and corresponding e-resources subscribed for them.

✦ Associate Members of the UGC-Infonet Digital Library Consortium

Success of UGC-Infonet Digital Library Consortium in the universities led to the demand for extension f the Consortium resources to the Universities that are not under the purview of UGC. The center has initiated its Associate Membership Programme with an aim to extend access to e-resources subscribed by the Consortium to private universities and other research institutions. Under the scheme, private universities and other research institutions can enroll themselves as “Associate Member” of the

Consortium and subscribe to resources of their choice available through the Consortium. The rates of subscription to e-resources are same as applicable to the Consortium for its core members. Associate members are charged an annual membership of . 5000.00. The subscription of e-resources in subject to the approval of respective publishers. So far more than 65 members have enrolled as associate members.

✦ Access to e-resources for Walk-in User

The center has 15 Internet-enabled PCs dedicated for the walk-in use including students and researchers for accessing electronic resources subscribed under the UGC-Infonet Digital Library Consortium. The license agreements signed with the publishers of e-resources provide access to e-resources for "walk-in" users. The INFLIBNET center, as the coordinating agency for the consortium, gets complimentary access to all e-resources subscribed under the Consortium. Students from Gujarat University, its affiliated colleges and nearby universities and colleges are welcome to access e-resources subscribed under the Consortium. Around 1000 uses visit the centre every year for accessing e-resources.

✦ Bibliographic Standards, Formats and Protocols

Bibliographic standards and protocols are backbone of bibliographic database and related software. The standards and protocols streamline the implementation of activities, provide utmost quality, consistency and most importantly facilitate interoperability, data transfer and exchange. Utmost efforts are being made to implement all recognized international standards such as Unicode, MARC21, AACR2, ISO2709, NCIP, FRBR, etc. into products and services at the Centre. The centre participates in the activities of NISO (http:/www.niso.org), the National Information Standard Organization, ISO (International Organization for Standardization) and BIS (Bureau of Indian Standards) as its member.

✦ Current Status

The Consortium provides differential access to more than 5,000 scholarly journals and eight bibliographic databases from 23 major publishers (including scholarly societies, university presses and aggregators) to more than 125 universities. Besides access to their current issues, most journals are available with their archives from 1997 onwards. Some of the publishers like American Chemical Society, Institute of Physics, and JSTOR provide access to their contents from Vol. 1 onwards. The access

to e-resources is IP-enabled for the universities covered under the Consortium. Use in the universities can browse, search, download and print full-text articles relevant to their research and academic work without any restrictions in terms of number of articles that they can download or number of simultaneous use. Multiple uses can access the databases and e-journal platforms simultaneously. The INFLIBNET Web Site (http://www.inflibnet.ac.in) hosts a search interface to search these journals, their URLs and member institutions.

✦ Aims and Objectives

The major aims and objectives of the UGC-Infonet Digital Library Consortium are to:

- ⇨ Promote and establish communication facilities to improve capability in information transfer and access to provide support to scholarship, learning, research and academic pursuits through cooperation and involvement of concerned agencies;
- ⇨ Establish information and library network – a computer communication for networking for linking libraries and information centers in universities, deemed to be universities, colleges, UGC information centers, institutions of national importance and R&D institutions, etc. avoiding duplication of efforts;
- ⇨ Facilitate academic communication amongst scientists, engineers, social scientists, academicians, faculty, researchers and students through electronic mail, file transfer, computer/audio/video conferencing, etc;
- ⇨ Undertake system design and studies in the field of communications, computer networking, information handling and data management;
- ⇨ Establish appropriate control and monitoring system for the communication network and organize maintenance;
- ⇨ Collaborate with institutions, libraries, information centers and other organizations in India and abroad in the field relevant to the objectives of the centre;
- ⇨ Promote R&D and develop necessary facilities to create technical positions for realizing the objectives of the Centre;
- ⇨ Generate revenue by providing consultancies and information services; and
- ⇨ Do all other such things as may be necessary, incidental or conductive to the attainment of all or any of the above mentioned objectives.

In terms of number of use, the UGC-INFONET Digital Library Consortium is the largest Consortium in India with a vision and plan to reach out to all universities and colleges affiliated to these universities, over a period of time. Universities in India were upgraded to 2 Mbps leased line under UGC-Infonet connectivity.

4.6 Information Literacy

Spectacular advancements in information technology and its inculcation into almost all spheres demand an advanced level of computing skills among individuals. The computer provides flexibility, speed and accuracy, and it enhances effectiveness and efficiency. In certain developed countries, basic knowledge about computer has been included in the definition of the term "literacy". The amazing technological advancements have opened new horizons for information creation, duplication, storage, access, distribution, and presentation. Information literacy is currently understood as embracing the ability to define a problem, find information to solve the problem, evaluate information and use it effectively. Information literacy as a way to move efficient access, evaluation and use of information should be taken into account and used for improving information end-use. Information literacy means knowing information about information. Information literacy refers to a constellation of skills revolving around information research and use. Hence, the library professionals as well as the use of information should acquire the skills to access and use efficiently and effectively the myriad sources of information, information and communications technology, search techniques and knowledge of e-resources so as to satisfy successfully the various complex information needs of the use. The library professionals as the information provider's information facilitators should act as library manage to guide and educate the user community for self-sufficiency and independent learning and information literacy is one such potential tool that empowers the learners.

The information literacy can be defined in terms of a set of competencies where an informed citizen of a society ought to possess for participating intelligently and actively in the society. The American Library Association's (ALA) Presidential Committee on Information Literacy in its final report has stated that, to be information literate, a peon must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. Shapiro-et al.

have defined information literacy as a new liberal art that extends knowing the technique of using computers and access information. Information Literacy encompasses to various terminologies having their own semantic content in addition to differences characterized by the type of skills, level, categories of learning, and instructional facilitating methods. Different concepts of Information Literacy have been evolved from library instructions and information skills-focused programs. The corresponding terms of information literacy have been explained below in Table-9.

Information Fluency	It concerns with capability or mastering of information competencies .
User Education	It is a global approach to teach information access to use communities .
Library Instructions	It focuses on library, technical and technological skills
Bibliographic Instructions	It relates to user training on information search and retrieval .
Information Competencies	It connotes to skills and goals on information.
Information Skills	It focuses on ability to acquire information.
User Orientation	It relates to make aware the user about use of technology.

Table 9: Analogous terms of Information Literacy

Information Literacy is a comprehensive and never ending life long process. It has a wide range of fields which can be summarized as follows. Table-10 supplemented with Fig.6 below clearly depicts a schematic view of the different dimensions of information literacy.

Media Literacy	It is the ability to comprehend and create images in variety of media in order to communicate effectively.
Network Literacy	It the ability to properly manage, connect and organize to assess, evaluate and get information in a right way.
Web Literacy	It a subset of information literacy requires the ability to access, search, utilize, communicate and create information on the world wide web (WWW).

Digital Literacy	It refers an ability to assess, collect, organize, evaluate and use of digital resources and services in an effective way.
Scientific Literacy	Scientific literacy is the knowledge and understanding of scientific concepts and processes which are required for personal decision making, participation in civic and cultural affairs, and economic productivity.
Visual Literacy	Visual literacy is the ability to understand and use images. This includes thinking, learning, and expressing oneself in terms of image. Photographs, cartoons, line drawings, diagrams, concept maps, and other visual representations are all important in visual literacy.
Critical literacy	It is the ability to evaluate critically the human, intellectual and social strengths, benefits and costs of Information Technology.

Table-10: Schematic view of the different dimensions of information literacy

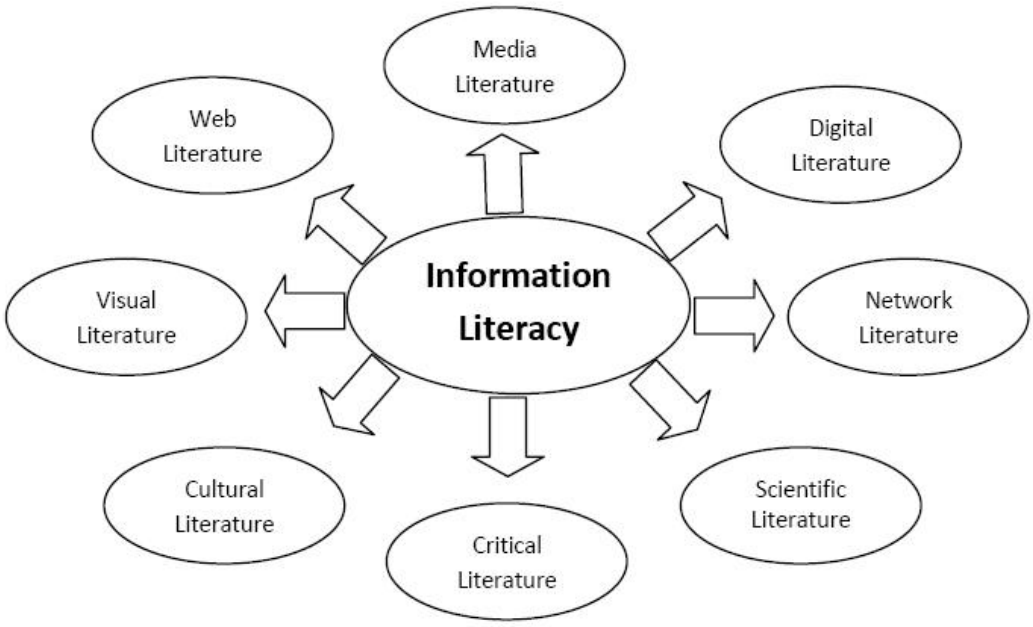

Figure 7: Schematic view of dimensions of Information Literacy

The other dimensions related to information literacy are, (i) Library Orientation, (ii) Bibliographic Instruction, (iii) User Education, and (iv) Training on Information Skill. While, the library orientation concentrates on using a library and its sections including

location of resources, bibliographic instruction emphasizes to find out documents in the library. The user education is related with the mechanics involved for using particular resources. Training on Information skill is related with the phenomena associated with the use of technology to retrieve information in the library. Information literacy relates to both cognitive and transferable skills, such as problem solving, evaluation and communication skills. The four different strategies of information literacy placed in Table-11 can be visualized in different angles with regard to use.

Information Literacy	**Student Skills and Strategies**	**Student outcome**	**Curriculum and Teaching Design**
IL is a problem-solving process for the use as the user is required to submit his requirements, information need. He is required to explore information by way of proper planning about the probable location of relevant information. In the process, he can self evaluate the processing and searching of information.	IL enhances the skill of generating presumptions, analyzing the problems while searching the required information from vast array of information sources. IL further develops the confidence of analyzing the constraints associated with retrieval of right, authentic information and generates creativity ideas to solve new emerging problems.	The student being one of the primary learners of IL builds self-reliance, independent and self-motivated.	IL has a positive brunt on the teaching faculties while designing need based curriculum. The teaching faculties develop the capability to retrieve the filtered information, and putting of innovative ideas.

Table 11: Strategies of information literacy

4.7 Conclusion

Library consortiums provide a wide range of physical and electronic delivery of materials, and integrate the collection development process which is a distinct and crucial step in moving towards the twenty-fit century library. Consortia are the tools which aids in exploiting the features of the e-resources as well as in effecting savings of resources of the LICs. UGC-Infonet scheme covers Indian universities under a common consortium to facilitate electronic access to research and other higher learning information. Central library of IITG is included in the fifth phase of 50 Indian universities under UGC Infonet Digital Library Consortium during 2004. The Central Library, IITG became a member of the UGC-Infonet Digital Library Consortium in the 2004 and accessing the e-resources available through it. Under the UGC-Infonet project the universities have been funded for network connectivity and each university is assigned a unique Internet Protocol (IP) address through which the publishers give access.

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CHAPTER - 5

EVALUATION OF ELECTRONIC RESOURCES

5.1 Introduction

Electronic resources are invaluable research tools which complement print-based resources in any traditional library. Electronic resources provide access to information that might be restricted to the user because of geographical location or finances. They also provide access to current information as these are often updated frequently. Through their various search techniques, electronic resources provide extensive links to explore additional resources or related content. In addition, electronic resources are convenient to use since use are able to access information from the library, internet cafe, and offices or at times from the comfort of their homes at any time of the day. It is for some of these reasons that university libraries are being challenged to provide access to electronic resources to support teaching, research and learning. Library resources whether print or electronic, are expensive and for the latter in particular, its continual use depends to a large extent on the sustainability of the current technological and infrastructural development of the university. With falling library budgets, there is the need to maximize the use of available electronic resources to justify the financial investment involved in the maintenance of these systems in academic libraries.

5.2 Evaluation: the Meaning

Wikipedia, the free encyclopedia defines evaluation as a means of systematic determination of merit, worth, and significance of something or someone using criteria against a set of standards. Evaluation often is used to characterize and apprise subjects of interest in a wide range of human enterprises, including the arts, criminal justice, foundations and non-profit organizations, government, health care, and other human services.

The American Heritage Dictionary of the English Language (2003, 4th Ed) defines evaluation as,

- To ascertain or fix the value or worth.
- To examine and judge and appraise mathematically.
- To calculate the numerical value.

Evaluation is about using and monitoring along with other information collected to make judgments about some projects. It is also about using the information to make

changes and improvements. Evaluation aims to answer agreed questions and to make a judgment against specific criteria. Like other research, for a good evaluation, data must be collected and analyzed systematically, and its interpretation considered carefully. Assessing value and worth of something makes evaluation distinctive. The results of an evaluation are intended to be used.

5.3 Evaluation of Library Collection: The Notion

Evaluation of the collection may be defined as the value assessment of the holding of the library in parts or as a whole. Paul Mosher defines collection evaluation as "the assessment of the utility and appropriateness of library collection to its use or programme". Evaluation ensures the best possible user-responsive collection which can meet the requirements of the user community. It helps to determine the utility, usefulness, relevance and validity of the library collection and services to the user. It is the application of some methods to show how well a programme of collection development performs. It has an important role in decision making because it gathers data needed to determine which of several alternative strategies appear most likely to achieve a desired result. The results of collection evaluation help the library management to allocate resources more effectively. The methods of collection evaluation and the various approaches become more useful to gather data for collection development policy and procedures. These help the decision-making activities in collection development.

Evaluation should be made in terms of costs, effectiveness and benefits. Costs are judicious, efficient and result-oriented expenditure or investment of money. Effectiveness relates to outputs in terms of the proportion of user's demands that are satisfied. The benefits of collection evaluation are the desired outcome of the implementation of collection development policies and procedures. Evaluation leads to cost-effectiveness which relates to optimization in the allocation of resources and better allocation of resources results in the better quality of service. Evaluation of the quality and usefulness of the collection and services are, therefore essential in order to monitor collection development. The prime characteristics of an evaluation programme are that it must be on-going, coordinated and systematic. Evaluation completes the collection development cycle and is closely linked with needs and assessment activities. It is an established fact that any evaluation of the collection of a

library must take into consideration the stated goals and objectives in the context of the activities of the parent institution.

5.3.1 Purpose of Evaluation

The purpose of collection evaluation may be enumerated in the following way:

- ⇨ To reveal the strength, weakness and utility of the collection on various subject area so as to make efforts for developing a suitable and useful collection.
- ⇨ To check, control and develop a realistic acquisition programme based on thorough knowledge of the existing collection.
- ⇨ To justify the increased budget demands and to examine the collection development policy for assessment of its effectiveness.
- ⇨ To organize the resources more competently and improve the efficiency of library personnel.
- ⇨ To assess whether the collection is matching the information needs of the user and to determine the availability of percentage of the library materials needed by user as document support.
- ⇨ To determine adequacy, quality of collection, and to ascertain how old and how relevant are the materials.

