USE OF E-RESOURCES BY FACULTIES AND STUDENTS OF NATIONAL INSTITUTE OF TECHNOLOGY (NIT) MIZORAM: A STUDY

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

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DECLARATION

I Lalchhanhimi Colney, hereby declare that the subject matter of this dissertation is the record of the work done by me, that the contents of this dissertation did not form the basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the dissertation has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the Mizoram University for the degree of Master of Philosophy in Library and Information Science.

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CERTIFICATE

This is to certify that the dissertation entitled **"Use of E-resources by Faculties and Students of National Institute of Technology (NIT), Mizoram: A Study"** submitted by **Lalchhanhimi Colney** for the award of the Degree of **Master of Philosophy in Library and Information Science** is carried out under my guidance and incorporate the student's bona fide research. This is the candidate's original work and is worthy of examination.

Date:
Place: Aizawl, Mizoram

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Aizawl **(LALCHHANHIMI COLNEY)**

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ABBREVIATIONS

ACM	-	Association for Computing Machinery
AICTE	-	All India Council for Technical Education
ASCE	-	American Society of Civil Engineering
ASME	-	American Society of Mechanical Engineering
ASTM	-	American Section of the International Association for Testing Materials
ASTP	-	Applied Science and Technology Plus
BOG	-	Board of Governors
CCB	-	Central Counseling Board
CD-ROMS	-	Compact Disk Read-only Memory
CE	-	Civil Engineering
CGPA	-	Cumulative Grade Point Average
CREC	-	Calicut REC
CSAB	-	Central Seat Allocation Board
CSE	-	Computer Science & Engineering
CSIR	-	Council for Scientific and Industrial Research
DAVV	-	Devi Ahilya Vishwavidyalaya
DELNET	-	Developing Library Network
DMCA	-	Digital Millennium Copyright Act
DOAB	-	Directory of Open Access Books
DOAJ	-	Directory of Open Access Journals
DRM	-	Digital Rights Management
DVD	-	Digital Versatile Disc
E- Book	-	Electronic Book
E- Encyclopaedias	-	Electronic Encyclopaedias
E- Journal	-	Electronic Journal
E- Mail	-	Electronic Mail
E- Newsletter	-	Electronic Newsletter
E- Newspaper	-	Electronic Newspaper
E- Reference	-	Electronic Reference
E- Report	-	Electronic Report
E- Zine	-	Electronic Magazine
ECE	-	Electronics & Communication Engineering

EEE	-	Electrical & Electronics Engineering
EIR	-	Electronic Information Resources
E-Resource	-	Electronic Resource
ETDs	-	Electronic Theses and Dissertations
GLAITM	-	GLA Institute of Technology & Management
HPRC	-	High Powered Review Committee
HTML	-	Hypertext Mark-up Language
ICT	-	Information Communication Technology
IDR	-	Institutional Digital Repository
IEEE	-	Institute of Electrical and Electronics Engineers
IEL	-	IEEE/IEE Electronic Library
IGNOU	-	Indira Gandhi National Open University
IIEST	-	Indian Institute of Engineering Science and Technology
IISc	-	Indian Institute of Science
IIT	-	Indian Institute of Technology
INDEST- AICTE	-	Indian National Digital Library in Engineering, Science And Technology - All India Council for Technical Education
INI	-	Institute of National Importance
INSPEC	-	Information, Service for Physics Engineering and Computing
IP	-	Intellectual Property
IP	-	Internet Protocol
IPR	-	Intellectual Property Right
ISM	-	Industrial, Scientific, & Medical radio frequency band
IT	-	Information Technology
J-Stage	-	Japan Science & Technology Information Aggregator – Electronic
JCCC	-	J-Gate Custom Content for Consortium
JEE	-	Joint Entrance Examination
JoSSA	-	Joint Seat Allocation Authority
JSTOR	-	Journal Storage
KIC	-	Knowledge and Information Centre
KREC	-	Karnataka Regional Engineering College

LAN	-	Local Area Network
MACT	-	Maulana Azad College of Technology
MANIT	-	Maulana Azad National Institute of Technology
ME	-	Mechanical Engineering
MEDLARS	-	Medical Literature Analysis and Retrieval System
MHRD	-	Ministry of Human Resource Development
MNIT	-	Malaviya National Institute of Technology
MNNIT	-	Motilal Nehru National Institute of Technology
MNREC	-	Motilal Nehru Regional Engineering College
MP	-	Member of Parliament
MREC	-	Malaviya Regional Engineering College
MSRIT	-	MS Ramaiah Institute of Technology
NALANDA	-	Network of Automated Library and Archives
NCR	-	National Capital Region
NDL	-	National Digital Library
NDLTD	-	Networked Digital Library of Theses and Dissertations
NIRF	-	National Institute Ranking Framework
NIT	-	National Institute of Technology
NITA	-	National Institute of Technology Agartala
NITC	-	National Institute of Technology Calicut
NITD	-	National Institute of Technology Delhi
NITD	-	National Institute of Technology Durgapur
NITH	-	National Institute of Technology Hamirpur
NITG	-	National Institute of Technology Goa
NITK	-	National Institute of Technology Karnataka
NITJ	-	National Institute of Technology Jalandhar
NITM	-	National Institute of Technology Meghalaya
NITMZ	-	National Institute of Technology Mizoram
NITPY	-	National Institute of Technology Puducherry
NITR	-	National Institute of Technology Rourkela
NITRKL	-	National Institute of Technology Rourkela
NITS	-	National Institute of Technology Silchar
NITSKM	-	National Institute of Technology Sikkim
NITSRI	-	National Institute of Technology Srinagar

NITW	-	National Institute of Technology Warangal
NPTEL	-	National Programme on Technology Enhanced Learning
OBC	-	Other Backward Classes
OCR	-	Optical Character Recognition
OPAC	-	Online Public Access Catalogue
OUAT	-	Orissa University of Agriculture and Technology
PDF	-	Portable Document Format
Ph.D	-	Doctor of Philosophy
PGIMER	-	Post Graduate Institute of Medical Education and Research
PREC	-	Punjab Regional Engineering College
PURNA	-	Parallel Universal Remote Numerical Analyzer
QIP	-	Quality Improvement Programme
R&D	-	Research & Development
REC	-	Regional Engineering Colleges
RFID	-	Radio Frequency Identification
SC	-	Schedule Caste
SGPA	-	Semester Grade Point Average
SMS	-	Short Message Service
ST	-	Schedule Tribe
SVNIT	-	Sardar Vallabhbhai National Institute of Technology
TEQIP	-	Technical Education Quality Improvement Programme
UG	-	Under Graduate
UGC	-	University Grant Commission
VNIT	-	Visvesvaraya National Institute of Technology
VRCE	-	Visvesvaraya Regional College of Engineering
WCT	-	WIPO Copyright Treaty
WIPO	-	World Intellectual Property Organization
WPPT	-	WIPO Performances and Phonograms Treaty
WWW	-	World Wide Web

1.1 Introduction

Information Technology has brought revolutionary changes in the functions of libraries which include variety of applications in libraries. It helps libraries in creating database for collections and making them available for easy access to users inside and outside the libraries through networks. Because of this feature, Information Communication Technology (ICT) is enabling the libraries to provide the most efficient and specialized information services on information pertaining to literature. ICT establishes an efficient information support and an effective communication system in the organisation of libraries. Electronic resources play a very important role in academic library management in the age of digital technology.