5.3.2 Evaluation Process

Building the collection does not end with the determination of users' needs, setting the collection objectives and selection of which books, journals and other materials have to be acquired. Collection on various subjects must be continuously checked and maintained by evaluating what documents have already been acquired, weeding unnecessary items, sending rare materials and little used materials to storage and keeping the most-used and valuable items in the collection.

The following factors are to be considered in the evaluation process:

- ❶ The kinds of materials already in the collection and how valuable each item is in relation to other items of similar nature which are not in the library.
- ❷ The nature of user community in order to decide whether the materials in the collection are really useful to the existing clientele and potential clientele,

regardless of how valuable they may be in terms of abstract evaluation of their worth or collection-richness.

❸ The purpose which that collection is supposed to accomplish, given that particular community of use.

Collection evaluation must be a part of collection management planning and performance. Whatever may be objectives of the library; academic support' research, recreation, community service and development, instruction, support of corporate activity, or a combination of these or anything else; evaluation should be made to determine whether the collection is meeting its objectives, how well it is serving the use, what are the areas of deficiency, and what is to be done to develop the collection.

✪ Types of Collection Evaluation Techniques

There are several basic typologies, or ways of classifying, collection evaluation techniques. Among these classifying criteria are the natures of the data, the focus of the techniques, and the effect or area of judgment. One classification system focuses on the nature of the data which is divided into quantitative and qualitative. Quantitative data are numeric and considered to be absolute and objective. Measures that provide quantitative data are accurate and can be gathered and analyzed relatively easily. Qualitative data are relatively subjective. Based in judgments, perceptions, or emotions, qualitative data are often difficult to accept as being directly comparable among respondents. Qualitative data are frequently anecdotal. Another useful typology categories measures by focus are collection centered or user-centered.

The physical evaluations or collection-centered evaluative approach requires human labor, but allows judgment of both physical characteristics and content. Content evaluation is a valuable part of physical assessment because a human judgment can be made. Collection evaluation helps to determine the use of the library collection. Physical assessment provides a good indicator of the condition of the overall collection, but also allows examination of each individual information resources of the library. Physical evaluation of a collection gives librarians an opportunity to develop an overall awareness of the collection. It helps to discover the relationship between age and condition of the collection and provides the opportunity to compare user demand with available resources. On the other hand, user-centered collection

evaluations are good methods to determine how well the library's holdings meet the needs of information seekers. User-centered methods benefit librarians because they reveal a perspective of the collection that is drawn from the perceived needs of library use. A very powerful and efficient user-centered collection evaluation tool is the library online management system. Most online management systems collect circulation data that may be organized in report form to provide frequency of individual title or classification-area loan information. Other data sets, such as interlibrary loan usage or consortia borrowing data, are equally appropriate for evaluation projects.

⇉ Collection Evaluation Measures and Methods

Primarily, the collection evaluation measures and methods depend on Data-Gathering Techniques which are categorized as follows.

◈ Extent

This category includes measures of size. All measures of extent are quantitative and, by definition, collection-centered. These are most frequently gathered for use in describing a number of libraries and their collections. The include counts, rations, and formulas. Ratios are used to demonstrate the relationship between two counts. Formulas are often expressed in terms of the number of monographs or serial titles in relation to several facto, including number of use and level of study. It is generally used to establish a recommended standard, usually in academic library collection. The conspectus approach typically refers to a joint or cooperative collection development policy designed to analyze strengths and weaknesses of member libraries and to allocate primary collecting responsibilities.

◈ Efficiency

This category describes the cost of providing materials. These measures are quantitative, typically collection-centered. They are nearly always expressed as ratios, although some systems use more complex weighted indices. Typical measures of efficiency include ratio and weighted systems. Efficiency ratios examine the relationship between a cost and count. Weighted systems attempt to acknowledge that not all measures are of equal importance and for this different indicator are evaluated and assigned relative weights to develop a composite score for an organization or phenomenon.

◈ Quality

Quality measures focus on the intrinsic quality or goodness of the collection. They are based largely on the subjective judgment of experts. Selectors generally apply basic criteria (authority, scope, treatment, currency, arrangement, format, and special consideration) in selecting individual items. Evaluation of a collection's quality takes place after items have been selecting and more frequently relies on external lists and bibliographies. Quality is essentially a subjective decision, depending on professional knowledge and judgment to apply standard criteria.

◈ Performance

Measures of performance focus on how well the collections fulfill its stated purpose from a variety of perspectives performance generally deals with three areas: use, user satisfaction and accessibility.

Use measures are generally categorized as quantitative and patron centered. The quality of materials may influence use, but it is the use itself that is viewed as the important aspect of collection performance. One of the advantages of measures of use is that most of them can be gathered unobtrusively, that is, without disturbing patrons.

User satisfaction majors focus directly on the perception of library use. The most common method is surveys and interviews. Surveys enabled decision make together opinion from a large number of people and to use the synthesized responses in determining broad levels of satisfaction. A frequent problem with user satisfaction method in evaluating library services is that only current use are included, presenting a distorted, or at least limited, perspective.

Measures of availability determined whether materials are available to patrons on demand. Fill rates and response time studies are typically categories as accessibility (availability) measures.

◈ Effectiveness

Effectiveness is typically approach through cost benefit analysis. It is an attempt to demonstrate the relationship between performance and efficiency. It goes beyond the cost of providing a service in attending to ascribe a value to the service.

Cost benefit analysis is an accepted and clearly appropriate economic procedure to apply to library operations. In a cost benefit analysis, all action are analyzed and identified, all cost and benefit are determined, monitoring values are assigned to all

cost and benefit, net benefit (benefits minus costs)are calculated, priorities are set and decisions made.

5.4 Evaluation of e-resources at Central Library, IIT Guwahati

It was only during the late 1990s that e-resources were made available to various subscribe. Attention was brought to these e-resources through the distribution of catalogues, personal marketing promotion and free online trial access. The evaluation of trial access revealed that there was a great scope for the development of a collection of books and journals in soft copy. The two main advantages of this media of resources include sizeable cost effectiveness compared to print version and time efficiency as data may be acquired within a short span of time thus increasing the speed and ease with which one acquires information from a resource collection. With the increase of e-journals the use of print journals has decreased dramatically –since use can download or make printout of required articles from their PCs themselves. But demand for the photocopies for the old volumes is still there since we only have access for the full text from Elsevier since 1995, from Springer since 1997 and from other publishers since 2000. In some cases, the publishers have not yet made full text available for the old volumes. E-journals have also reduced the document delivery of single articles, the shelving time of the library staff and the circulation of documents of the library. Despite the popularity of the e-journals, use needs significantly more guidance in using them than they did in using a library of print materials. Therefore, Reference work has increase in alternative ways: the task of listening to a user's needs, how to access those resources, and how to formulate their queries for search systems etc. In fact, the whole process of electronic journal development requires effective management of change. The introduction of electronic journals has an impact on working practices requiring more technical skills and competencies and changes in management priorities. Tracking electronic journals to collect usage statistics is not an easy task. Most publishers provide usage reports to show which titles have been used, which articles have been accessed and various other statistics. Looking at the statistics a library could take decisions on how to maximize the use of the e-journals. Since we have e-journals against print subscriptions, activities in relation to the management of print subscriptions presently are being carried out side by side and the library has remained the appropriate structure through which to take

decisions about the distribution of budgeted funds for the purchase of e-journals. In summary, the introduction of e-journals has reduced some of the traditional library activities but has also introduced some new activities and procedures in the operations of the library.

The Central Library entered the development phase of e-resources collection during 2004 at a time when UGC-Infonet was introduced by INFLIBNET. The e-journals accessible by the use through UGC-Infonet Digital Library Consortium have given the Central Library, IIT Guwahati the opportunity to improve their services to use. Access to e-journals through the consortium have given the library excellent price advantage in terms of rates of subscription to e-journals and in some cases, reduced subscription rates to print journals or advantage of price cap on the subscription rates to print journals. It not only provides wider access to information, but in the long term, also to save the library funds, on the print subscription. Thus, the Institute faculty, students and researchers are greatly benefiting by the e-resources access, which facilitates online access to over 4500 e-journals and a host of databases. Probably the most important factor regarding the popularity of e-resources is the ability to provide remote and convenient access anytime and anywhere. It provides 24-hour accessibility. The accessibility factor is of greatest importance to the use of information. Irrespective of their controversy, e-journal package subscriptions are justified for the increased access they deliver to use. The Central Library is providing access to e-resources under the UGC-Infonet programme. Introduction of this has helped the library to enhance and promote library support to achieve the university's academic goals. In the Central Library the e-resources are used more frequently than print journals. E-journals offer many advantages: they add enormous resources to the collection; save the libraries shelving space; satisfy users' expectations for user-friendly, convenient and remote access; and provide powerful searching tools and features linking to more resources. It is certainly true that the usage statistics provided by publishers such as Elsevier indicate extensive performance. However, the high overall volume use conceals varied levels of use – a small number of titles have experienced the heaviest use while there are a large number of titles with few, or zero accesses. Journal usage indicates that not every title has been used, and some titles were used infrequently by all programs as a whole. Altogether, a small number of journals formed the majority of total use. A look at titles revealed that different disciplines showed a great deal of variation in their total use of e-journals. For

example, use in the sciences seems to have used the collection more than the use in the social sciences.

⌗ Electronic Journals

An e-journal is produced, published and distributed all over the globe via electronic or the Internet. Publishers have moved quickly towards the use of the latter as a major medium for the distribution of their products. In fact, e-journals are becoming an accepted and necessary means of meeting the demands for the dissemination of knowledge everywhere. E-journals offer tremendous possibilities and advantages over print journals. The history of e-journals began with the full-text from the year 1998, a few publishers namely Elsevier, Academic, Springer etc had offered access to their online journals free of cost against subscription to print version as an additional gesture. The library made use of this facility by registering such free online journals officially. Thus, the library entered the second phase towards the e-resource collection development without much of budget constraint. The goal of E-Journals is to provide desktop access to freely available electronic version of journals subscribed by Central Library and free e-journals of relevance to the Library. To this end a web-accessible directory was developed containing a database of all journals subscribed by Central Library. The directory also contains several free peer-reviewed electronic journals. Thus the database stores a variety of information such as holding details, internet addresses, user IDs and Passwords etc about each journal including links to the journal's website. Using these links, use can visit the journal site and access the full text of articles.

5.5 Subscription cost of e-resources

In bundle subscriptions (big deals), publishers offer the institution electronic access to many or all of their journals across a wide range of disciplines for a price that, while large, is still less than the cost of subscribing to these journals individually. In the end, use gain access to a more comprehensive collection. A publisher's representative stated that e-journals are still less expensive than print journals because publishers offer a ten percent discount when subscribers select e-only access. With regard to economic gains, the representative pointed to cost-savings that would otherwise go to binding and storing print journals, as well as the savings in shelving capacity (Robertson, 2003). The INFLIBNET Centre spends huge amount for the subscription

of e-resources. In 2008, ` 32,213,354 was spent for the subscription of number of e-journals to 10 (Ten) universities located in the North Eastern region.

⇨ **Improved service**

E-journals have enabled it to provide for access to many journals for its faculty, research scholar and students to support their academic and research work. This represents a huge growth in the collection of the institution and shows tremendous savings in terms of document delivery and additional subscriptions. E-journal titles greatly exceed the number of titles the library previously subscribed to in print. The great majority of Science Direct titles that were available to the institution in 2004 did not have corresponding current print subscriptions. Access to these of e-journals supports the faculty/student/research scholars in an effective and efficient manner. It contains almost any title needed to maintain accreditation standards.

⇨ **Enhanced access**

E-journals have helped the Central Library, IIT Guwahati to improve its services to the use. Today most of the use of Central Library prefers to use the e-resources of the library due to its convenient access facility of 24-hour accessibility, remote and convenient access anytime and anywhere.

⇨ **Increased usage**

The increased value of Central Library's e-journal collection is also evident in their use. E-journals are used more frequently than print journals. It is certainly true that the usage statistics provided by publishers such as Elsevier indicate extensive performance. However, the high overall volume use conceals varied levels of use – a small number of titles have experienced the heaviest use while there are a large number of titles with few, or zero, accesses. Journal usage indicates that not every title has been used, and some titles were used infrequently by all programs as a whole. Altogether, a small number of journals formed the majority of total use. Interestingly, titles not subscribed to in print got more use than those subscribed to originally. A look at titles revealed that different disciplines showed a great deal of variation in their total use of e-journals. For example, use in the sciences seems to have used the collection more than the use in the social sciences.

Metrics	Jan 2010	Feb 2010	Mar 2010	Apr 2010	May 2010	Jun 2010	Jul 2010	Aug 2010	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011
Requests for full-text documents	26, 385	21, 739	34, 231	24, 939	22, 830	21, 488	21, 256	19, 903	21, 543	23, 754	17, 057	17, 962	21,858
Requests for all pages	64, 757	56, 659	81, 358	60, 959	56, 533	53, 935	53, 562	52, 734	53, 620	59, 328	53, 293	49, 522	67,283
Total Searches Run (incl. Federated Search)	8, 623	7, 941	10, 179	8, 743	8, 766	8, 450	8, 345	8, 569	8, 341	9, 412	8, 517	5, 924	8,762

Table 12: Number of Full text Article Request

5.6 Measurement of Usage Statistics

Licensed electronic journals involved huge subscription cost. INFLIBNET has been spending crores of Rupees for subscription of e-resources. Licensee, and publishers, need to understand how much these e-resources are used and when. There are questions about how the content itself is used. How much is printed out, e-mailed, or downloaded. Since the consortia subscription of UGC-Infonet digital Library Consortium includes large number of journals published by single publishers and gives the user unlimited access to all articles, the primary unit of statistics will be collated by journal title. In this model, titles that are highly used will have a lower cost per-use and be perceived as a better value. Summaries of data usage by journal title can help librarians decide what titles to add, change or delete and can assist publishers in determining the health of the journal. With a full-text journal database, the conversation centers on three measures: hits (equated to searches), sessions (equated to use), and documents used (equated to downloads). The number of hits will vary, depending on network access and telecommunication facto. Likewise, the number of sessions will vary because of time-outs and other network protocols. These measurements can be summarized by time periods of hour, day, week, month, and year. The formation of Project Counting Online Usage of Networked Electronic Resources (COUNTER) provides the tool needed to measure e-usage accurately.

⏭ Project COUNTER

There has for some time been widespread agreement that vendor-generated usage statistics provide the best way forward, but this was not, until the advent of COUNTER, translated into the necessary coherent, international effort. To be of value, these usage statistics have to satisfy the "Three C"s. First, they must be credible, and they are not yet generally so, as the recent ARL E-metrics project has shown (www.arl.org/stats/newmeas.html). They must also be consistent, which they are not currently, due to the lack of standardization of terms and definitions used. Finally, they must be compatible, which they are not, due to the wide range of different practices being used by vendors to generate usage statistics. In recent years there has been a growing awareness of the need for an international effort, involving vendors, librarians and intermediaries, to develop acceptable, global standards for measuring online usage. This has resulted in Project COUNTER (Counting Online Usage of Networked Electronic Resources), now the leading initiative in the field. COUNTER had its genesis in the UK, with the PALS (Publisher and Librarian Solutions) group formed by JISC, ALPSP and The Publishers Association. Under the Chairmanship of Richard Gedye of Oxford University Press, PALS made considerable progress in 2000 and 2001 in developing the framework and processes that evolved into COUNTER. In March 2002 COUNTER was formally launched, with a fully international Steering Group, a dedicated Project Director and a set of clear objectives. The objective of Project COUNTER is to develop agreed international Codes of Practices governing the recording and exchange of online usage data for different categories of content.

5.7 Usage statistics for Full Text Access

Licensed electronic journals involved huge subscription cost. INFLIBNET has been spending crores of rupees for subscription of e-resources. Licensee and publishers need to understand the amount of use of these e-resources is used including the time. Since the consortia subscription of UGC-Infonet digital Library Consortium includes large number of journals published by single publishers and gives the user unlimited right of entry to all articles, the primary unit of statistics will be collated by journal title. In this model, titles that are highly used will have a lower cost per-use and be perceived as a better value. Summaries of data usage by journal title can help

librarians decide what titles to add, change or delete and can assist publishers in determining the health of the journal. With a full-text journal database, the conversation centers on three measures: hits (equated to searches), sessions (equated to use), and documents used (equated to downloads). However, measuring hits or sessions can yield misleading information. The number of hits will vary, depending on network access and telecommunication facto. Likewise, the number of sessions will vary because of time-outs and other network protocols. These measurements can be summarized by time periods of hour, day, week, month, and year. The systems staff analyzes data from server logs to determine the ability of the server to meet the load during periods of peak demand.

In networked information environment, the ability to monitor the traffic and usage is not easy task. Most of electronic resources available through consortia are served from server maintained and controlled by publishers, aggregators and vendors. As controlling authority of data rests on the publishers, the use do not find in any way to know the reality and simply belief in them. It has practically difficult and complex to obtain reliable data from publishers. This has created problems in obtaining accurate use statistics for e-Journals. With new standards like COUNTER which stands for Counting Online Usage of Networked Electronic Resources has made libraries to serve librarians, publishers and intermediaries by facilitating the recording and exchange of online usage statistics. (Prem Chand; 2006; 351-356).

5.8 User Statistics of Journal Section (Monthly) of Central Library, IIT Guwahati

Table-13 shows the monthly statistics of Use in Journal section of Central Library, IIT Guwahati from June 2009 to June 2010. From the table it is seen that the visits of use to the journal section of the Central Library is increasing during this year. From the analysis it is also found that in June and July month, very less number of uses visited the Central Library reason being that it is the period of semester break.

Year	Month	Number of use (Monthly)	Percentage of Library Use (Monthly)
2010	January	2602	10.18%
	February	2266	8.87%
	March	3214	12.58%
	April	2287	8.95%
	May	2046	8.00%
	June	2134	8.35%
	July	1586	6.20%
	August	2072	8.10%
	September	1710	6.70%
	October	2446	9.57%
	November	1931	7.55%
	December	1262	4.93%
	Total	**25557**	**100.00%**

Table 13-: User Statistics (per month) for use in Journal Section of Central Library of IIT Guwahati

Almost all the University Libraries are spending huge amounts on printed journals. Central Library of IITG is also spending a significant amount on printed journals. Day by day the prices of these journals are increasing and the number of journals is rapidly decreasing. It is because of the financial incompatibility of the university to move along with the rising prices of foreign journals. It is not possible for the university to increase the budget for the journals in order to meet the yearly increase of the subscription charges. In reality budgets are shrinking and the prices are rising. Most of the universities are passing through the same phase.

5.9 Conclusion

Information Technology (IT) with its capacity to amplify, globalize, accelerate, decentralize, intensify and commercialize has brought about revolution in library and

information centers (LICs). An increasingly important function of academic libraries today is the provision of information in electronic formats. Today libraries are providing electronic access to a wide variety of resources, including indexes, full-text articles, complete journals and Internet/Web resources. In fact, libraries have been moving towards an electronic environment, in which sufficient computers are necessary for clienteles to access information. Electronic collection development pertains to free and fee-based resources available on the web and/or in CD-ROM format, including websites, government documents, electronic journals, e-books, and subscription databases. The objective of developing e-content collection is providing access not only to e-books, e-journals, e-conference proceedings etc. but everything which is needed irrespective of their formats and availability. In this electronic environment the selection process is becoming more complex as reading materials are produced in a variety of electronic formats. In order to select the best resource, the library staff must be aware of the underlying theory of electronic databases and understand the impact electronic resources can have on a library. In fact, because of the explosion of electronic resources and its complexity, there is now more than ever before a pressing need for guidance in developing such resources. This not only depends on the size of the library but more importantly on the goals of the program and needs of the use. . The academic libraries today are reorienting their collections and their collection development policies in the light of e-resources. Today the library collections are different from the way they were a decade or two ago. This is so because of the ability to deliver information to remote use electronically, but then this requires drastic changes in the services pattern, staffing, budgeting and planning. In the light of scholarly communication, changing technology, the Internet, serials pricing, and resource sharing the debate of “access versus ownership” continues. Today the point is not to replace ownership with access, but to incorporate access into our collection development efforts to maximize our purchasing power and best serve the clienteles. Earlier libraries were facing various problems for managing print documents rescued by the electronic resources. The consortia initiatives are mushrooming in the world rapidly. UGC-Infonet: E-Journals Consortium launched by the University Grants Commission (UGC) through Information and Library Network (INFLIBNET) Centre is considered one of the best consortium models in the globe.

An electronic information resource collection development policy has proven to have several distinct benefits. Fit, as with any traditional collection development policy, it serves as a guide when acquiring information resources to support the mission and programmes of the institution. Second, it directs us in using our very limited library resources for acquisitions. Third, it provides guidance to assist librarians who are trying to choose specific resources, or to select one format over another. Finally, it can be used to justify the selection of certain resources. As the proportion of total budget of the library that supports electronic resources continually increases, collection development policy proves to be more and more relevant and necessary.

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CHAPTER – 6

DATA ANALYSIS AND FINDINGS

6.1 Introduction

E-resources have already proved to be one of the vital source of information due to multidisciplinary research corroborated with multi dimensional resource requirements of the use and it is rather indispensable in today's electronic environment reason being that, they are more up-to-date, and can be accessed anywhere, crossing all geographical boundaries. Through various search techniques, electronic resources provide extensive links to explore additional resources or related content. Such resources add value while conducting R & D activities. There has been a rapid urge of the user community to get more and more information online. The development of ICT devices, the rapid rise of electronic databases, and modern e-book technologies have altogether changed the entire scenario of informatics. The user attitude to information is gradually shifting from printed documents to electronic resources and thus, it has become an important area of research for the information professionals in India.

Data Analysis and findings are essential for a scientific study and for that the scholar has taken relevant data obtained through the filled-in questionnaire for making analysis and draw inferences. Analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data groups. The analysis of data in a general way involves a number of closely related operations, which are performed with the purpose of summarizing the collected data and organizing these in such a manner that they answer the research questions. Analysis is the product of insight into the total situation, paying upon the assembled facts and giving them a general significance. Its validity depends more upon common sense, experience, background knowledge, and intelligent honesty of the interpreter than upon conformity to any set rules that might be formulated.

6.2 Analysis by Responses

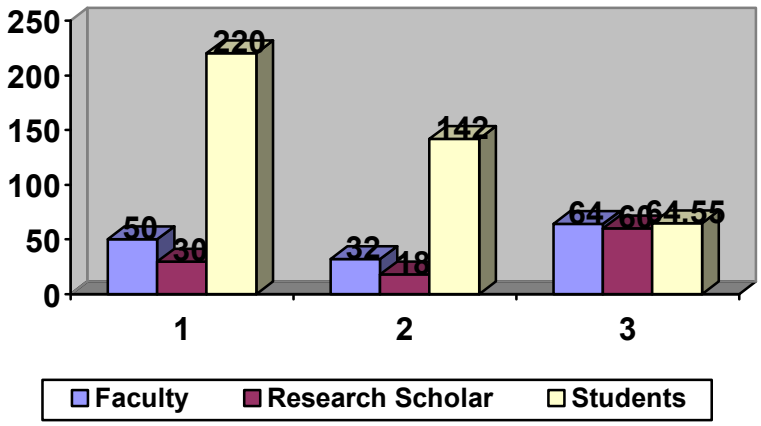
Analysis of responses by designation of the library use' under study has been discussed in Table-14 supplemented with Graph-3. As already discussed, altogether 300 questionnaires were distributed to the use in Central Library of IIT Guwahati constituting 50 Faculty members, 30 Research Scholars and 220 Students of different academic departments. Out of 300, a total number of 238 filled-in questionnaires were received which constitute 79%. While analyzing the table it was revealed that, the

users belonging to the category of faculty members have responded maximum which constitute 100%, followed by the students 77% and research scholars 60% respectively. This shows that, faculty members give more emphasis to use the central library, IIT Guwahati. However, the scholar could not obtain 62 questionnaires duly filled in which constitute 21% in total by the use of the library due to their pre-engagements. Further, the faculties as being provided with internet facility and can access the library through intranet, they access from their desktop or laptop to find information relating to their study and research. Moreover, the researchers are also equally being facilitated with the computer having internet connectivity which makes them easier to access information from the library.

Sl. No.	Designation	Questionnaire Distributed	No. of response	% of response
1.	Faculties	50	50	100
2.	Students	220	170	77
3.	Research scholars	30	18	60
	Total	**300**	**238**	**79**
	Not responded	**62**	**Nil**	**21**

Table 14: Analysis by responses

Graph 3: Analysis by Responses

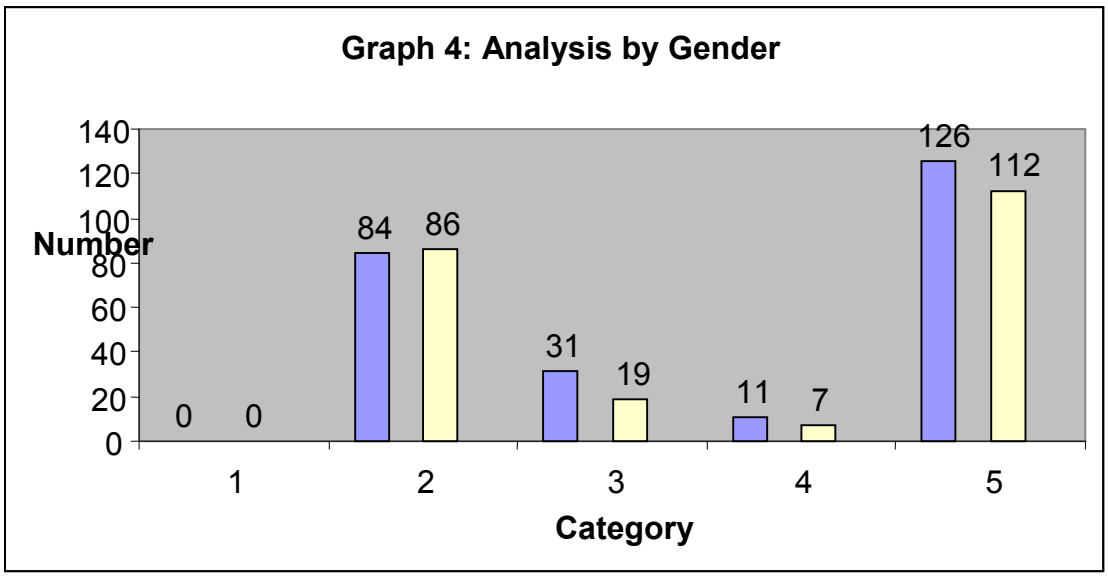


6.3 Analysis by Gender

Gender is one of the components of the questionnaire. Data relating to this component of the library under study has been placed in Table-15 supported with Graph- 4 for analysis. Analysis relates to the use belonging to both the genders such as male and female.

Sl.No.	Gender	Category			Total
		Student	Faculty	Research Scholar	
1	Male	84 (67%)	31 (25%)	11 (9%)	126 (53%)
2	Female	86 (77%)	19 (17%)	7 (6%)	112 (47%)
3	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 15 -: Analysis by Gender



Analysis shows that, male constitute highest number covering 126 (53%) total while female constitute 112 (47%). Out of the total males the students community constitute 84 (67%) in total followed by faculty 31 (25%) in total and research scholar 11 (9%). Further, out of 112 female 86 (77%) are the students while 19(17%) are the faculties and 7 (6%) are the research scholars. It could be further visualize that the female

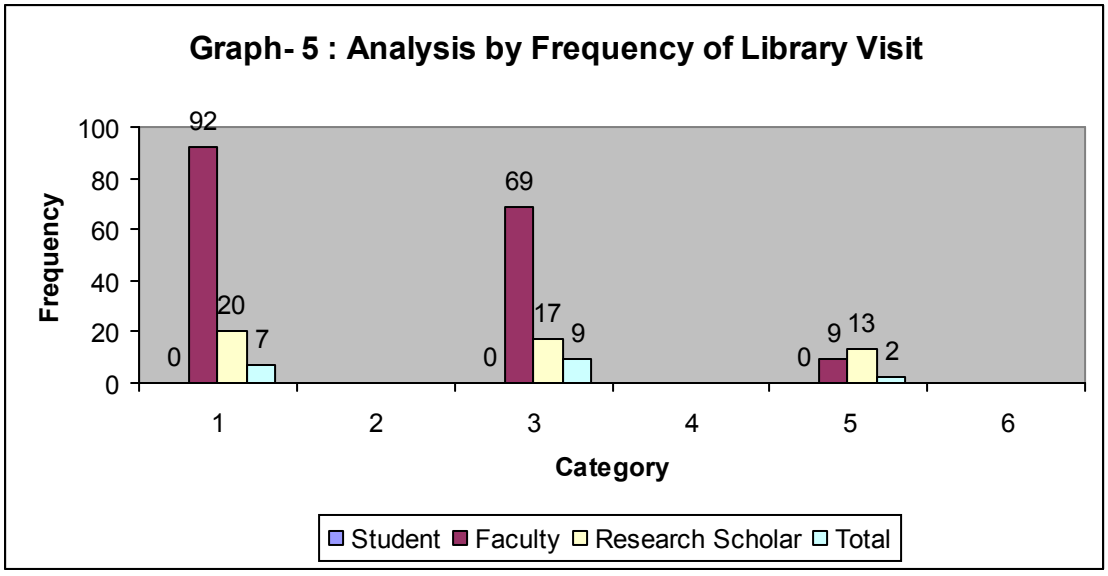
students are more to use the library while in faculty community the male faculties are more compare to female faculties. Likewise the male research scholars are higher in number than that of the female research scholars.

6.4 Analysis by Frequency of visit to Library

The frequency of visits to the library helps to know the use of the library and is an index to judge the utilization of the library resources. If use visits the library frequently, it can be implied that they are getting benefits from the library resources. Analysis of frequency of visit of the use to the library under study is placed below in Table-16 followed by a Graph-5 for clear understanding.