The rapid growth in information explosion along with technological developments particularly Internet and World Wide Web, have brought drastic changes to the function and service in all types of libraries. The libraries are now shifting from their traditional role as storehouses of information to dynamic disseminators of information. Libraries have witnessed a great metamorphosis in recent years both in their collection development and in their service structure. 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 reduces. The Internet can be used for efficient retrieval and meeting information needs. This is very important for libraries since most of them call for more and more research work and 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.

An electronic resource or E-resource is any information source that the library provides access to in an electronic format. The library has purchased to subscriptions to many electronic information in order to provide access to the user free of charge. The major developments taking place in library and information centres today are the widespread availability and use of various kinds of electronic learning resources. Electronic learning materials have increasingly become the focus of research and

development of any institution in the recent years. The commonly available electronic resources namely CD ROMS, OPACs, web databases, internet and other networked information sources are competing with, and in some instances replacing the print-based information sources, which have been in place for centuries as the primary medium for storage and communication of recorded information.

E-resources provide access to substantial portion of world's literature expeditiously, exhaustively, efficiently, pin-pointedly, up-to-date and authentically at a simple touch of a button. With the introduction of e-resources, it has exposed the learners to much more resources of information and has become an invaluable resource of current information. E-resources are very common in academic libraries but their maximum use and management is a matter of concern today.

The world of digital information is interwoven by communication technology in the present frame of time. Library, being a responsible organization of social memory and processing contributes as a carrier of knowledge and thus establish a powerful communication link between knowledge generators, knowledge utilizers and knowledge evaluators. The role and responsibilities of libraries are also changing because of the proliferations in digital forms of information resources and support sophisticated information and communication technology and its extensive use by the community. These drive enforced library and information professionals to keep pace by re-shaping the storage and dissemination of information and knowledge.

1.2 Significance and Scope of the Study

The study assumes great importance in the current electronic environment for effective and efficient teaching, learning and research. The institution is expected to make use of the electronic resources for both teaching and learning by the NIT academic fraternity.

The scope of the study is exclusively confined to NIT, Mizoram and no other central institutes are covered under the purview of the study. The present studyfurther covers the students including research scholars and the faculties of NIT, Mizoramand is concentrated on the evaluation of the use of electronic resources in terms of use and user satisfaction in the esteem institution. Being aware of the necessity and inevitability of the use of e-resources in technological institutes, the scholar is keen on working on the study and has been motivated to undertake this particular research problem. The strength of the teachers and the students (as on March, 2016) has been shown in Table 1.2.

Table 1.2: Name of the Department with Faculties and Students

Sl.No.	Name of the Department	Total No. Of Faculties	Total No. of Students
1.	Computer Science & Engineering	7	63
2.	Electrical and Electronics Engineering	8	59
3.	Electronics and Communication Engineering	7	64
4.	Mechanical Engineering	5	59
5.	Civil Engineering	1	46
6.	Humanities and Social Sciences	7	0
	Total	**35**	**291**

Source: Central Library, NIT

1.3 Review of Literature

Considerable amount of literature are available in the area under study. The scholar made an extensive survey of literature available in the concerned field so as to get abreast with the information. The scholar has also taken atho-rough review of published literature in the concerned area and some of them are included here.

Devi and Devi (2016) in their article have found that most of the students of School of Humanities (81.4%) are aware of e-resources where 30.6% of the students prefer e-journals and e-articles and 46.6% of the students are using e-resources for academic purpose. The main problem faced by the students (26%) while accessing e-resources is due to slow internet speed in the library. Lastly, about 56% of the students admitted that they need seminars, workshops and orientation programme to update their knowledge regarding e-resources.

Singh (2016)in his article wrote that e-resources play a very important role for the PG students of the college. He further stated that libraries are determined to give right information for the right users at the right time and are more concerned with the subscription of e-resources in the library. It is also found that PG students are satisfied with the quality and search techniques of e-resources; users are interested to get proper guidance or training for using e-resources more frequently and agreed that e-resources are providing a better platform and saves time for their study, teaching and research. However, the study suggested the demand of printing and scanning facility in the library and more computers in the library for accessing e-resources.

Parvathammaand Shinde (2015) in their paper have discovered that majority of the respondents consult reference sources such as dictionaries, encyclopaedia or access bibliographic databases in CD-ROM or DVD and web resources rarely or have never referred to them. This may be due to their ignorance about the academic value of these resources or lack of technical skills. The article further concluded with the view of the necessity to offer information literacy skills to the students in the beginning of the course period to train them in identifying, locating, evaluating and using both print and electronic information resources efficiently.

Tyagi (2015) in his article revealed the process of transforming management libraries in NCR into digital libraries as being painfully slow. The findings also revealed that the tools and criteria used for selecting electronic materials are different from those used for printed materials. The survey reveals that select management libraries in NCR are lagging behind in strategic planning of e-resources collection development plan and its implementation. For the good of the community and nation, management libraries in NCR have to strive hard to improve accessibility and diversity in the digital age. They can do it provided they possess affordable technology, the power to negotiate through a cartel and unwavering support from the authorities. Otherwise, they are liable to fall by the wayside, as traditional as they are now.

Vasudevanand Rakhi (2015) in their study opined that e-resources improve the quality of their work but lack of accessibility and lack of training of e-resources are the main problems faced by the doctoral students while accessing e-resources.

Patel and John (2014) in their article had a view that e-resources are already accepted as an important collection of libraries and information centres especially in university libraries where both print as well as electronic sources of information as of now are almost equally preferred by the user community. The trend has increased towards the use of electronic resources but not at the cost of printed sources of information.

Adeniji (2013) in his article said that the evolution of e-resources has give way to a new method in service delivery in term of teaching not limited by geographical boundaries. It is further revealed that the government should provide enough resources for effective teaching and learning in Nigerian Higher institutions. The College management and the lecturers should address the constraints that hinder the usage of e-resources in their campuses.

Anasuyaand Anjaiah (2013) in their article said that e-resources should be made easy to use and easy to learn to users. The library web page should provide online guide to e-resources and various search options beyond key words to e-resources. This will help the users to fine the desired content and will also maximize the use of e-resources and satisfaction of users. The important fact here is convincing libraries to move towards e-resources which are found to be less expensive and more useful for easy access.

Chopra and Kaur (2013) examined the use of electronic resources by the Research Scholars of the Punjab University Chandigarh and have discovered that the use of e-resources is very common among the scholars of Punjab University. The study also reveals that approximately all the research scholars are aware of the electronic resources in the university, maximum number of scholars are satisfied with both medium i.e., print or e-resource. The research scholars are using the e-resource and rely on it for their research work.

Issa, Larongbe and Oguntayo (2013) in their article on the strength of findings have concluded that the university libraries print and e-resources need to be strengthened for adequacy, relevance and usage so that both categories of resources could be used to complement each other for meeting the users' needs. It was also suggested that library authorities and lecturers should make their students' assignments e-resources based to encourage usage; provision of standard storage facilities and appropriate back up hard copies as well as the enforcement of e-library regulations.

Mishraand Laltlanmawii (2013)had a survey on the use of e-resources in Indian Institute of Technology Library Guwahatiand have opined that the efficiency of libraries have increased due to the skilled manpower as it is providing adequate electronic resources in multiple forms to the users. Even if the users are self sufficient to access the e-resources, the library professionals put much effort through various search techniques on the users for more effective use of the e-resources.

Tiwari, Choudharyand Khan (2013) found that the key survival of any information and library service is satisfying the needs of the users. Libraries have dynamically met the challenges of technology and are now the gateways to access the realm of information available in an electronic form online at any time and from any place. Electronic resources have enhanced and have replaced existing materials, as

another format which libraries can provide to its users and erstwhile support teaching and learning in a new and vibrant way.

Bala, Dhaliwal and Tandon (2012) emphasized on the evolution of technology where change is the only static thing in this world. Print documents being imposed on the library system were then resolved with the help of electronic resources changing the information scenario all around the world. Information subscribed today will become outdated tomorrow. Due to the increasing and speedy information, demand of users, library forced to subscribe scholarly literature by paying huge amount to the publisher. Mere subscription of e-resources is not enough for a library, their management including continuous subscription to e-resources, to provide adequate and frequent training, online help and instruction to users and staff by arranging periodic information literacy programmes is also necessary which enabled the end user to search the desired information.

Dhanavandan, Esmail and Nagarajan (2012) carried out their research which showed that the respondents are emphasizing on the importance of electronic version of documents. With the availability of more resources through the internet with high speed connectivity, the demand for e-resources in their specific subject is increasing. Accordingly, the libraries have to evolve more scientific methods to develop a standard collection of e-resources along with print documents assessing the requirement of the users' community.

Kumar D, Manjunath and Moorthy (2012) in their article concluded that LAN connection should be developed where the speed of internet needs to be increased for quick access to the available e-resources. The library must acquire computers with internet connections and procure more number of e-journals and other forms of e-resources should be included in the library.

Mahapatra, Swainand Jena (2012) examined the use of e-resources by the faculty members of Orissa University of Agriculture and Technology (OUAT) where the study gives a vivid analysis of electronic information environment and services provided by OUAT a leading agricultural university in India. The findings show that the use of e-resources must be popularised and made use of among students and faculty members of OUAT. The training on use of e-resources for teachers/employees is highly implemented.

Rajanikantaand Ramaresh (2012) said that a large majority of faculty fully endorse the view that online journals carry recent advances in a discipline where journal articles provide current information and in depth information on a narrow topic. The study reveals that online journals are vital for medical faculty who are engaged in research activities and provide quicker access to primary information in the disciplines of medical sciences.

Thanuskodi (2012) in his paper revealed that the respondents have high problems in accessing e-resources in terms of virus, difficulty in using digital resources due to lack of IT knowledge and limited access to computers. The respondents have moderate problems in accessing relevant information and long time to view. The respondents have least problems towards slow accessibility, lack of time and too much information retrieved.

Verma and Gupta (2012) have jointly conducted a study on the use of electronic resources by faculty members of GLAITM Libraryand highlighted that the maximum number of faculty members are not aware of various e-resources and suggested orientation programmes regularly to make optimum use of them. They also observed that the availability of e-resources on the campus is insufficient for all the existing disciplines erstwhile suggested the subscription of more number of e-journals. It was concluded that the bandwidth should be increased within the institute's premises in order to provide the best internet facility.

Kumar and Sharma (2010)opined that e-resources have changed the information seeking and dissemination patterns and are capable of providing most recent, relevant and authentic information. These are widely accepted by all categories of users for one purpose or another like teaching, publishing, course work, study, research, information etc. The study concludes that internet is the most used e-resource, also reveals that most of users are not satisfied with the e-resources available. The library should subscribe to more e-journals and publicize the available e-resources for the benefit of all. It is a fact that the value of these resources increases as they are used through training programmes and such. They also explained why librarians as well as faculty members should go hand in hand to motivate students in use of e-resources to a large extent.

Sharma and Sharma (2010) in their research have discoveredthat the majority of the respondents i.e. 88.46% prefer to use e-journals and 30.77% of them

are using e-books. Also, 84% respondents are able to access the e-resources very easily while the remaining 16% respondents feel it to be difficult.

Patil and Parameshwar (2009) have analyzed a collected data to cover the need for training or orientation programme among the faculty members where 57.62% felt the need and 42.38% felt otherwise.

Sami and Iffat (2009) in their article have highlighted that the technical staffs face fewer problems as compared to the non-technical staffs while accessing e-resources having been through technical courses during their academic career and later having worked in a technical environment.

Sharma (2009) in his article has elaborated that majority of the teachers prefer to use e-resources in comparison to traditional resources because 75% of them feel that e-resources are time saving, followed by 65% saying it is easy to use while 52% and 48% finding it more useful and more informative respectively. The study shows that the use of e-resources is very common among the teachers and research scholars of Guru Gobind Singh Indraprastha University and majority of them are dependent on e-resources to get the desired and relevant information. But practical use of e-resources is not up-to the worth in comparison to investments made in acquiring these resources; secondly infrastructure and training programs should also be revised as per requirements. It is observed that the availability of e-resources on the campus is almost sufficient for all the existing disciplines but the infrastructure to use these resources is not adequate and can hinder the ability to meet the requirements of the users.

Kanniyppan, Muthusamyand Sankar (2006) in their article has been found that as per the obtained data, 55% of the users face problem in accessing personal computers, 65% face problem while accessing the software, 77% of them with accessing external networks foe e-mail or internet, 81% face problems due to lack of information, while 41% feel that e-resources are not relevant to their needs. The study concluded that most of the respondents face problem due to ignorance and lack of proper training to use the e-resources of the library.

1.4 Research Gap

On the analysis of the above literature review, it has been observed that there are sufficient numbers of research conducted on E- Resources in various fields. But no other studies have been conducted on the use of e-resources by faculties and

students of National Institute of Technology in Mizoram in particular. This research gap motivated the scholar to undertake the area of study.

1.5 Statement of the problem

The emergence of e-resources has drastically revamped the status of all the libraries and information centres during the last decade. There has been a rapid urge of the user community to get more and more information online. The development of the information communication technologies (ICT), the rapid rise of electronic databases and modern e-book technologies have altogether changed the entire scenario of providing information to the users. The users' attitude to information also changed from printed documents to e-resources and thus, it has been mandatory on the library to ascertain the details of the availability of e-resources like online journals and databases, electronic theses and dissertations (ETDs), government publications, etc. in the prevailing areas of the NIT curriculum so as to provide advanced services to the users. Therefore, it is time for the information professionals in India to study the different key dimensions of e-resources and to successfully channel them into the inquisitive minds of users by identifying and addressing some of the issues relating to the use of e-resources. These works deal with different types of e-resources available including freely available open access materials and their impact for educational use.

NIT, Mizoram was established only in the year 2011, and the e-resources were subscribed by the library in the same year to meet the needs of the faculties and students. The library due to scanty allocation of budget could not subscribe print journals as compared to e-journals due to high cost involvement supplemented with reaching of the documents due to strategic location of the NIT at Mizoram. This has precipitated to problems at the NIT Central Library in meeting the demands of the users. In spite of the same, the Central Library under study has initiated the subscription of e-journals for the students and faculties. As of now, it subscribes to 6 E-journals on renewal basis and 2 E-books consisting of 1438 titles are purchased on perpetual basis.

Therefore, the present research topic attempts to find out the use of e-resources available in the Central Library, NIT by the user community. This facilitated the researcher to find out the relevance and length of the e-resource services provided by Central Library, NIT as well as the Librarian to compare usage statistics from different vendors, make better decisions and plans for sound infrastructure. Considering the fact that, it is time for the information professionals to

study the different key dimensions of e-resources and to successfully channelize them into the inquisitive minds of users by identifying and addressing some of the issues relating to the use of e-resources, the scholar was motivated to take up this research problem.

1.6 Objectives of the study

The objectives of the present research problem are to:

1) Ascertain the types of e-resources available in the Central Library NIT, Mizoram.
2) Find out the usage of e-resources by the faculties and the students.
3) Identify the problems encountered while accessing e-resources.
4) Suggest mechanism to make use of e-resources.