Sl. No.	Frequency	Category			Total
		Student Scholar	Faculty	Research	
1	Weekly	92 (54%)	20 (40%)	7 (39%)	119 (50%)
2	Daily	69 (41%)	17 (34%)	9 (50%)	95 (40%)
3	Occasionally	9 (5%)	13 (26%)	2 (11%)	24 (10%)
5	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 16 -: Analysis by Frequency of Library Visit

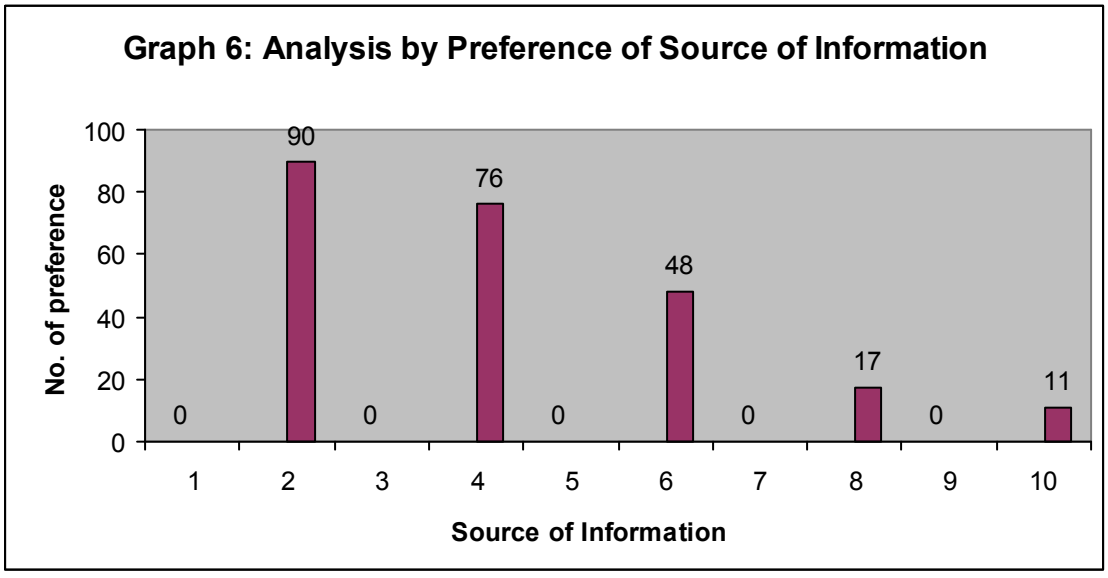


The frequency of visits to the library depends upon the nature of library collections, organization, maintenance and services etc. The above Table-16 depicts the views to the use who responded to the statements related to their frequency of visit to the Central Library, IIT Guwahati. It is evident from the table that, the use of various types such as students, faculties and research scholars taken option to visit the library according to their needs and requirements. The table reflects that the weekly visitors are to the library are more than that of daily and occasional. It could be seen from the table that out of 238, 119 (50%) visit the library weekly, while 95 (40%) visit daily followed by 24 (10%) occasionally. Further, out of 119 the students community constitutes more than that i.e. 92 (54%) followed by 20 (40%) faculties and research scholars 7 (39%). Likewise, among the daily visitor that is 95 (40%) the students' community are more followed by faculty and research scholars. It is interesting to know that out of 24 (10%) occasional visitors, the faculty constitute more that is 13 (26%) followed by student and research scholar which constitute 9 (5%) and 2 (11%) respectively. This shows that the students community profusely use the library than that of other communities primarily due to complete their assignments and other library related jobs. However, the faculty responses to visit the library are less which may be due to their pre-engagement and other academic works. Therefore, it seems that the faculty responses are more from the group of occasional visitors to the library.

6.5 Analysis by Sources Used for Getting Information

Sl. No.	Source of Information	Category			Total
		Student	Faculty	Research Scholar	
1	Print Materials	62 (36%)	18 (36%)	6 (33%)	86 (37%)
2	Online Resources	53 (31%)	16 (32%)	7 (39%)	76 (32%)
3	Web Resources	30 (18%)	13 (26%)	5 (28%)	48 (20%)
4	CD-ROM	14 (8%)	03 (6%)	00 (00.00%)	17 (7%)
5	Audio-Visual Tapes	11 (7%)	0	0	11 (4%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 17 -: Analysis by Preference of Source of Information



The user visits the library to fulfill the information needs of them by consulting the documents available in the library. The use of the library was asked to indicate the

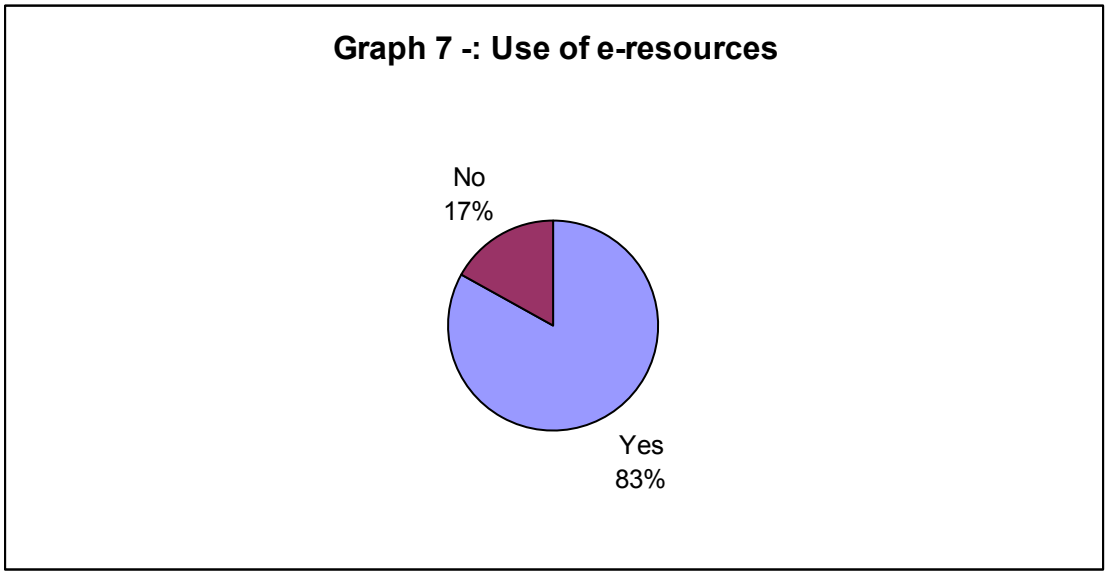
types of resources which they prefer to use. Different types of information resources were listed in the questionnaire. Table 17- reveals the use of different sources and their preferences by the use of the Central Library. The table further reveals that while 86 (37%) use users print material, 76 (32%) and 48 (20%) use of Central library use online and web resources of the library respectively and this means that e-resources are most commonly used resource of the library. The scholar through the questionnaires obtain the sources of information used by the students, faculties and research scholars, which primarily has been split over five headings, such as; print, online, web, CD ROM and audio visual. Placing of the information used by the various use in the library under study in the Table-17 reveals that the print materials are the more preferred shape of document compared to online resources and web resources as, out of 90 (37%) use constituting 62 (36%) faculties and 6 (33%) research scholars. Likewise, use of online resources has been given traced by the use followed by web resources. In all type of resources, the student's populations are high compared to faculties and research scholars. It could be further visualized that the use are adaptive to the electronic sources of information.

6.6 Use of e-resources

Electronic Resources are increasingly becoming important these days as they are more up-to-date, nascent, reliable and can be accessed anywhere across all geographical boundaries. E-resources add value while conducting R&D activities. Electronic resources are making a significant growth as part of library collection which adds potential value to the resources of the library. Though a huge finance is involved in building of e-resources, it adds positive value to the use. But without conducting a study, there is no way of knowing whether the use accept them or not, do they find the e-resources easy to use, reliable, and useful or are e-resources effectively in use. The use of e-resources of the central library under study has been depicted below in Table-18 supported with Graph-7 for clear vision of the statement.

Sl. No.	Use of e-resources	Category			Total
		Student	Faculty	Research Scholar	
1	Yes	130 (76%)	50 (100%)	18 (100%)	198 (83%)
2	No	40 (24%)	00 (00.00%)	00 (00.00%)	40 (17%)
3	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 18-: Use of e-resources



While analyzing the above facet it could be revealed that 198 numbers of users (83%) out of 238 samples opine in favour of use of e-resources while 40 (17%) submit their negative opinion. This is however a positive response of the use of e-resources in various forms for different academic purposes.

6.7 Purpose of Use of e-resources

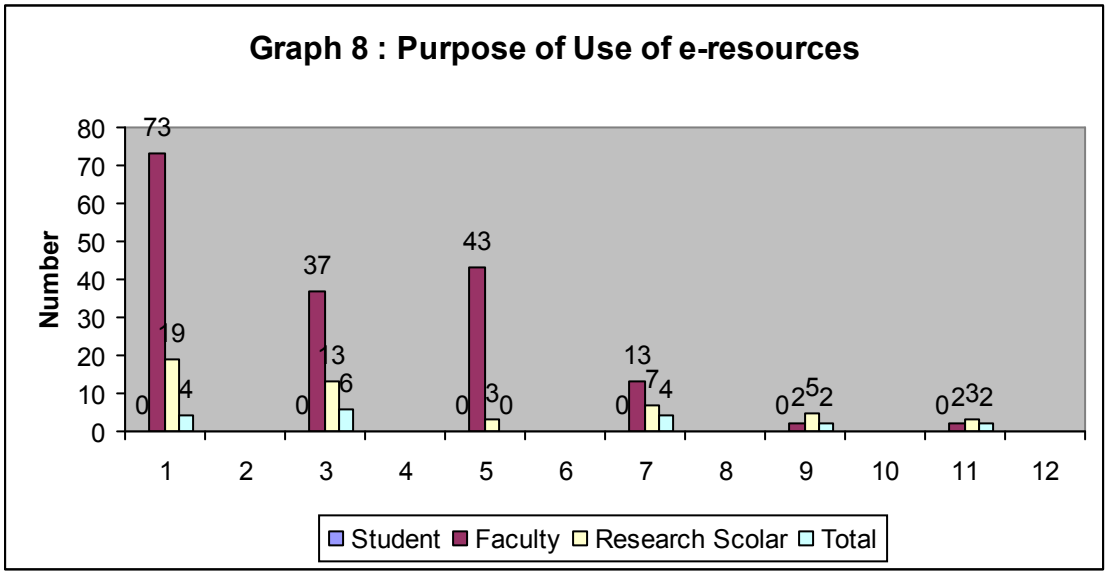
Table-19 and Graph-8 shows the purpose of using the e-resources by the use of the library.

Sl. No.	Purpose	Category			Total
		Student	Faculty	Research Scholar	
1	To update knowledge	73 (43%)	19 (38%)	4 (22%)	96 (40%)
2	Supporting academic research work	37 (22%)	13 (26%)	6 (34%)	56 (24%)
3	Preparing notes	43 (25%)	3 (6%)	0	46 (19%)
4	Writing an article	13 (8%)	7 (14%)	4 (22%)	24 (10%)
5	Preparing lectures	2 (1%)	5 (10%)	2 (11%)	9 (4%)
6	Writing book	2 (1%)	3 (6%)	2 (11%)	7 (3%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 19 -: Purpose of Use of e-resources

The respondents were asked to indicate the purpose of use of e-resources which differ from one user to another. The major purposes of use of use of e-resources are listed in Table-19 which forms the quantitative study that gives an indication of the core purpose of e-resources used by the use of Central Library. It is revealed from Table-19 that a majority of 96 (40%) number of the respondents use the e-resources of the library to up date knowledge while other use to support academic research work that constitute 56 (24%), 46 (19%) to prepare notes, 24 (10%) to write an article and 7 (3%) to write books. The table also indicates that among the user community the purpose of use of e-resources vary from category to category. It could be further analyzed that the student's population are more in number for visiting the library for various purposes. It is interesting to know that major responses comes from the students group which constitute 73 (43%) followed by faculties 19 (38%) and 4 (22%)

research scholars. It is also found that the student populations are more which constitute 43 (25%) followed by 3 (6 %) faculties with no research scholars. Out of 46 (19%) who visits the library preparing the notes. This is genuine that the student responses are more visiting library for various purposes. Likewise, the faculties out of 24 and 9, 7 (14%) and 5 (10%) respectively visit the library to write article and preparation of lecture notes.



6.8 Type of e-resources mostly used by the user

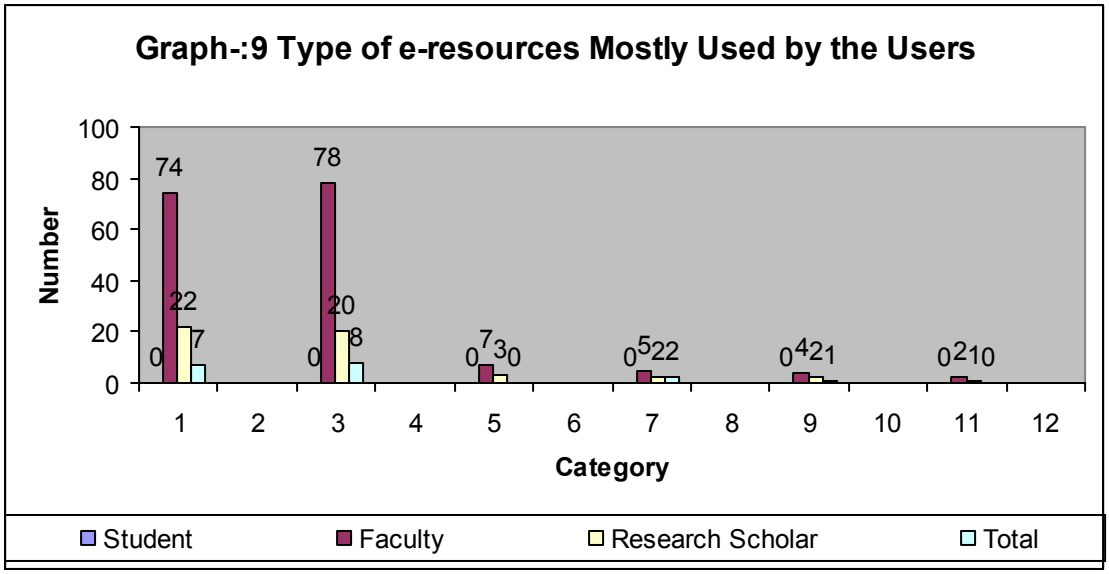
The type of e-resources mostly used by the user has been placed under Table-20. The scholars has obtained data relating to this component which has been classified into six categories, such as; e-journal, e-book, bulletin board, DVD's, CD ROM, floppy diskettes.

Sl. No.	E-resources	Category			Total
		Student	Faculty	Research Scholar	
1	E-books	78 (46%)	20 (40%)	8 (44%)	106 (44%)
2	E-journals	74 (44%)	22 (44%)	7 (39%)	103 (43%)
3	Bulletin Board	7	3	0	10

		(4%)	(6%)	(0%)	(5%)
4	DVDs	5 (3%)	2 (4%)	2 (11%)	9 (4%)
5	CD-ROM	4 (2%)	2 (4%)	1 (6%)	7 (3%)
6	Floppy Diskettes	2 (1%)	1 (2%)	0 (0%)	3 (1%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 20 -: Type of e-resources mostly Used by the User

The data shows that most of the faculty members and research scholars use some kind of e-resources. The table further reveals that, 170 number of students, 50 number of faculty and 18 research scholars use multiple type of e-resources such as, e-book, e-journals etc. While making analysis it could be ascertained that, 74 (44%) of students, 22 (44%) research scholars and 7 (39%) faculty members use e-journals respectively and constitute fit, second and third rank respectively. Moreover, it also could be observed those 78 (46%) students, 20 (40%) faculty and 8 (44%) research scholars use e-books. Thus use of e-book is highest among the students. 7 (4%) students and 3 (6%) faculty members are using the bulletin board. Very less number of respondents is using the DVDs, CD-ROMs and Floppy Diskettes that are available in the library. The above table has been supplemented with Graph-9 for clear understanding of the use of type of e-resources those are mostly used by the use in the library under study.