1.7 Research Methodology

i.) Data Sources

The study is based on primary and secondary sources.Primary sourceshere provide foundation for the study.

The primary data was collected through structured questionnaires distributed among the faculties and students including research scholars of NIT Mizoram (Appendix 1). Out of 35 faculties and 291 students and 2 research scholars which comes to a total of 328, a sample size of 210 (64%) was selected. Out of 210 (64%) a total of 166 (79%) responded to the questionnaire. Care was taken to cover the respondents from all subject areas.

The scholar during the study interacted in person with the Librarian of the Central Library of the institution to find out the extent of use of e-resources by the academic fraternity and technological barriers faced by them along with possible solutions to overcome them.

Secondary data has been collected from Annual report of NIT, articles from different journals, books and from internet sources.

ii.)Data Analysis and Interpretation

The analysis and interpretation was based on the feedback from the faculties, students including research scholars and the librarian of the Central Library, NIT Mizoram through structured questionnaires distributed among 175 students including research scholars and 35 faculties. The primary data collected were analyzed and interpreted with the help of Microsoft Excel Software. Simple analysis tools such as

mean scores, median scores and standard deviation were used so as to derive appropriate statistical measures and findings.

iii.)Limitations of the Study

The study relies principally on primary data, where the questionnaire is designed to obtain relevant and updated data on the use of e-resources by the faculties and students of NIT Mizoram and depends on the authenticity of responses received from the questions presented before them. Generally, there is a risk of getting different answers from the same individual when ask queries regarding their extent of use of e-resources in the NIT Central Library. The primary data acquired from this particular study may not be free from the risk of manipulation and therefore, making it possible to receive a biased views which may crop up from the effect of the present external environmental factors or the mood of the respondents.

The scholar also referred to the Annual report of NIT Mizoram and several other books and articles from journals and online sources which constitute the secondary data. The accuracy of the data depends on the truthfulness of the information presented in these data collected.

1.8 Chapterization

The present research topic is comprised of the following chapters:

Chapter 1 of the study discusses about the advances and revolutionary changes in the functions of libraries in modern era where the libraries are now shifting from their traditional role as storehouses of information to dynamic disseminators of information. Along with this, there has been ongoing development of computer applications in the academic arena, with the help of Internet and the Web which are constantly influencing the development of new modes of scholarly communication for effective and efficient retrieval to meet information needs of the users. It also discusses about the use of e-resources in the present generation where the shift has been made to computer-based technical operations indicating the prospect of radical changes in the means of library service. The present chapter includes the significance and scope of the research topic at hand concentrating on the evaluation of electronic resources in terms of use and user satisfaction in the NIT Central Library, Mizoram; review of literature where the scholar had an extensive survey of literature available in the concerned field; the research design consisting of statement of the problem, objectives of the study, research methodology to clarify the research work, and finally concluding with the data analysis and interpretation.

Chapter 2 includes exclusive history of the establishment of 31 National Institutes of Technology (NITs) in our country naming the Board of Governors, courses offered, admission criteria, education system, the environment of NIT campuses, facilities within the libraries followed by the ranking of the 31 prestigious NITs in India. This chapter also gives an overview of the NIT in North East India followed by NIT, Mizoram in particular along with its mission statement, vision statement, objectives of the institution, education system, administration, admission procedure, examination and evaluation, training and placement programmes, R&D programmes and included the facilities and services offered by Central Library, NIT, Mizoram.

Chapter 3 emphasises on the concept of e-resources in the present era along with its type. The chapter briefly discusses about the INDEST-AICTE Consortium followed by the use and access of e-resources. It further gives a description on the pedagogical issues and copyright issues which initially starts with the Intellectual Property Right, continued by a preview of the existing Copyright Acts, copyright of computer programs and copyright issues in electronic publishing. The chapter concludes with the statement of common practices of technologies for protection of copyright.

Chapter 4 focuses on data analysis and findings where the scholar has analyzed the primary data obtained through questionnaire circulated among the faculties and students of NIT. Analysis has been done based on tables accordingly by designation, gender, frequency of library visit, preference of source of information, frequency of use of e-resources, purpose of use of e-resources, preference of e-resources by the users, providing e-resources in the library, rate of satisfaction of e-resources, awareness approach about e-resources, use of OPAC, problems in accessing e-resources, suggestions from the users,thenfollowed by findings.

Chapter 5includes the placement of suggestions based on the inputs received from the faculties and students, including research scholars further followed by a comprehensive conclusion of the entire research work.

There has been a change in academic libraries due to the revolution in e-resource era. The academic libraries of all sizes and types are embracing digital collection which saves time and space and are relatively easy to maintain. The next chapter gives details about the collections and maintenance of libraries of the National Institutes of Technology in India entitled "National Institutes of Technology (NITs) in India with special reference to Mizoram."

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2.1 Introduction

Education means overall development of an individual. An education system should attempt to provide the teaching and training of an individual in order to induce

professional competence and ability, personality development, provide leadership and team work, concern for human values towards colleagues and subordinates, respect for superior, behave in a disciplined way and exercise the habits of punctuality, sincerity, devotion, hard work, integrity, honesty and concern for the people, society and nation.

The education system in National Institute of Technology (NIT), Mizoram envisages achieving the above mentioned qualities by undertaking an integrated and balanced blend of curricular, co-curricular and extra-curricular activities among students, teachers and supporting staff and by creating congenial and close relations among all. NIT Mizoram, at present, offers 5 UG courses, viz., Electrical & Electronics Engineering, Electronics & Communication Engineering and Computer Science & Engineering; and since 2014, Civil Engineering and Mechanical Engineering. The institute follows a credit based system for academic evaluation. It offers industrial training and project as part of the education system. The courses in NITs are divided into semesters with evaluation on the basis of credits, which allows for proportional weighting based on the course's importance. For each semester, grades range from 3 to 10. Semester evaluations are independent. The weight average of the semesters is used to compute the cumulative grade point average (CGPA).

Stringent faculty recruitment and industry collaboration also contribute to NIT success. Faculties other than the lecturers must have a PhD degree and relevant teaching and industry experience. Existing faculties who do not meet these criteria enrol under a Quality Improvement Programme (QIP) at Indian Institutes of Technology (IITs) and Indian Institute of Science (IISc).

During the second Five-Year Plan (1956-60) in India, a number of industrial projects were contemplated. To ensure enough supply of trained personnel to meet the demand for these projects, a decision was taken to start the Regional Engineering Colleges (RECs), at the rate of one per each major state, which can churn out graduates with good engineering merit. The Government started 14 RECs between 1959 and 1965, at Warangal, Calicut, Durgapur, Kurukshetra, Jamshedpur, Jaipur, Nagpur, Rourkela, Srinagar, Surathkal, Surat, Trichy, Bhopal and Allahabad. It established one in Silchar in 1967 and added two others located at Hamirpur in 1986 and Jalandhar in 1987.

Thus, 17 RECs (given in Table 2.1) were established from 1959 onwards in each of the major states. Each college was a joint and cooperative enterprise of the Central Govt. and the concerned State Govt. All the institutes offer degree courses at

various bachelor's, master's and doctorate levels in various branches of engineering and technology.

Table 2.1: Regional Engineering Colleges (RECs) in India

Sl.No.	Year of Establishment	Institute	Place
1.	1959	REC	Warangal
2.	1960	REC	Durgapur
3.	1960	REC	Nagpur
4.	1960	REC	Jamshedpur
5.	1960	REC	Srinagar
6.	1960	REC	Surathkal
7.	1960	REC	Bhopal
8.	1961	REC	Calicut
9.	1961	REC	Rourkela
10.	1961	REC	Allahabad
11.	1962	REC	Surat
12.	1963	REC	Kurukshetra
13.	1963	REC	Jaipur
14.	1964	REC	Trichy
15.	1967	REC	Silchar
16.	1986	REC	Hamirpur
17.	1987	REC	Jalandhar

Source: MHRD

The RECs were jointly operated by the Central Govt. and the concerned State Govt. Non-recurring expenditures and expenditures for post-graduate courses during the REC period were borne by the Central Govt. while recurring expenditure on undergraduate courses was shared equally by Central and State Govt. Due to the enormous costs and infrastructure involved in creating Indian Institute of Technology (IIT), in 2002, Ministry of Human Resource Development (MHRD) decided to upgrade the RECs to "National Institutes of Technology (NITs)" instead of continuing the creation of IITs. The upgrade was designed along the lines of the prestigious IITsafter it was concluded that RECs had potential as proven by the success of their alumni and their contributions in the field of technical education. In 2002, MHRD issued NIT status to 3 colleges, located at Patna (Bihar Engineering College-a 110

year old college), Raipur (Government Engineering College) and Agartala (Tripura Engineering College). Based on the request of State Govt. and feasibility, future NITs are either converted from existing institutes or can be freshly created. With the technology based industry's continuing growth, the government decided to upgrade 20 NITs to full-fledged technical universities.

Therefore in 2002, all RECs became NITs. The Central Govt. controls NITs and provides all funding. Subsequently, funding and autonomy for NITs increased and they award degrees which have raised their graduates' perceived value. These changes implemented recommendations of the "High Powered Review Committee" (HPRC). The HPRC, chaired by R.A. Mashelkar, submitted its report entitled "Strategic Road Map for Academic Excellence of Future RECs" in 1998. Parliament passed the NITs Act in 2007 which took effect on 15 August of that year. The target was to fulfil the need for quality manpower in the field of engineering, science and technology and to provide consistent governance, fee structure and rules across the NITs. The law designates each NIT an Institute of National Importance (INI).

2.2 National Institutes of Technology (NITs) in India

The National Institutes of Technology (NITs) are a group of premier federally-funded public engineering institutes in India. These institutions have been declared as Institutes of National Importance alongside the IITs by an Act of Parliament of India in 2007.These institutes of national importance receive special recognition and funding from the Govt. of India. The NIT Council is the supreme governing body of India's NITs system. All 31 NITs are funded by the Govt. of India. These institutes are among the top ranked engineering colleges in India. The NITs have one of the lowest acceptance rates for engineering institutes, of around 2 to 3 percent, second only to the IITs in India.

On their inception decades ago, all NITs were referred to as RECs and were governed by their respective State Govts. In 2002, MHRD decided to upgrade all RECs to "National Institutes of Technology" (NITs). The upgrade was designed along the lines of the prestigious IITs. NITs were founded to promote regional diversity and multi-cultural understanding in India. Comprising 31 autonomous institutes, they are each located in one major state/territory of India. The list of NITs in India has been shown in Table 2.2 according to the year of establishment.

Table 2.2: National Institutes of Technology (NITs) in India

Sl.No.	Year of Establishment	Institute	Place
1.	1886	NIT	Patna
2.	1956	NIT	Raipur
3.	1959	NIT	Warangal
4.	1960	NIT	Bhopal
5.	1960	NIT	Jamshedpur
6.	1960	NIT	Nagpur
7.	1960	NIT	Surathkal
8.	1960	NIT	Durgapur
9.	1960	NIT	Srinagar
10.	1961	NIT	Allahabad
11.	1961	NIT	Calicut
12.	1961	NIT	Rourkela
13.	1961	NIT	Surat
14.	1963	NIT	Kurukshetra
15.	1963	NIT	Jaipur
16.	1964	NIT	Trichy
17.	1965	NIT	Agartala
18.	1967	NIT	Silchar
19.	1986	NIT	Hamirpur
20.	1987	NIT	Jalandhar
21.	2010	NIT	Delhi
22.	2010	NIT	Goa
23.	2010	NIT	Pondicherry
24.	2010	NIT	Manipur
25.	2010	NIT	Meghalaya
26.	2010	NIT	Mizoram
27.	2010	NIT	Nagaland
28.	2010	NIT	Sikkim
29.	2010	NIT	Uttarakhand
30.	2010	NIT	Arunachal Pradesh
31.	2010	NIT	Andhra Pradesh

Source: MHRD

The President of India is the ex-officio visitor of all the NITs. The NIT Council works directly under him and it includes the Minister-in-Charge of technical education in Central Govt., Chairman and the Directors of all the NITs, Chairman of University Grants Commission (India), Director General of CSIR, Directors of other selected central institutions of repute, members of Parliament, Joint Council Secretary of Ministry of Human Resource and Development, nominees of the Central Govt., AICTE, and the Visitor.

2.3 Ranking of NITs in India

The Edu-Rand Rankings of 2015 selected the best Engineering Colleges in India where the NITs of India have been ranked according to their growth and development of infrastructure and resources. The survey was done jointly by Edu, an Indian company and Rand Corporation, a non-profit American thinktank. Also in April 2016, National Institute Ranking Framework (NIRF) which is published by MHRD ranked the NITs respectively (given in Table 2.3).

Table 2.3: Ranking of NITs

Sl.No.	Year of Establishment	Institute	Place	Edu-Rand Rankings (2015)	NIRF (2016)
1.	1886	NIT	Patna	57th	87
2.	1956	NIT	Raipur	61st	63
3.	1959	NIT	Warangal	-	28
4.	1960	NIT	Bhopal	25th	-
5.	1960	NIT	Jamshedpur	34th	78
6.	1960	NIT	Nagpur	14th	18
7.	1960	NIT	Surathkal	-	-
8.	1960	NIT	Durgapur	-	30
9.	1960	NIT	Srinagar	-	67
10.	1961	NIT	Allahabad	9th	23
11.	1961	NIT	Calicut	35th	35
12.	1961	NIT	Rourkela	21st	19
13.	1961	NIT	Surat	-	15
14.	1963	NIT	Kurukshetra	32nd	48
15.	1963	NIT	Jaipur	20th	37
16.	1964	NIT	Trichy	-	12
17.	1965	NIT	Agartala	-	52
18.	1967	NIT	Silchar		65
19.	1986	NIT	Hamirpur	30th	51
20.	1987	NIT	Jalandhar	42nd	42
21.	2010	NIT	Delhi	-	92
22.	2010	NIT	Goa	-	76
23.	2010	NIT	Puducherry	-	-
24.	2010	NIT	Manipur	-	-
25.	2010	NIT	Meghalaya	-	57
26.	2010	NIT	Mizoram	-	-
27.	2010	NIT	Nagaland	-	-
28.	2010	NIT	Sikkim	-	-
29.	2010	NIT	Uttarakhand	-	-

30.	2010	NIT	Arunachal Pradesh	-	-
31.	2010	NIT	Andhra Pradesh	-	-

Source: MHRD

2.4 National Institutes of Technology in North-East India

To establish education as high importance, North-East India is also not neglected as there are 8 NITs including NIT, Mizoram in different parts to promote education, research of high importance and to create knowledge based society. Here, brief descriptions about the other NITs prevailing in North East are discussed below.

2.4.1 National Institute of Technology (NIT), Agartala

The National Institute of Technology Agartala shortened to NIT Agartala or NITA is a technology-oriented institute of higher education established by India's MHRD, Govt. of India in Agartala, India. It was founded as Tripura Engineering College in 1965 and declared a National Institute of Technology in 2006, recognised as an Institute of National Importance. The institute was established in 1965 as Tripura Engineering College with the three traditional branches of civil, electrical and mechanical engineering. It was initially affiliated with Calcutta University and has some curriculum structure and examination system as Bengal Engineering College (currently IIEST Shibpur).