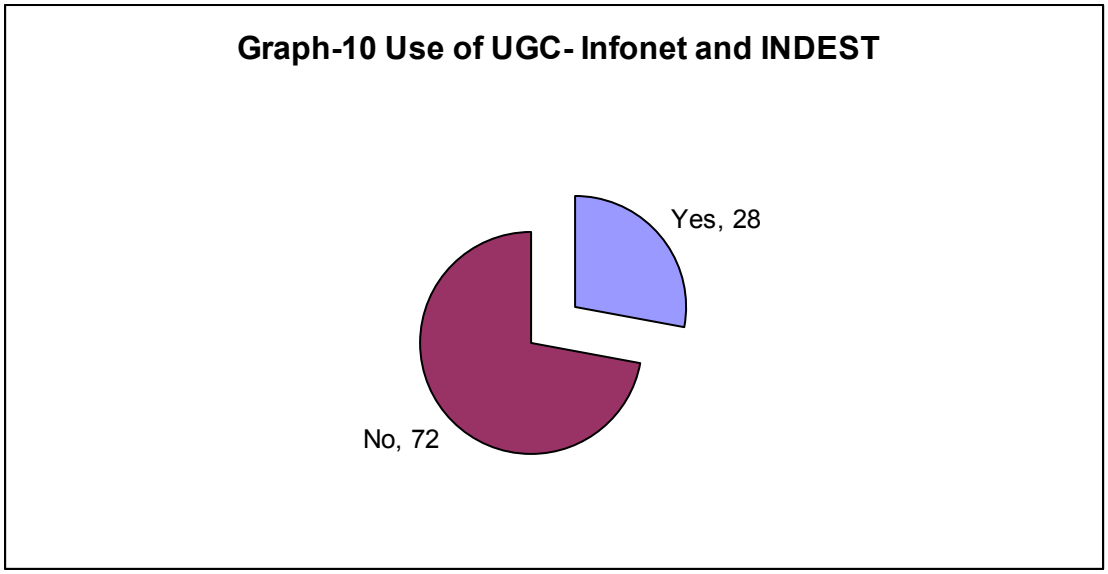
6.9 Use of UGC- Infonet and INDEST

Sl. No.	Use of UGC-Infonet and INDEST	Category			Total
		Student	Faculty	Research Scholar	
1	No	132 (78%)	29 (58%)	11 (61%)	172 (72%)
2	Yes	38 (22%)	21 (42%)	7 (39%)	66 (28%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 21 -: Use of UGC- Infonet and INDEST

The scholar would like to ascertain from the respondents about the use of e-resources subscribed under UGC- Infonet and INDEST consortium and the same has been tabulated in Table-21 supplemented with the Graph-10 for better clarity of information shows that 172 (72%) respondents out of 238 in total gives a negative option about the use of consortium. However, 66 respondents are in favour of the use of consortium, from among the students community 170 in total, 132 (78%) do not take the benefits of consortium while 38 (22%) takes the use of consortium in the library. It could be further visualized that out of a total 50 faculties 29 (58%) are in not favour of using the consortium in the library, whereas 21 (42%) faculty takes the

benefits of consortium. This may be due to the fact that the faculties access the consortium e-resources through their personal desktop provided to them by the library in various academic departments. With regards to research scholars maximum is 11 (61%) also equally placed a negative approach while 7 (39%) go in favour of using the library consortium.



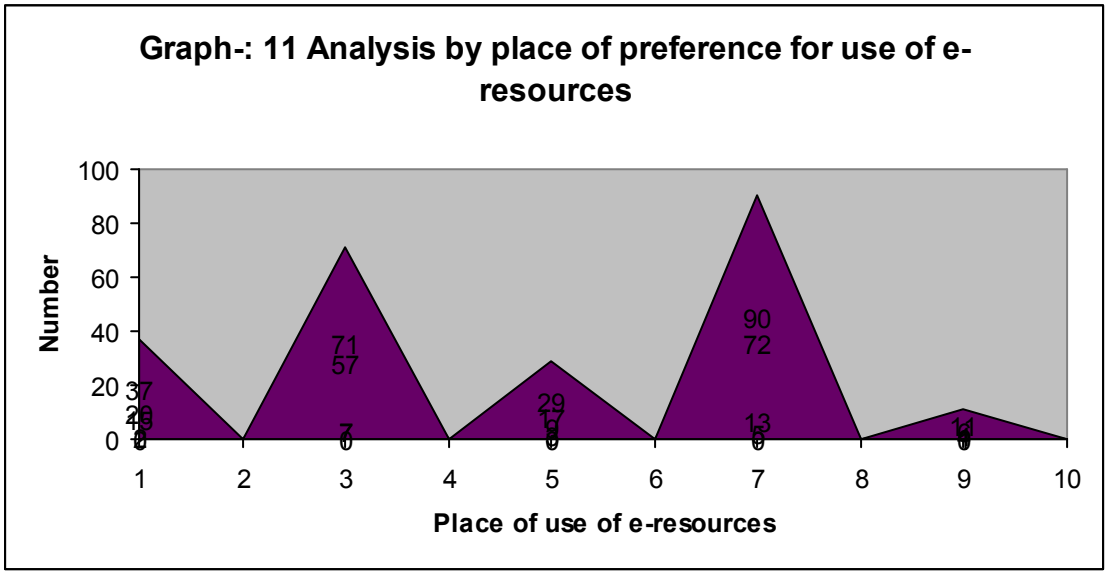
6.10 Analysis by the Place of Preference to Use e-resources

Sl. No.	Place of e-Resources Use	Category			Total
		Student	Faculty	Research Scholar	
1	Library	72 (42%)	13 (26%)	5 (28%)	90 (38%)
2	Computer Center	57 (34%)	7 (14%)	7 (39%)	71 (30%)
3	Department	20 (12%)	15 (30%)	2 (11%)	37 (15%)
4	On campus	17 (10%)	9 (18%)	3 (17%)	29 (12%)
5	Off campus	4 (2%)	6 (12%)	1 (5%)	11 (5%)

	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 22 -: Analysis by the Place of Preference to Use e-resources

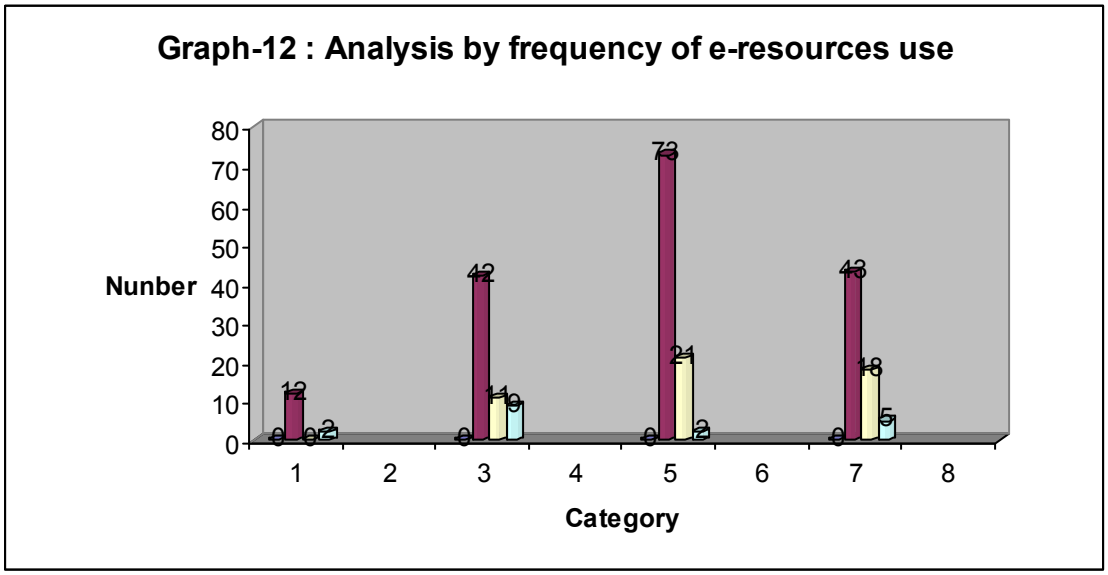
Data regarding the place of preference to use the e-resources is presented in Table-22 supported with the Graph 11. It clearly indicates that the majority of respondents prefer to use e-resources in the library followed by computer center and department respectively mention may be made out of 238 use, 90 (38%) are the use who browse for various e-resources in the library followed by 71 (30%) in computer center and 37 (15%) in their departments respectively. Again, the students population are more compared to faculty and research scholars, where 72 (42%) followed 57 (34%) and 20 (12%) of for e-resources in the library, computer center and department respectively. It is interesting to know that 15 users (30%), followed by 13 users (26%) and 9 users (18%) access e-resources in the department, library and on-campus respectively. This shows that the faculties are being provided with internet connectivity in their respective desktop so as to facilitate them to access e-resources. It is surprising to know that maximum number of research scholars 7 (39%) followed by 5 (28%) and 3 (17%) out of 18 in total preferred to access e-resources from computer center, library and on campus respectively. It is clear from the analysis that the computer center is open for accessing e-resources to all type of use where the students and research scholars take the maximum use of e-resources.



6.11 Analysis by frequency of e-resources use

Sl. No.	Frequency of e-resources Use	Category			Total
		Student	Faculty	Research Scholar	
1	Weekly	73 (43%)	21 (42%)	2 (11%)	96 (40%)
2	Daily	43 (25%)	18 (36%)	5 (28%)	66 (28%)
3	Monthly	42 (25%)	11 (22%)	9 (50%)	62 (26%)
4	Never	12 (7%)	0 (0%)	2 (11%)	14 (6%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 23 -: Analysis by Frequency of e-resources Use



Analysis by frequency of use of e-resources of the library under study has been placed in Table 23 supplemented with Graph 12 for a clear vision of the information. The scholar obtained the data in four various components, such as; never, monthly, weekly and daily. The data reveals that out of 238 in total, 96 (40%) which is the maximum followed by 66 (28%) and 62 (26%) preferred to use the e-resources in the library weekly, daily and monthly respectively. Again the student communities are more

compared to faculty and research scholars. It could be ascertained that out of 170 students that again 73 (43%) preferred to use e-resources weekly in the library which may be due to the time constant for various academic programmes,43(25%) students however opined the use e-resources daily. While analyzing data relating to the faculties it could be found that again 21 (42%) faculties constitute the highest followed by 18 (36%) and 11 (22%) who preferred to use e-resources weekly, daily and monthly respectively. It is evident from the table that both the faculties and students community preferred weekly basis to access e-resources in a monthly basis followed by 5 (28%) who prefer e-resources daily. It is surprising to know that out of the research community 2(11%) to its opined who access weekly and never respectively. It is evident that more conductive environment requires prevailing in the library so that the maximum number of use will preferred to access e-resources from the library.

6.12 Analysis by awareness approach about e-resources

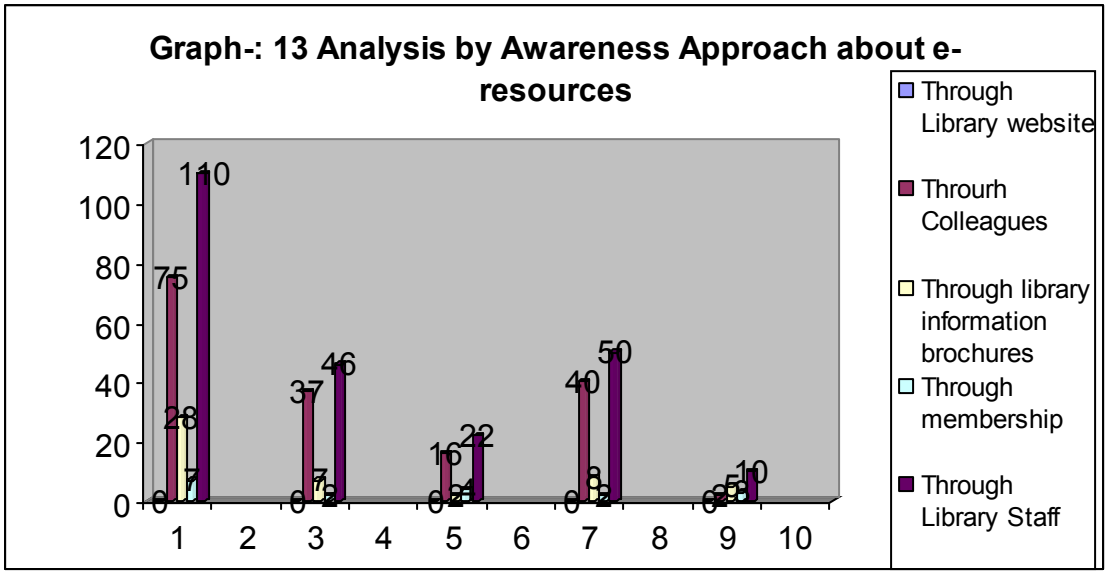
The scholar submitted a question through the questionnaire to the respondents to ascertain the tapping of the source for use of e-resources through five options. The same has been placed in Table-24 appended with Graph-13 for clear understanding of the problem.

Sl. No.	Awareness Source	Category			Total
		Student	Faculty	Research Scholar	
1	Through library website	75 (45%)	28 (56%)	7 (39%)	110 (47%)
2	Through membership	40 (24%)	8 (16%)	2 (11%)	50 (21%)
3	Through colleagues	37 (21%)	7 (14%)	2 (11%)	46 (19%)
4	Through library information brochures	16 (9%)	2 (4%)	4 (22%)	22 (9%)

5	Through library staff	2 (1%)	5 (10%)	3 (17%)	10 (4%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 24-: Analysis by Awareness Approach about e-resources

The table clearly indicates that among the respondents, 110 (47%) number of users noted the availability of e-resources from the library website, followed by 50 (21%) number of users who know the same through membership, 46 (19%) number of users through colleagues, followed by 22 (9%) number of users through library information brochures and few number of respondents 10 (4%) know about the e-resources through the library staffs. This shows that, most of the respondents are quite familiar in browsing the internet to get the update information on the institution through concerned website. This is a welcome step among the user communities who are quite aware of the use of e-resources.



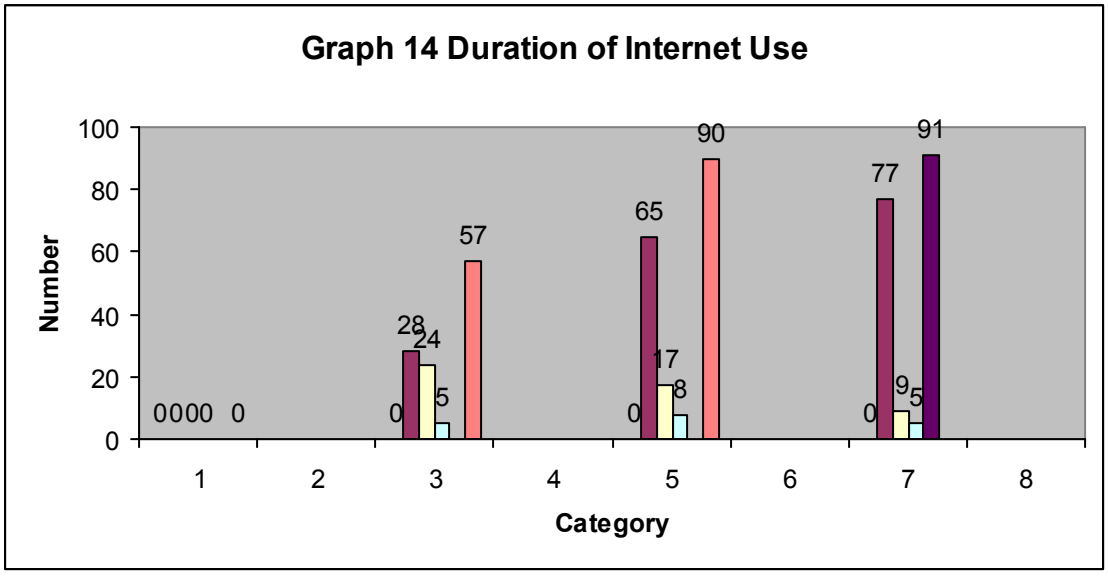
6.13 Access to Internet

In recent years, Internet has emerged as the most powerful medium for storage and retrieval of information. With the unprecedented growth in the quantum of knowledge worldwide and easy accessibility, Internet has become an unavoidable necessity for every institution for higher learning and research. An Internet user has access to a wide variety of services, such as, electronic mail, file transfer, vast amount of e-

resources, breaking news, shopping opportunities, and many more. The scholar asked the respondents to indicate the average time spent on the use of Internet services of the library under study and the data has been tabulated in Table-25 along with the Graph-14.