On 23 February 2006, the Union Cabinet approved the proposal of the State Govt. for conversion of Tripura Engineering College to National Institute of Technology, a fully Central Govt. funded institution with Deemed to be University status. It also became a National Centre of Excellence.

2.4.2 National Institute of Technology (NIT), Silchar

National Institute of Technology Silchar (NITS) is one of the 31 NITs of India and was established in 1967 as a REC in Assam. In 2002, it was upgraded to the status of National Institute of Technology and was declared as Institute of National Importance under the National Institutes of Technology Act, 2007.

The RECs were jointly operated by the Central Govt. and the Assam State Govt. The college was conferred with autonomy in financial and administrative matters. In 2002, the institution was granted Deemed University status with the approval of the UGC/AICTE. Now NIT Silchar is a premier engineering institute in Assam along with IIT Guwahati. The motto of NITS is "May our education be brilliant and radiant."

2.4.3 National Institute of Technology (NIT), Manipur

National Institute of Technology, Manipur also known as NIT Manipur is among the 31 NITs in India established with funding support from the Ministry of Human Resource Development, Govt. of India. NIT Manipur was set up to impart quality technical education to various levels of higher learning. It has been established to cater to the needs of thousands of students from the North-East and outside in the field of Technical Education with National Institute of Technology Agartala as its mentor institute and tremendous support from the State Govt. of Manipur, NIT Manipur started its first session on 1st August, 2010.

The institution was first established under the Manipur Societies Registration Act, 1989. Later, NIT Manipur was declared a full-fledged NIT along with 9 other new NITs through an Act of Parliament and notified under Govt. of India Gazette notification no.28 of 2012 dated 7th June 2012 and declared as an Institute of National Importance.

2.4.4 National Institute of Technology Nagaland (NIT), Nagaland

National Institute of Technology, Nagaland is a higher education technology institute located at Dimapur in Nagaland, India. It is one of the 31 National Institutes of Technology. NIT Nagaland was set up by the Government of India in 2009, as part of the Eleventh Five-Year Plan (2007-2012) for imparting technical education in the state of Nagaland. NIT Silchar has provided initial mentorship to NIT Nagaland for the initial 2 years of its establishment. The first batch of NIT Nagaland (2010-2014) studied at NIT Silchar for 2 years and then the NIT Nagaland was shifted to its home state Nagaland in September 2012. NIT Nagaland is a federally funded technical university established by an Act of the Indian Parliament.

NIT Nagaland is managed by the NIT Nagaland Society registered under the Societies Act. The institute is fully funded by the Ministry of Human Resource Development, Govt. of India. On October 13, 2012, former Union Minister of human resource development, communication and information technology KapilSibal inaugurated the NIT Nagaland at Chumukedima. The institute provides separate hostels for boys and girls with internet facility.

2.4.5 National Institute of Technology (NIT), Sikkim

National Institute of Technology, Sikkim or NITSKM is a premier technical institute situated in the Indian State of Sikkim. It is one of the 31 NITs in India and

has been declared as an Institute of National Importance by Government of India. It is an autonomous institute and functioning under the aegis of MHRD. NITSKM is one among the 10 newly sanctioned NITs by the Govt. of India under the Eleventh Five-Year Plan, 2009. The institution started functioning in August, 2010.

Currently, the institute is being operated from temporary campus at the Barfung Block, Ravangla Sub Division of South Sikkim surrounded by great scenic beauty. Construction for a permanent building is on the way which will be situated at Pakyong, Sikkim. It is managed by the NIT Sikkim Society registered under the Societies Act.

2.4.6 National Institute of Technology (NIT), Arunachal Pradesh

The National Institute of Technology, Arunachal Pradesh (also known as NIT Arunachal Pradesh) being an autonomous technical institute is one of the 31 National Institutes of Technology in India and is recognized as an Institute of National Importance. The classes of NIT Arunachal Pradesh were started from 2010 in a temporary campus in Yupia, Arunachal Pradesh. Yupia is 18 kms from Itanagar and 11kms from Naharlagun which is the twin capital town and houses the temporary campus for the institute.

The institute is a fully residential campus. There are 5 hostels for boys and 3 hostels for girls. NIT Arunachal offers undergraduate programs in engineering constituting of 6 departments.Till November2011, NIT Durgapur was monitoring the NIT Arunachal Pradesh, but now a Director to the NIT, Dr. C.T. Bhuniya has been appointed by the MHRD.

2.4.7 National Institute of Technology (NIT), Meghalaya

The National Institute of Technology (NIT) Meghalaya is one among the 31 NITs in India established under the NIT Act 2007 (Amended 2012) of the Parliament of India as Institutes of National Importance with full funding supported from the MHRD, Govt. of India.

The institute was set up by the Ministry of Human Resource Development by the NIT act in 2010. The foundation stone of NIT Meghalaya at Cherrapunjee (Sohra) was laid by then Union Minister for IT and Human Resource Development KapilSibal in October 2012. The institute presently functions from its temporary campus atthe Bijni Complex located in Laitumkhrah, Shillong, of the North Eastern Hill University.

2.5 Central Library Facilities and Services of NITs

NITs have a Central Library equipped with technical books, literature, fiction, scientific journals and other electronic materials. Most have digitized their libraries where some provide an intranet library facility having high speed connectivity. Electronic libraries allow students to access online journals and other periodicals through the INDEST-AICTE Consortium, an initiative by the MHRD. Students also have access to IEEE documents and journals while some have video conferencing facilities, others are upgrading under the World Bank funded TEQIP scheme.

❖ **National Institute of Technology (NIT), Patna**

The National Institute of Technology Patna (NIT Patna), formerly Bihar School of Engineering and Bihar College of Engineering is a public engineering institution located in Patna in the Indian state of Bihar. It is an autonomous institute functions directly under Ministry of Human Resource Development, Government of India. The motto of NIT Patna is "Excellence in scientific and technical education."In 2007, it was granted Institute of National Importance status in accordance with the National Institutes of Technology Act, 2007.

The Central Library of the institute owns a vast stock of over 75,000 books catering to the needs of all the relevant fields of engineering. It has a resourceful stock of over 10,000 computer related books and clearly demarcated section for every engineering branch and architecture. In addition to the engineering pertinent books, the library is self-sufficient in a vivid category of other business and current affairs related magazines, pamphlets and journals which includes TIME and NEWSWEEK. The Central Library is fully automated and all operations are performed with the help of Libsys-Library Automation Software. The library is a member of INDEST and DELNET.

The Central Library maintains an e-resource section which subscribes and maintains a wide collection of highly acclaimed e-journals published by big names like:

- American Society of Civil Engineering (ASCE)
- American Society of Mechanical Engineering (ASME)
- IEL
- IEEE
- NATURE
- ACM
- INDIAN STANDARD

- SPRINGER, etc.

The total collection of e-journals in the e-resource section numbers to more than 2700 of diverse categories. This section is mainly used for vital information access and research.

❖ **National Institute of Technology (NIT), Raipur**

The National Institute of Technology Raipur (NIT Raipur) is a technical institution funded by the Government of India, located in Raipur, Chhattisgarh, founded in 1956 as Govt. College of Mining & Metallurgy with 2 engineering disciplines, mining and metallurgy; the institute is one of the oldest of its kind in India. It is currently one of the National Institutes of Technology, which have been accorded Institute of National Importance status by the National Institutes of Technology Act, 2007.

The Central Library of NIT, Raipur has a good collection of more than 1 lakh of documents consisting of text books, reference books and back volume journals. Besides, it subscribes to a good number of print journals and online resources. The library automation program through Libsys7- Library management software is in progress. The library caters to the information needs of nearly 5000 users consisting of faculties, staff, students and research scholars.

The library provides the following library services:

- Book bank service for ST/SC/OBC
- Digital library service for text books, reference books, periodicals, newspapers
- Document delivery services through e-mail
- Users' education service, etc.
- The library also subscribes online resources including 48 e-books, 15 e-journals and 4 online journal archives while the subscription of Open Access Journals include:
- Directory of Open Access Journals (DOAJ)
- Directory of Open Access Books (DOAB), etc.

❖ **National Institute of Technology (NIT), Warangal**

The National Institute of Technology, Warangal (abbreviated NIT Warangal or NITW) is a public engineering and research institution located in Warangal, India. It is recognised as an Institute of National Importance by the Government of India. Foundation stone for this institute was laid by then Prime Minister Jawaharlal Nehru on October 10, 1959, the first in the chain of 30 NITs (formerly known as RECs) in

the country. The institute was renamed as the National Institute of Technology, Warangal in September 2002. It has consistently been ranked as one of the top 10 institutes in India. The motto of NIT Warangal is "One who works, shall succeed."
The REC, Warangal was the first to be established (in 1959) among the chain of 15 RECs in the country. The foundation stone for the college was laid by Pandit Jawaharlal Nehru on October 1959 in Kazipet. In September 2002, the college was renamed as National Institute of Technology and was given a deemed university status. NITW was given the status of INIon 15th August 2007.

The Central Library supports the teaching and research programs of the institute and provides facilities for general reading and disseminates information according to the requirement of the users. The library has around 1, 79,797 books, back volumes, technical pamphlets, standards, CD-ROMs, e-books etc. The library has campus LAN connectivity through the Computer Centre where the MHRD Gol, New Delhi set up a consortia-based subscription to e-resources for technical education system named as INDEST (Indian Digital Library in Engineering, Science and Technology) and receiving online journals viz. IEL (IEEE/IEE Electronic Library, ASME, ASCE, Applied Science and Technology Plus (ASTP), ACM Digital Library, Springer Verlag Link, Nature, J-gate, Indian Standards 18,000 in e-form from 2003 onwards.

The services and operations in the Central Library are fully computerized. The database of the entire library acquisitions was created using Libsys software.

❖ **Maulana Azad National Institute of Technology (NIT), Bhopal**

Maulana Azad National Institute of Technology, Bhopal (MANIT/NIT-B), also known as National Institute of Technology, Bhopal (NIT Bhopal), formerly Maulana Azad College of Technology (MACT) is an Institution of National Importance under the NIT Act in Bhopal, Madhya Pradesh, India. It is a part of the group of publicly funded institutions in India known as National Institute of Technology.

MANIT was started in 1960 as Maulana Azad College of Technology, named after the first Minister of Education, Maulana Abdul Kalam Azad. MACT started functioning in 1960 at Govt. Swami Vivekanand Polytechnic with an intake of 120 students and 70 faculty members. It was one of the first eight Regional Engineering Colleges. It is also one of the oldest colleges of Madhya Pradesh. The institution was

inaugurated by the then Prime Minister of India, Jawaharlal Nehru. The motto of MANIT is "Knowledge is greatest jewel."

The Central Library of MANIT subscribes to online resources such as-

- IEEE (ILE) Level-II
- INFORMS, USA
- ASTM Standards and Engineering Digital Library
- CRC Physics & Chemistry NetBase
- Taylor & Francis Business, Management & Economics Journals, etc.

❖ **National Institute of Technology (NIT), Jamshedpur**

The National Institute of Technology, Jamshedpur (NIT Jamshedpur), is an Institute of National Importance located at Jamshedpur, Jharkhand, India. Established as a Regional Institute of Technology in 1960, it was upgraded to National Institute of Technology (NIT) on 27th December 2002 with the status of a deemed university. It is the third in the chain of 8 NITs established as a part of the Second Five Year Plan (1956-1961) by the Govt. of India.

NIT Jamshedpur was originally founded as the Regional Institute of Technology in 1960 by Dr. SrikrishnaSinha, the then Chief Minister of Bihar. 15th August, Independence Day in India, was chosen for the laying of the foundation stone.

The Central Library of NIT Jamshedpur consists of reading room and a stack room including 2 Book Banks where one is meant for the students belonging to scheduled cast (SC) and scheduled tribe (ST). The other Book Bank is TEQIP Book Bank used by both SC/ST and general students.

The library subscribes to a sizable number of technical, scientific and general periodicals, journals and newspapers for the students and faculties of the institute.

In addition to this, there are online services through INDEST Consortium on the subjects for the following:

- IEEE (IEL Online)
- ASCE
- ASME
- Springer- Verlag
- SCIENCE-DIRECT

Moreover, the library plans to subscribe J-Gate and is also planning on subscribing IEEE Journals.

❖ **Visvesvaraya National Institute of Technology (NIT), Nagpur**

Visvesvaraya National Institute of Technology, Nagpur (VNIT Nagpur) also referred as NIT Nagpur, located in Maharashtra, formerly Regional College of Engineering, Nagpur (REC) and Visvesvaraya Regional College of Engineering, Nagpur (VRCE) is a premier public engineering and research institution in India. The institute has been consistently ranked among the best fifteen (15) engineering colleges in India. It was established in June 1960 by the Govt. of India and later named in honour of engineer, planner and statesman, Sir MokshagundamVisvesvaraya.

VNIT Nagpur is centrally-funded and belongs to the National Institutes of Technology system. In 2007, the institution was conferred the status as Institute of National Importance (INI) alongside other NITs and IITs by an Act of Parliament of India. The motto of VNIT Nagpur is "Excellence in action is yoga."

The VNIT Nagpur Central Library is 4 decades old having three storied building. The library and information centre is automated and uses Libsys software. Students and faculties have access to information through Online Public Access Catalogue (OPAC). The library also consists of 9 different sections including Social Welfare Book Bank and Students Aid Fund Book Bank.

Library Collections include:

- Books

General Books	70,264
Book Bank	27,950
Books for economically weak students	15,978

- Periodicals

National	52
International	89
Gratis Periodical Received in Library	76
Indian Standards	8759
Society Standards	337
Bound Volumes	15,106
CDs	986
A & V Materials	298
INDEST Periodicals	1706

Projects in progress:

- Application of Barcode Technology to various collections in information unit

- Implementation of Biometric Attendance System for entrance.
- Application of RFID Technology.
- Application of ISO-2008 service.

❖ **National Institute of Technology (NIT), Surathkal, Karnataka**

The National Institute of Technology Karnataka (NITK) formerly known as Karnataka Regional Engineering College (KREC) is a public engineering university at Surathkal, Mangalore. It was founded in 1960 as KREC while today; it is one of the 31 National Institutes of Technology in India and is recognised as an Institute of National Importance. The motto of NITK is "Work is worship." The foundation stone for Karnataka Regional Engineering College (KREC) was laid on 6th August 1960, at Surathkal, made possible through the efforts of U. SrinivasMallaya and V.S. Kudva.

The NITK library is housed in a spacious two-storied independent building adjoining the main building of the institute on the eastern side of the campus. The library has a whopping collection of approximately 15, 9,752 books housed in the eastern wing while the periodicals, journals and bound volumes are accessible in the western wing.