Sl. No.	Duration of Internet Use	Category			Total
		Student	Faculty	Research Scholar	
1	More than 7 years	77 (45%)	9 (18%)	5 (28%)	91 (39%)
2	5-7 years	65 (38%)	17 (34%)	8 (44%)	90 (37%)
3	1-4 years	28 (17%)	24 (48%)	5 (28%)	57 (24%)
4	Never	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 25 -: Duration of Internet Use



The analysis shows that all the respondents are quite use to internet and they browse it for various purposes. It could be revealed from the above Table-25 and Graph-14, out of a total number of 238 respondents, 91 (39%) numbers of respondents are using

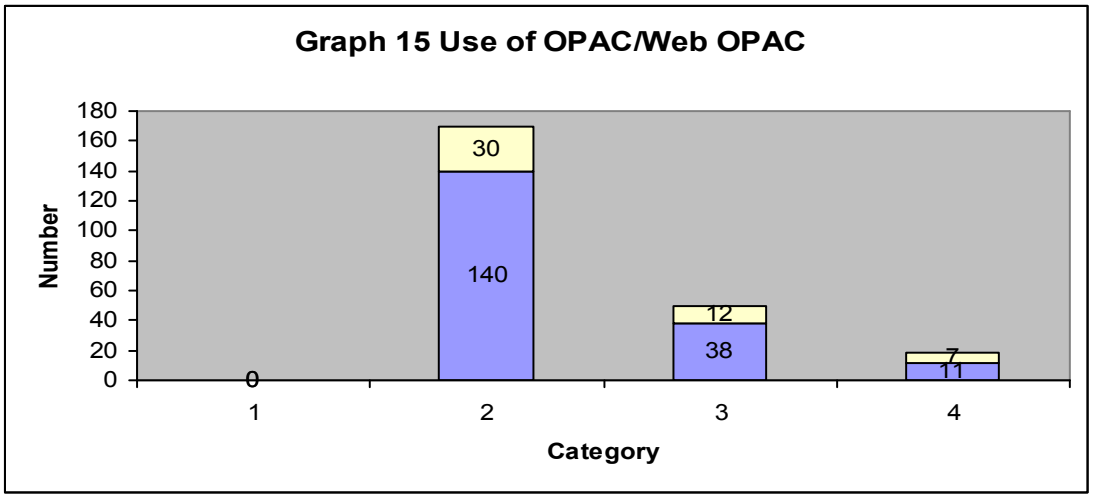
internet for more than 7 years followed by 90 (39%) respondents who browse for internet for last 5-7 years and 57 (24%) number of respondents are using the internet for last 1-4 years. This reveals that, very number of respondents are used to internet that have got an exposure to e-resources. The study reveals that a good number of respondents are slowly inclined to make internet as a platform for obtaining e-resources.

6.14 Use of OPAC/WebOPAC and Web Site

An Online Public Access Catalogue (OPAC) is a library catalogue having with a direct connectivity with the master databases of the library collections. It disseminates information about the availability of the documents in the library that can be accessed through a computer terminal for the benefit of library use. An OPAC provides the use online access to the library's catalogue allowing them to search and retrieve records which has got multiple access facilities of the document such as, ISBN, Author, Title, Subject, Keywords etc. OPAC is one of the important modules of any integrated library management software. The university library under study uses LibSys software for various operations in the library. OPAC also extends the facilities to the use for online reservation, borrower status checking and so on. The Web-OPAC also equally plays a vital role to promote the use of library resources in a networked environment especially when the library is accessible on web. The library extending the facilities and services to the use primarily to its members requires developing a web site of its own or may push itself as an icon in the organization website. The library further requires to put forth some of the important icons on the website so that the use can have a seamless access to the library site. Through the Web OPAC, the use can know the holdings of the library including other services available in the library through web site. In this process designing and developing of the library website is indispensable so that millions of use at the same time without any geographical limitations can access the services of the library on the platform of Internet. The scholar has put forth below the data relating to the use of OPAC/Web OPAC of the library under study in Table 26 supplemented with Graph-15 for a clear vision of the parameter.

Sl. No.	Use of OPAC/Web OPAC	Category			Total
		Student	Faculty	Research Scholar	
1	Yes	140 (82%)	38 (76%)	11 (61%)	189 (79%)
2	No	30 (18%)	12 (24%)	7 (39%)	49 (21%)
	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 26 -: Use of OPAC/Web OPAC



It is revealed from the Table-26 that out of a total 238 respondents while, 189 (79%) are using the OPAC service of the library to find out information regarding the availability of the resources in the library premises, 49 (21%) respondents do not make use of OPAC service due to many reasons such as, either they may not be knowing the use of such service or may not be conversant with the use of computer and or search technique or may be due to time constraints. Analysis further reveals that, 140 (82%) number of use i.e., the students constitute the highest percentage followed by 38(76%) number of faculties and 11 (61%) research scholars. This shows that the students have the proficiency to use the computer as the medium of their learning process and it is also pertinent to mention that, due to pre-engagements of the faculties due to multiple academic works and engagements of the research scholars in their data collection and or the field survey less number of the faculties and research scholars were noticed to use the library OPAC service.

The library under study provides also Web-OPAC service to its valued customers which are a healthy sign for the library to use the library resources profusely. With regard to Web OPAC service the use are more comfortable to find out academic information due to the Internet connectivity in the library, computer center and academic departments etc. To provide the best services to its members of irrespective academic communities, the library provides Internet facilities to the students, faculties, research scholars in the library itself and further, the academic departments are also connected with Intranet facilities so that, the faculties can access the library resources including e-resources collected through consortium. It is interesting to note the institution library under study provides the benefits to the students especially with Wi-Fi connectivity and campus network in their hostels which allow them to more to be more conversant with the technology. The faculties also are provided in their quarters with such facilities who take the best use of library resources for teaching and research purpose.

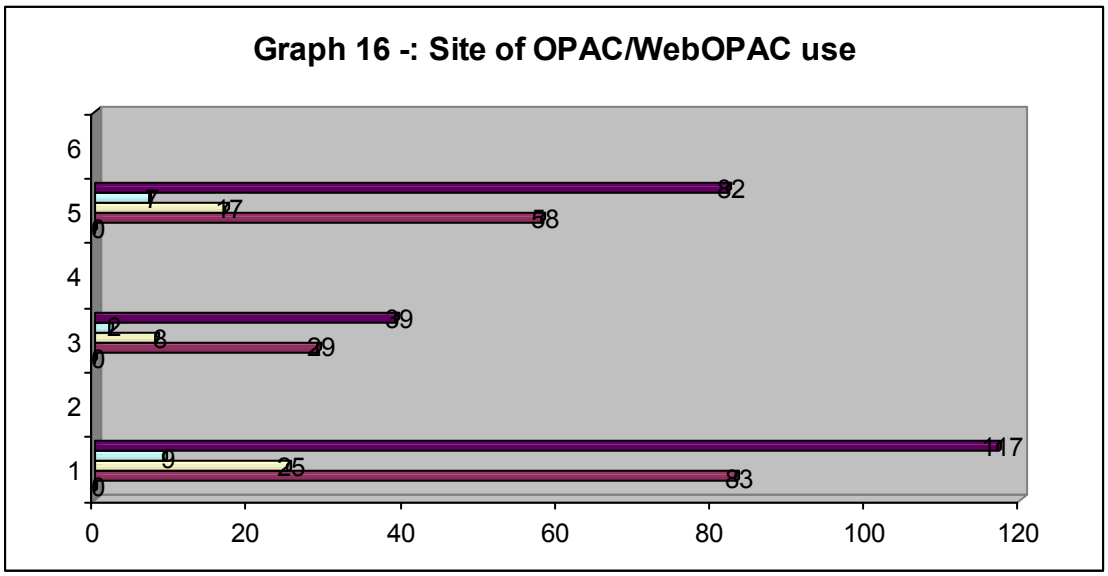
6.15 On-site Access of library resources

On-site access to library resources is other developing parameters of the library where the library facilitate the use to access the library on Internet. As discussed earlier, library under study also equally facilitate the use to access the library resources on Internet and for that, the library has built up a website of its own. The scholar has put forth below the data relating to on-site access of the library under study in Table- 27 supplemented with Graph-16 for clear understanding of the statement.

Sl. No.	On-site Access	Category			Total
		Student	Faculty	Research Scholar	
1	Library	83 (49%)	25 (50%)	9 (50%)	117 (49%)
2	Through online over Internet	58 (34%)	17 (34%)	7 (39%)	82 (35%)
3	Department computer	29 (17%)	8 (16%)	2 (11%)	39 (16%)

	Total	170 (100%)	50 (100%)	18 (100%)	238 (100%)

Table 27 -: Site of OPAC/WebOPAC use



While analyzing the data with regard to on-site access of the library by the use placed above it could be revealed that, the use has been facilitated with to get the library resources in a multiple ways. Even if the library provides OPAC service, the use also get an option to use the library resources on internet by browsing the information through Web OPAC and the facilities has been extended to all the academic communities irrespective of the types whether students, faculties, and research scholars. The use gets the chance to access the library holdings in the library including other platforms such as department computer and on-line. Analysis reveals that 117 users (49%) access OPAC/Web OPAC in the library premises, while, 82 (35%) number of users access online through internet and 39 (16%) through department computer connected with Intranet. Further like other analyses here also, the students are at the apex to use the library resources which is clearly evident from the table that, 83 (49%) students followed by 25 (50%) faculties and 9 (50%) research scholars out of a population of 170, 50 and 18 respectively prefer to use on-site access to the library resources. This is also supplemented with on-line access through Internet where 58(34%) students, 17 (34%) faculties followed by 7 (39%) research scholars access the information respectively out of the same population

group. This show that all the academicians such as students, faculties and research scholars are equally in the same footing for having conversant with the technology.

6.16 Findings

After due analysis of the questionnaires placed under different tables as noted above, interacting with the users, and while browsing the other sources of information concerning to the present study of the Central Library, IIT Guwahati, the scholar deduced with the following findings. From the above study, it could be realized that the student give much emphasis to use the library resources on IITG in multiple ways. The general is not a positive criteria where both the communities equally play a vital role to access the library resources from among all the communities i.e. students, faculties, research scholars. The scholar made a thorough analysis to ascertain the frequency of visit which after analysis could be observed that the student community immensely takes the maximum benefit of the library resources compared to the other populations. As the use of the library under study is conversant with the technology they hardly find any problem to access the electronic resources of the library. Inspite of the fact that a good number of users placed their negative opinion to use the e-resources still then it is a positive response from other communities who use the e-resources predominantly to satisfy their needs which is clearly evident from the analysis for the purpose of e-resources. The scholar made an all out effort to project the various e-resources available in library study which after analysis it could be found that two most important documents such as e-journals and e-books are found to be mostly preferred documents. Again even if the library provides OPAC services to the use have been facilitate with to the access library through Web OPAC internet where they can access the library collection through Web OPAC, the services of the library is also supplemented with the access of library resources on internet from the library, online and department computer which facilitate the use to have a wide range of options to get the library. The study further shows that consequently after the emergence of libraries own website, the users are accessing the library profusely.

CHAPTER - 7

SUGGESTIONS
AND
CONCLUSION

Information and knowledge are the products of society which flows through various channels of information resources. These information resources help to improve the quality education and research work. The advances in ICTs have brought phenomenal changes in libraries with regard to its infrastructures, management of information resources, library functions, services, and competencies of the staffs, development of skills along with use' requirements. In this changing environment there is a shift from print to e-resources which are easy to use, flexible and available without geographical boundary. The enhanced features of online access, provided through web technologies such as hyperlinks to related texts and links to multimedia, also provide value addition to these resources. Development of communication systems and digital technology has made the e-resources available in abundance in World Wide Web. E-resources are becoming very popular and pervasive these days as it provides the freedom to access the content at the desktop of the user at ease.

7.1 Suggestions

The scholar after obtaining various suggestions from students, faculties and research scholars have submitted below to improve upon the library services in a more effective way. Moreover, the scholar also placed below some of the valuable suggestions to act upon by the library for improvement.

- The library needs to make licensing agreement with the publishers so as to avoid any future complicacies.
- The majority of users need current periodicals and which must be continued. But due to the escalation price of the periodicals primarily of the foreign periodicals due to the general economic recession all around the world, it is not possible for any library to have all the periodicals subscribed. Under such circumstances resources sharing/inter library loan system has became indispensable and which should be implemented.
- The provision of document service is very much required by the academicians along with the provision of SDI service and CAS so as to keep the scholars abreast of recent developments
- Procurement of CDROM of various national and international databases is indispensable in the library.
- Collection development of e-books, e-journals needs to be more strengthened.

- ☞ The library should conduct feedback/use survey to know the need of use from time to time.
- ☞ Use training to the changing technology requires to be extended by the library and the academic department as well so as to make the optimum benefit of e-resources.
- ☞ The library is required to be well equipped by modern Information Communication Technology to facilitate each access to the information needs of the use.
- ☞ Each and every college Libraries should have their own building with state-of-the-art at the central place of the college for easy accessibility by the use.
- ☞ Internet facility should be provided to the library use, so that they may access their information needs easily. Libraries may be linked with or be a member of library resources in the country, e.g. DELNET.
- ☞ Libraries need to be automated to meet the challenges of an information society with necessary hardware and software. Each College library should create its own local database and provide effective and efficient computerized library and information services, such as Database Service, CAS, SDI, Reference Service, Document Delivery Service, etc.
- ☞ Library staffs, both professional and semi-professional needs to be fully oriented towards application of ICT. The authority should organize such kind of regular training programs to acquire latest developments in the field. Special initiatives in orientation programs/computer literacy program may be organized for the library staff.
- ☞ Library must employ modern library technique and device in its operation. So that it provide service in order to save time of library user and the staff because manual system is time consuming.

7.2 Conclusion

E-resources have become an important aspect of library and information centers. However, the most useful type of electronic resources exists in digital form. Within most organizations, documents provide a fundamental and necessary mechanism of communication. They can also embed a number of different types of communication modality and can utilize a wide range of presentation and publication media. The

majority of the conventional documents have been published using the medium of paper. The advent of computer has made possible the creation of many new types of documents which are referred to as electronic documents. Such documents exist only inside a computer system in digital format. They are acquired in computer format and published by a central database and distributed by floppy disk, CD-ROM, Hard disk, pen drive etc. or communication link. One significant advantage of e-documents over those that are based on the use of paper is that they can embed many more communication modalities than is possible with conventional documents. These include text, static picture, sound, animation, motion picture and various tactile modes of communication. There are many other advantages to be gained from the use of e-documents. They are accessible without any geographical boundary. The advent of powerful, low cost computer-based technologies is forcing the system designers and library and information professionals to provide the services and facilities that they offer. The use of new technologies within libraries brings many exciting possibilities for the development of new approaches to information storage and access. Global access to e-documents will be provided by an information superhighway.

With the proliferation of number of IT-based resources in Library and Information Centers, the needs and demand of use are also increasing. Today the uses need more information without visiting the library. It has resulted into the change of collection building in LICs. Today LICs are building more and more connectivity with resources of other institutions/organizations for satisfying the information need and requirements of the use. But the rising cost of the resources, its ever-increasing number and static or marginally increasing budgets are forcing LICs to resort to alternatives like consortia. The shared subscription or Consortia based subscription to e-resources ensures better, faster and more cost effective ways of providing electronic information resources to the information seekers of the user community. The LICs acts as a gateway to knowledge by providing information resources and services to its use with much greater ease and convenience. The study has shown that e-journals perform an increasingly important role in academic and R & D work of IITG. There is an ever increasing demand for subscriptions and access of more e-journals titles by the user community. To exploit the e-resources fully there also appears to be some need for the use to be provided with training in using the e-resources. The study has enabled the respondents to express their satisfaction and their aspirations for the

improvements of the e-resources services of the library. Several responses identified both satisfaction and expectation for the future.

E-resources in the midst of information and communication technology have proved to be pragmatic value for all types of user i.e., students, research scholars and teachers, etc. It is a channel of communication for update of knowledge. The shrinking budget allocation to the library compelled to face financial constraints for building outstanding collection development. It is also one of the facto for cut down drastically the current subscription to the journals. In India, several initiatives/the librarian adopted the means of Information Technology to acquire, organize and disseminate the resources to the use' community through electronic form. The e-resources have become indispensable due to proliferation of information. Most of leading university libraries including the Central University libraries has developed collecting e-resources for building of the notion of digital libraries. They however have also developed their own websites giving important features with hyperlink provision. The e-resources are one of features in their webpage where some university libraries provide the use easy and free access to the e-resources. While in some cases, some documentation and information centers allow the use to use the e-resources on payment of minimum fee. The library under study has also provides the e-resources services in the university giving link to Central Library. The e-journals can be searched by subject. Further, the university also extends the facilities to the use with tutorials on e-resources. The e-resources subscribed by IIT Guwahati are which provides free online access with print formats. The institution in addition to the e-resources available through UGC-Infonet Digital Library Consortium programme also develops the databases on various subjects through Internet. The e-resources thus collected by the library include websites, archives of working papers/pre-prints/journal articles, e-prints, directories, etc. In the days before "e-"became a prefix to the word "resources," librarians and their staff were responsible for the collection of resource usage statistics. Most serials in academic libraries do not circulate, so libraries historically had to identify other ways to determine usage outside of circulation statistics. With the introduction of e-resources, the task of tracking usage statistics shifted from libraries to the provided of the content. Of course, the publishers and vendors employed different methods for gathering, interpreting, and distributing the usage data. The result is that libraries now receive incompatible and inconsistent information from which to determine how their resources are being used.

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APPENDICES

Appendix – I

QUESTIONNAIRE

on

AN EVALUATION OF USE OF E-RESOURCES IN INDIAN INSTITUTE OF TECHNOLOGY LIBRARY, GUWAHATI

Dear Sir/Madam,

I am pursuing my M.Phil course in Library and Information Science in Mizoram Univeity and carrying out my dissertation work on the above topic under the guidance of **Dr. R N Mishra,** Asst. Professor, Department of Library and Information Science, Mizoram Univeity, Aizawl. You are kindly requested to fill up the questionnaire for the purpose of dissertation work only. The information given by you will be kept strictly confidential and will be used exclusively for the present work.

Thanking You *Sincerely yours,*

(Rosa Laltlanmawii)
M.Phil Scholar

- **The respondent is requested to put (✓) mark in the space provided in each question or provide information wherever necessary.**
- **You are kindly requested to use separate sheet wherever applicable.**

1. Name of the respondent: _____
   With address, e-mail etc._____
2. Category to which you belong: (a) Student ☐ (b) Faculty Member ☐
   (c) Research Scholar ☐ (d) Other ☐
3. Sex Male ☐ Female ☐

4. Name of the Department: _____

5. Do you visit the library? Yes ☐ No ☐
(If yes, what is the frequency of visit to Library) Daily ☐ Weekly ☐ Occasionally ☐

6. Which information sources you prefer to use?
Printed Material ☐ Online Sources ☐ Web Sources ☐
CD-ROM ☐ Audio/Video Tapes ☐
Others (Pl. specify) ☐

7. Are you using the electronic resources of the library ? Yes ☐ No ☐

8. Purpose of using e-resources:
Writing an article/paper ☐ Writing a book ☐
To update knowledge ☐ Preparing notes ☐
Supporting academic research work ☐ Preparing Lecture ☐
Others (please specify) _____

9. Which e-resources you most like to use?
CD-ROM ☐ DVDs ☐ Floppy Diskettes ☐
E-Journals ☐ Bulletin Boards ☐ E-Books ☐
Others (please specify) _____

10. Are you using the UGC Infonet Digital Library Consortium and INDEST Consortium? Yes ☐ No ☐

11. Which place you used to prefer to use to access e-resources ?
Library ☐ Computer Center ☐
Department Laboratory ☐
On campus Location ☐ Off Campus Location ☐

12. Do you have a Department Library? Yes ☐ No ☐

13. Do you access the library from the Department ? Yes ☐ No ☐

14. How often you use e-resources?
Daily ☐ Weekly ☐ Few times a day ☐
Few times a month ☐ 2-3 times a week ☐ All the time ☐

15. How do you get awareness about e-resources?

Through membership ☐ Through Library Website ☐

Through information brochures of library ☐ Through Library Staff ☐

Through colleagues ☐ Other Sources ☐

16. Type of e-resources frequently used by you

E-book ☐ E-journals ☐ E-dictionaries ☐

E-encyclopedia ☐ E-thesis/dissertation ☐ E-newspapers ☐

CD-ROM Database ☐ Online Databases ☐ E-mail ☐

Discussion groups ☐ Blog ☐

Others (please specify) _____

17. Do you access Internet? Yes ☐ No ☐

If yes, from how many years you are using internet

1-4 years ☐ 5-7 years ☐ More ☐

18. Are you using the OPAC? Yes ☐ No ☐

19. What is your OPAC access point?

In Library ☐ In Department Computer ☐

Through online over internet ☐ Others _____

20. Does the library provide any special services regarding e-resources?

Yes ☐ No ☐

If yes, please specify _____

21. If the library provide the required e-information? Yes ☐ No ☐

22. Are you satisfied by the library e-resources services? Yes ☐ No ☐

23. How do you rate your satisfaction?

Excellent ☐ Good ☐

Moderate ☐ No comment ☐

24. Do you face any problem in accessing the e-resources? Yes ☐ No ☐

If yes, what are those problems?

Limited number of machines ☐ Slow internet speed ☐

Resources are not sufficient ☐ Information is not up to date ☐

Do not understand the process ☐

Others (please specify) _____

25. Does your library provide any training to use the e-resources?

Yes ☐ No ☐

If yes, are you satisfied by the training?

Yes ☐ No ☐

26. From whom you want to take the training?

Library personnel ☐ Publishers ☐

Computer Specialists ☐

27. How do you grade the following e-resources?

(Please put in 10 point scale)

E-book	☐	E-journals	☐	E-dictionaries	☐
E-encyclopedia	☐	E-thesis/dissertation	☐	E-newspapers	☐
CD-ROM Database	☐	Online Databases	☐	E-mail	☐
Discussion groups	☐	Blog	☐	Subject gateway	☐

28. How do you find the retrieved sources?

Useful ☐ Most useful ☐ High productive value ☐

29. Any other information you would like to contribute:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

30. Any suggestion you would like to share for development of the e-resources services in the library and increase its efficiency?

_____

_____

_____

_____

_____

_____

_____

Date _____ Signature_____

(Thanks for your cooperation)

Appendix – II

QUESTIONNAIRE

On

AN EVALUATI ON OF USE OF E-RESOURCES IN IIT LIBRARY, GUWAHATI

Dear Sir/ Madam,

I am pursuing my M.Phil course in Library and Information Science in Mizoram Univeity and carrying out my dissertation work on the above topic under the guidance of Dr**. R.N. Mishra,** Asst. Professor, Department of Library and Information Science, Mizoram Univeity, Aizawl. You are kindly requested to fill-up the questionnaire for the purpose of dissertation work only. The information given by you will be kept strictly confidential and will be used exclusively for dissertation.

Thanking you, Sincerely yours,

(**Rosa Laltlanmawii)**
M.Phil Scholar

Note: The Librarian is requested to use separate sheet of papers where ever necessary corresponding to the question number.

A. GENERAL

1. Name of the Library: _____

2. Year of establishment: _____

3. Name of the Librarian: _____
   or Library in-charge

4. Correspondence Address: _____

5. Telephone: _____ Fax: _____ E-Mail:_____

6. Web site URL (If any): _____

B. LIBRARY COLLECTIONS

7. Collections of the Library

7.1 Books:

7.2 Bound Volumes:

7.3 Current Journals: Indian:_____ Foreign: _____

7.4. Theses/Dissertation: _____

7.5. Reference Tools: _____

7.6. Microform: _____

7.7. CD-ROM: _____

7.8. Audio/Video Cassettes: _____

7.9. Others: _____

8. No. of journals procured for different disciplines under the IIT

Department	Indian Journal	Foreign Journal	Total

Total			

9. Total books procured for different disciplines under the IIT

Department	Books

C. **LIBRARY BUILDING**

10. Does the library have its own building? Yes ☐ No ☐

11. Do you feel that library has adequate space to provide the various types of services to the clienteles? (Please tick) Yes ☐ No ☐

12. Do you think that the number of seats provided in the library is adequate to meet the needs of Teaches/Students/ Research Scholars of the Univeity?

Yes ☐ No ☐

If yes, please give details_____

13. Do you have research cubical? Yes ☐ No ☐

14. Do you have extension provision in future? Yes ☐ No ☐

D. READER'S SERVICE

15. What are the total working hours of the library?

a. Week days ☐

b. Sundays ☐

16. What is the timing of the Library? _____

a. Week days ☐

b. Sundays ☐

17. Does the library remain open during holidays and vacation?

Yes ☐ No ☐

18. Do you provide OPAC service?

Yes ☐ No ☐

19. Do you have electronic / AV resources, workstations and appropriate Infrastructure for use and delivery

Yes ☐ No ☐

20. Do you provide any awareness programme about e-resources from UGC-Infonet

Yes ☐ No ☐

21. Do you provide information literacy training to the use?

Yes ☐ No ☐

If yes, kindly tick below the literacy service provided by you.

- Media Literacy
- Network Literacy
- Web Literacy
- Digital Literacy
- Scientific Literacy
- Visual Literacy
- Critical literacy

22. Do you have any institutional repositories of research articles, reports, and institutional publications?

Yes ☐ No ☐

23. Do you provide campus area network services? Yes ☐ No ☐

24. Do you provide database services? Yes ☐ No ☐

If yes, kindly mention in detail

- Bibliographic database
- Compendia
- International database (please mention in detail)
- National database (please mention in detail)

25. Do you provide institutional repository service? Yes ☐ No ☐

If yes, kindly mention the collections and the year of commencement of service?

Institutional publications _____no.

Theses/ Dissertations _____no

Govt. publications _____no

Research articles _____no.

Any other _____no.

E. NETWORKING OF LIBRARIES

26. Do you adopt any electronic mode of dissemination of information to the use?
If yes, please mention the methods adopted for dissemination of information
Yes ☐ No ☐

27. Do you provide any CD-ROM service?
Yes ☐ No ☐

28. Total number of use accessing to CD-ROM database:
_____

29. Which Library software is in use?

- Libsys ☐
- CDS/ISIS/WINISIS ☐
- SLIM++ ☐
- SOUL ☐

Any other (Please specify) _____

30. Is your library is totally computerized? Yes ☐ No ☐

If no, which section in the library is computerized?

- Acquisition ☐
- Cataloguing ☐
- Circulation ☐
- Serials control ☐
- Back volume ☐
- Text Book ☐

Any other (Please mention) _____

31. On which server the library software has been installed?
Local (Library) ☐ Central (Institute's) ☐

If central, who is managing your library software?

Library and Inf. Professional ☐ Computer Professional ☐

Information Scientists ☐

Any other_____

32. Does your institute have a website? Yes ☐ No ☐

If yes, who is hosting your website _____

33. How frequently you up-date the website?

Monthly ☐ Half Yearly ☐ Yearly ☐

34. Has your library got an independent LAN or is a part of campus network?

Independent ☐ Part of campus network ☐

35. How do you spread out your institute's campus LAN?

- To all Departments ☐
- To Central library ☐
- To all Labs/Centers/Units ☐
- To the entire campus including hostels ☐
- To the individual rooms of all students ☐
- To all faculties and office residences ☐

Any other _____

36. Are your campus network and library network connected to internet?

Yes ☐ No ☐

If yes, please specify your Internet Service Provider (ISP)

- ERNET (ex: ac.in, edu.in, res.in) ☐
- VSNL ☐
- NICNET ☐
- Any other _____

37. Type of internet connection is being used in the library, departments, students' hall and residences.

37.1 Library

- Dial-up ☐
- Leased ☐
- Radio link ☐
- Cable network ☐
- V-sat ☐

Any other _____

37.2. Departments

- Dial-up ☐
- Leased ☐
- Radio link ☐
- Cable network ☐
- V-sat ☐

Any other _____

37.3. Bandwidth of library network

- <=1.0 Mbps ☐
- >1.0 to <=2.0 Mbps ☐
- >2.0 Mbps to <=6.0 Mbps ☐
- >6.0 Mbps and above ☐

38. Do you have networking of Libraries? Yes ☐ No ☐

If yes, please mention the name of the libraries, Information Centers

To which the networking have been established

Is your library a member of any library networks, and a part of any consortium in India?

Yes ☐ No ☐

38.1. Library Networks:

- DELNET ☐
- CALIBNET ☐
- INFLIBNET ☐

Any other _____

38.2 Consortium:

- INDEST ☐
- UGC-Infonet Digital Library ☐

Any other _____

39. What are all the e-resources (full-text and bibliographic databases) subscribed from INDEST consortium and UGC Infonet Digital Library Consortium? (Kindly mention in a separate paper the list e-resources)

40. Does the library provide online information access, (please tick).

- E-books ☐
- E-journals ☐
- Abstracting databases ☐
- Open access journals (free) ☐

Any other services _____

41. Does the library provides CD-ROM services, please tick mark the type of service(s).

- Standalone ☐
- Networked ☐
- Both ☐

Any other services _____

42. Does the library provides Internet facilities, please provide the following data.

- No. of PCs connected _____
- Type PCs used (ex. P1, P2, P3, P4) _____

- No. of use accessing per day _____

43. If your library provides communication network services, please tick mark the type of service(s) available

- E-mail ☐
- Telephone ☐
- Facsimile ☐
- Voice mail ☐
- Videotext ☐
- Teletext ☐

Any other services

_____

44. If your institute provides personal e-mail facilities, please (tick mark) the category of use who use this facility:

- Teachers ☐
- Research scholars ☐
- Students ☐
- Non-teaching ☐

Any other

_____

45. Does the library provides e-learning/education services, please tick mark the type of service(s)

- Desktop (standalone) ☐
- CD-ROM/ DVD ☐
- Audio and video cassettes ☐
- Intranet ☐
- Internet or online ☐
- Any other services ☐

46. If your library provides electronic conferencing services, please tick mark the type of service(s) provided.

- Audio and video ☐
- Telephone ☐
- Both ☐
- Any other services☐

47. Is your library provides e-publishing services like
    - Library news bulletin ☐
    - Library news letters ☐
    - Reports ☐

    Any other services

    _____

48. Does the library provides access to web-based document delivery services through JCCC, please specify the number of requests (*based on print documents*) received from INDEST consortium per month

    _____

49. Does the library provides any support services, please tick mark the type of assistance in accessing electronic resources.
    - User orientation/education ☐
    - User training ☐
    - Staff training ☐

    Any other mean

    _____

50. Has your library initiated digitization process? Yes ☐ No ☐
    (If yes please specify the type of documents, software and format for digitizing documents)

50.1. Types of Documents:
    - Books (rare, out of print, public domain) ☐
    - Journal ☐
    - Thesis and dissertations ☐

- Question papers ☐

Any other

_____

50.2. Type of software id being used:

- Omni page pro ☐
- Fine reader ☐

Any other

_____

50.3 Type of format is being used:

- PDF ☐
- TIFF ☐
- HTML ☐
- DOC ☐

Any other

_____

51. Please provide the infrastructure facilities available in the library.

- No. of computers _____
- No. of fax machines _____
- No. of telephones _____
- No. of TVs _____
- No. of No. of VCP/VC _____
- No. of projectors _____
- No. of photocopies _____
- No. of scanners _____
- No. of barcode _____
- No. of scanners _____
- No. of printers _____

F. ELECTRONIC INFORMATION:

52. Please specify the availability of electronic information

Electronic journals in CD ☐ Through Web Access ☐

Any other format (Please specify) _____

53. **TOTAL NUMBER OF E-RESOURCES:**

E-books:

Web:_____ CD-ROM:_____ Floppy:_____ Any other: _____

E-journals:

Web:_____ CD-ROM:_____ Floppy:_____ Any other: _____

Databases:

Web:_____ CD-ROM:_____ Floppy:_____ Any other: _____

G. FINANCE

54. Please state budgetary provision and expenditure of the library

Description	Budgetary provision in .	Expenditure in .
2005-2006		
Institution Budget		
Library Budget		
Books		
Current Periodicals		
Electronic resources		
Hardware		
Software		
Maintenance		
2006-2007		
Institution Budget		
Library Budget		
Books		
Current Periodicals		
Electronic resources		
Hardware		
Software		
Maintenance		
2007-2008		
Institution Budget		

Library Budget		
Books		
Current Periodicals		
Electronic resources		
Hardware		
Software		
Maintenance		
2008-2009		
Institution Budget		
Library Budget		
Books		
Current Periodicals		
Electronic resources		
Hardware		
Software		
Maintenance		
2009-2010		
Institution Budget		
Library Budget		
Books		
Current Periodicals		
Electronic resources		
Hardware		
Software		
Maintenance		

55. How much money has been earmarked for automation?
(Please state in detail)

_____

_____

_____

_____

56. How much money has been spent for digitization process?

_____

_____

_____

_____

57. **PROBLEMS**

In your opinion what are the problems you are facing in giving electronic information services to the use? Please tick in order of preference by putting 1,2,3…

Insufficient Library Grant ☐

Inadequate Staff ☐

Lack of adequate Space ☐

Deprived of proper status and salary ☐

Indifferent attitudes of authorities ☐

Lack of computer skills among the staff ☐

Lack of cooperation from teaching community ☐

Lack of infrastructure ☐

Lack of coordination among staffs ☐

Lack of cooperation ☐

Failure of internet connectivity ☐

Any other problem _____

48. What are the steps you have taken for proper use of e-resources (Please state in detail)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

59. What is the future development plan for providing other services through e-form in the library?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Date _____ **Signature of the Librarian**

Appendix – III

Information and Library Network (INFLIBNET) Centre

UGC-INFONET Digital Library Consortium

March 18, 2008

Terms and Conditions of the Agreement for Access to E-resources for the Members of the UGC-INFONET Digital Library Consortium

Background

The UGC-Infonet Digital Library Consortium was formally launched in December, 2003 by Honourable Dr. A P J Abdul Kalam, the then President of India., soon after providing the Internet connectivity to the universities in the year 2003 under the UGC-Infonet programme. The Consortium proved to be a recipe to university libraries which have been discontinuing subscription of scholarly journals because of "Serials Crisis". The term "serials crisis" refers to exponential and continuing increase in subscription cost of scholarly journals. The crisis is a result of rise in cost of journals much faster than the rate of inflation, increase in number of journals and the paucity of funds available to the libraries.

The Consortium provides current as well as archival access to more than 5,000 core and peer reviewed journals and nine bibliographic databases from 23 publishers and aggregators in different disciplines. The programme has been implemented in a phased manner. In the fit phase that began in 2004, access to e-resources was provided to 50 universities who had Internet connectivity under the UGC-Infonet Connectivity programme of the UGC. In the second phase, 50 more universities were added to the programme in the year 2005. So far 120 Universities out of 171 that come under the purview of UGC, have been provided differential access to subscribed e-resources. These e-resources cove almost all subject disciplines including arts, humanities, social sciences, physical sciences, chemical sciences, life sciences, computer sciences, mathematics and statistics, etc. The programme is wholly funded by the UGC and executed by the INFLIBNET Centre. The total annual cost on providing differential access to more than 5,000 journals and nine bibliographic databases is around 30 crores.

The benefit of subscription to e-resources would also be extended to the colleges, to begin with the College for Potential with Excellence (CPE). The Consortium also plans to launch its "Associate Membership Programme" wherein private universities and other research organizations would be welcomed to join the Consortium for selected e-resources.

1.0. Terms and Conditions of the Agreement

The licenses are expected to incorporate the following terms and conditions in their agreements. The UGC-Infonet Digital Library Consortium and its member Institutions is termed as "**Subscriber",** and the publisher / service provider is termed as "**Licensor".** The member institutions in the UGC-Infonet Digital Library Consortium are categorized in the following three phases:

i) Phase I : 50

ii) Phase II : 50

iii) Phase III : 57

iv) Associate Members : to be enrolled

Total : 157

2. Access

2.0. Access and number of simultaneous use to e-resources including e-journals and online bibliographic databases of a Licensor shall be provided to the member institutions as specified in the tender document.

2.1. Incase there is a limit in number of simultaneous access, the total number of simultaneous access would be pooled for core member institutions in a given category which can be used by any member of the core member institution, depending upon extent of usage. However, a minimum number of accesses would be maintained for each institution.

2.2. The Licensor shall provide IP-enabled access to the member institutions to their e-resources. The institutions that do not have static IP address would be given log-in / password based access to e-resources.

2.3. The licensor shall provide search, browse, view and download facilities. The licensor will allow inter-library loan for print / softcopy of articles from their licensed e-resource on "not-for profit" basis.

2.4. Licensor shall provide usage statistics reports on monthly basis to the headquarters of the Consortium as per details provided under Para 9.0.

2.5. The user shall be bonafied employee, faculty, student, researcher (full-time / part-time), alumni members and corporate members of the institutes and that number shall be unlimited. Use shall be allowed unlimited access (preferably), view, search, browse, download and print the data for their use. Walk-in visitors who are physically present at the subscriber's site should also be allowed to use the resources.

2.6. UGC-Infonet Digital Library Consortium at the INFLIBNET Centre shall be the implementing agency of the consortium.

2.7. The publisher would provide access to the new titles added during the contract period at no additional charge.

2.8. Subscribe may provide electronic links to the licensed materials from their web sites at journal level and licensor should provide help in doing so.

2.9. Consortium members should be allowed to download bibliographic records and abstracts in their local database (especially records for publications from their own faculty, staff and students) and full-text articles published by their faculty / students in their Institute's e-print archives.

3.0. Payment

3.1. Subscriber understands that different publishers / license / service provide have different pricing models. So, the fee for the access of e-journals shall be arrived differently depending on pricing model through mutually negotiable agreement.

3.2. The payment would be released only after receipt of "access-enabled" certificate from each subscriber. Multiple year agreements will be invoiced annually.

3.3. Whenever the agreement is entered into, the payment computation will be on "prorata basis" with effect from the date of contract entered into for remaining period of that calendar year. The subscription period may also be extended into non-calendar year, if mutually agreed.

3.4. If the payment is to be made in Indian currency to the representative of the publisher in India, the currency conversion shall be done on the TT bank selling rate as prevailing on the date of publisher's invoice.

4.0. Tenure

4.1. Quotes for subscription to e-resources are invited for a period of five years, i.e., 2006 to 2011. The licensor may provide change in rate of subscription over this period.

4.2. The agreement shall commence on the date of providing access and continue on annual basis or for a period as decided by the Subscriber.

4.3. Multiple-year agreements will automatically be renewed for successive one-year term unless either party gives notice of minimum one month to the other party in writing.

5.0. Back-issue rights

5.1. The licensor shall provide access to all e-resources with back volumes / date with a minimum period of five yea base (calendar year) of full text of all the titles.

5.2. The new title or titles added during the contract period shall be provided at no additional charge along with their back issues.

5.3. Back-issues access would be provided for titles that are discontinued or merged with other titles during the contract period.

6.0. Archival Policy

6.1. The perpetual access to e-resources for the period of subscription along with their backfiles offered during the subscription period would be preferred. In case, the resource is licensed on print based subscription, perpetual access should allow cross-sharing of subscribed resources amongst all subscribe.

6.2. On completion of every year, the publisher would provide the full-text of e-resources (e-journals / e-databases) for that year on prevalent formats, i.e., CD-ROM / DVD-ROM to the headquarters of the UGC-Infonet Digital Library Consortium at INFLIBNET Centre with the retrieval software for access on the network.

6.3. In case of termination of the agreement or on the expiry of the agreement, the Licensor shall provide the full text of the e-journals or e-databases for the period of agreement on the prevalent formats on CD-ROM, DVD, etc with the retrieval software for network access to all the members of the Consortium.

6.4. In case of change in archival technology, the state-of-art archival technology shall be made available by the Licensor to subscribe at no extra cost for

archival of full text data of e-journals to higher version of technology as and when it arrives.

7.0. Awareness Building and User Support

7.1 Licensor will inform members of the UGC-Infonet Digital Library Consortium about their user's meet/seminars to be organized in the country / in the region well in advance to enable the subscriber to participate free of cost in the event.

7.2 Licensor will provide adequate number of publisher's publicity material, brochure, posters and user support material in both prints as well as on CD form, as applicable.

8.0 Training

8.1 The Licensor will conduct 'Train-the-Trainer' sessions for at least two library and information science professionals per member institution at ten locations to be named by the UGC-Infonet Digital Library Consortium from time to time.

8.2 The Licensor shall, however, not be responsible for the travel and related costs of the librarians and information specialists for attending such training programmes.

8.3 The Licensor will provide the 'Train the Trainer' programme in the consolidated training programme along with the other publishers, if required. Subscriber will inform Licensor, the schedule of such training Programme.

8.4 The subscriber will not pay any charges to licensor for 'Train the Trainer' Programme towards travel/stay, etc.

8.5 Licensor will provide sufficient copies of the course manual in electronic and printed form at their own cost.

8.6 Licensor will inform the address and contact details of the 'Train the Trainer' to Subscriber / member institutions for any help required by the use.

8.7 UGC-Infonet Digital Library Consortium Headquarters / member institutions will identify the user institutes, who will provide audio visual facility, venue and hospitality for train-the-trainer programme.

9.0 Usage Statistics

Licensor shall be required to submit the following 'COUNTER' complaint usage / statistics:

9.1 No. of downloads, both full-text and abstracts; done by the member institutions monthly and cumulatively by participating member institute.

9.2 Data as at (9.1) above shall be provided for

- Current month
- Previous month
- Cumulative for the current year
- Cumulative for the previous year(s)

9.3 Data as at (9.1) & (9.2) above shall be provided for each journal.

9.4 In case of any discontinuation or gap, the publisher shall inform the reason and the origin of discontinuation /gap.

9.5 The designated technical / administrative contacts from member institutions of the Consortium as well as Consortium Headquarters shall be given access to the publisher's server/database, where usage statistics is hosted. Licensor shall allow access to down load the statistics to two designated staff in each member institution. This access to the designated use of members of the Consortium shall be password regulated and such use will have the privilege to download statistics with respect to their institutions. In case of Consortium Headquarter, Licensor will ensure the complete access to usage statistics in respect of all Member Institutions.

10.0. General Terms and Conditions (GTC)

10.1 In the event that access to E-journals is stopped from the Licensor's end due to any problem, subscriber / member institution, etc. shall be allowed access for the same period/ time as the breakdown, after the term of the contract or subscriber shall deduct the proportionate amount from the fees payable to the Licensor or the licensor shall refund the proportionate amount to the subscriber.

10.2 A notice of one month shall be provided by either side in the event of termination of contract.

10.3 If the licensor sells or otherwise transfers ownership of e-journals to another licensor it will provide non-exclusive copy along with of volumes in published and make it available through the licensor's site to subscriber. In case it does not happen, the amount shall be proportionately refunded to the subscriber.

10.4 The UGC-Infonet Digital Library Consortium and its member institutions recognize the following obligations on its part:

10.4.1 Maintaining the integrity of the licensed products; and

10.4.2 Ensuring access to and use of licensed products is limited to authorized use;

10.5 The subscriber shall not be responsible for any sales tax, VAT or other taxes or any other license fee or any other hidden cost except the agreed invoiced amount.

10.6 The agreed terms and conditions can't be altered without mutual consent of both the parties.

10.7 Licensor will have to indemnify the subscriber for losses / claims / compensation caused raised by third party with regard to the contract.

10.8 The licensor liability to subscriber shall be to a sum equal to the fee paid by subscriber if things go wrong on the part of Licensor.

10.9 The subscriber shall not be liable for breach of any of the terms of the agreement by any authorized user provided that subscriber did not intentionally assist in or encourage such breach or permit such breach to continue after having noticed thereof and provided reasonable cooperation to licensor(s) to prevent misuse.

10.10 Any kind of breach of agreement as a result of conditions beyond control such as a war, strike, fire, flood, governmental restrictions, power failures, damage, or destruction, act of God shall not be deemed as a breach of the contract agreement.

10.11 In case of closure or merger of any of the member institution, the print subscription of the particular member institution(s) will not be maintained.

10.12 In case of closure or merger of any of the member, the respective subscription/access costs will not be taken into account for payment or other fee chargeable by the licensor.

10.13 In case, access fee is based on the print subscriptions cost model, the year of signing the agreement will be base year for taking the print subscriptions cost into account to compute the access fee payable to licensor.

10.14 The publisher would not discontinue the access to e-resources on account of excessive downloads at subscriber's end. Instead, the publisher should devise mechanism to check excessive simultaneous downloads using robots or other mechanism. The publisher may also inform threshold for abuse of e-resource in terms of maximum number of downloads.

11.0 Governing Laws and Jurisdiction

11.1 The contract agreement shall be governed by the laws of India.

11.2 All disputes arising under the contract agreement shall be settled under the rules of the international arbitration court by one or more arbitrators in accordance with the said rules. The place of the arbitration shall be in New Delhi (India) and carried out in the English Language.