❖ **National Institute of Technology (NIT), Durgapur**

The National Institute of Technology Durgapur (NITD) is a Central Government Engineering College located in Durgapur, West Bengal, India. Formerly known as REC Durgapur, it is among the first 8 Regional Engineering Colleges established in India and was founded in 1960 by the then Chief Minister of West Bengal, Dr. Bidhan Chandra Roy. Today it is one of the 30 National Institutes of Technology in India and has been recognised as an Institute of National Importance by the Govt. of India under the National Institutes of Technology Act, 2007. The National Institute of Technology Durgapur (NITD) formerly known as REC Durgapur was established in 1960 as a co-operative venture between the Govt. of India and the Govt. of West Bengal aimed to function as a pace setter for engineering education in the country and to foster national integration. The motto of NITD is "Work Makes a Man."

The NITD library has a collection of 1.2 lakh volumes including text books, reference books and bound volumes of journals, standards, etc.

- The library subscribes to 180 current journals
- Library operations have been automated with the help of Libsys-4
- The book database is accessible through OPAC

- Circulation services are executed through barcode system

The library is an Institutional member of DELNET (Developing Library Network) and a beneficiary member of INDEST. The library subscription to Full Text E-Resources and other database resources are given below-

Full Text E-resources	Other Database Resources
ICE Virtual Library (Trial Access up to 19.12.2016)	J-Gate Custom Content
MathSciNet	Indian Standards
Library Press Display (Trial Access)	The American Library, Kolkata
Emerald Insight (Trial Access)	DELNET, New Delhi
IEL Online	INDEST-AICTE
TSpringerVerlag	NPTEL
ACM Digital Library	Open Access Journals
ASME Journals	Knimbus (user manual)
Elsevier Journals	
ONLINE CATALOGUE SERVICE	
Nature	
ASCE Journals	

❖ **National Institute of Technology (NIT), Srinagar**

National Institute of Technology, Srinagar (NITSRI) is a technical (engineering) institute located at Hazratbal, Srinagar, Jammu & Kashmir and a leading technological institute of India along with NITs and IITs. It is the 7th in chain of 17 NITs established as a part of the Second Five Year Plan (1956-61) by the Govt. of India. The institution has recognition as an Institute of National Importance under NIT Act of Parliament and has produced more than 8000 graduates.

On 15th August 2007, it became an Institute of National Importance under the NIT Bill passed by the Parliament of India. Now NITSRI is an autonomous body that conducts its own academics along with the other NITs and IITs of India. The motto of NITSRI is "Lead me from darkness to light."

NIT Srinagar has developed an Institutional Digital Repository (IDR) and the repository which is contributing factor towards e-learning by providing digital content through National Digital Library (NDL). NITSRI Central Library has a collection of about 68,000 books of Engineering, Science, Humanities and about 6,000 bound volumes of journals both foreign and Indian. The library is also connected to IGNOU

Educational programmes. The users can meet their information needs through OPAC in the library.

The full text e-resources in the NITSRI library are:

- IEL Online
- Springer Link
- Elsevier's Science Direct
- ASCE Journals Online
- ASME Journals Online
- JCCC
- NATURE
- ProQuest Science
- INDIAN STANDARDS

Bibliographic Databases procured by the NITSRI library:

- J-Gate Custom Content for Consortia
- Compendex and INSPEC on ENGINEERING VILLAGE2

❖ **Motilal Nehru National Institute of Technology (NIT), Allahabad**

Motilal Nehru National Institute of Technology Allahabad (MNNIT or NIT Allahabad formerly Motilal Nehru REC (MNREC) is a public higher education institute located at Allahabad, Uttar Pradesh, India. It is one of the National Institutes of Technology and like the rest of them, classified as an Institute of National Importance on 15 August 2007. The college has the distinction of being first in the country to start an undergraduate program in Computer Science & Engineering in 1976-77. Established in 1961, the foundation stone of MNNIT was laid by Jawaharlal Nehru, the first Prime Minister of India and the institute was named after his father, lawyer and freedom fighter, Motilal Nehru. The founding principal of the college was Mr. Gopal Kishore Agrawal. The motto of MNNIT is "Success comes through hard work."

The NIT Allahabad Central Library has a collection of over 1, 04,382 books and bound periodicals. It also subscribes 53 Indian and 237 International technical periodicals. In order to facilitate all the readers in selecting the reading materials of their choice, the access to stacks is open to its members. The reading materials has been classified and catalogued as Dewey decimal classification and Anglo-American Cataloguing Rules-II.

The following journals are available from INDEST-AICTE Consortium:

Sl.No.	Publishers	Website Address
1.	ACM Digital Library	http://portal.acm.org/portal.cfm
2.	ASCE Journals	http://ascelibrary.org/
3.	ASME Journals	http://asmedigitalcollection.asme.org/journals.aspx
4.	Springer Verlags Link	http://www.springerlink.com

E-book services in NIT Allahabad Central Library:

Sl.No.	E-book	Website Address
1.	Cambridge University Press	http://ebooks.cambridge.org/
2.	Springer eBooks	http://link.springer.com/
3.	McGraw-Hill's Express Your e-book Library	http://lib.mylibrary.com
4.	CRC eBooks from Taylor & Francis	www.crnetbase.com
5.	Elsevier Science Direct	http://sciencedirect.com/
6.	World Scientific eBooks	www.worldscientific.com
7.	Cengage Learning/ Gale eBooks	http://infotrac.galegroup.com/itweb/mnit
8.	Pearson Education	http://lib.mylibrary.com
9.	Oxford University Press eBooks	http://www.oxfordscholarship.com/

❖ **National Institute of Technology (NIT), Calicut**

National Institute of Technology Calicut (NITC), established in 1961, formerly the Calicut REC (CREC) till 2002, is a federally funded technical university and an Institute of National Importance governed by an act passed by the Parliament of India. The college is among the very few institutions in the country to host a supercomputer of its own and amongst the pioneers in the country to have a dedicated nanotechnology department.

National Institute of Technology Calicut was set up in 1961 as REC Calicut (CREC), the ninth of its kind and the first one to be established during the Third Year Plan period. The classes were initially held at the Govt. Polytechnic at West Hill before it moved to its present campus in 1963. The motto of NITC is "From darkness, lead us unto light."

NITC's Central Library, with more than 100,000 books, is one of the largest technical libraries in India. The institute has a digital library Nalanda (Network of Automated Library and Archives) which houses online resources. Users of the

institute and networked institutions can access around 17,000 journals, proceedings, databases, electronic theses, dissertations and online courses at Nalanda. It is part of the INDEST Consortium which networks the libraries at technical institutions in India.NIT Calicut's supercomputer, Purna (Parallel Universal Remote Numerical Analyser), is accessible from anywhere in the campus and is provided for the use of all students and faculties.

- **National Institute of Technology (NIT), Rourkela**

National Institute of Technology Rourkela (NITR / NITRKL) formerly REC Rourkela is public funded premier institute of higher learning for engineering, science and technology located in the steel city of Rourkela, Odisha, India NIT Rourkela was established as REC Rourkela on 15 August 1961 where the foundation stone was laid by the first Prime Minister of India, Jawaharlal Nehru. It was granted autonomy in 2002 and now functioning Independent under the MHRD thus becoming one of the National Institutes of Technology. During the Captainship of the Founding Director Prof. Sunil Kumar Sarangi, the institute was transformed to its current status, and now NIT Rourkela is well known for its research related activities now a days in various field of Science.

The BijuPattanaik Central Library, functional from 1965, has been named after BijuPattanaik, the former Chief Minister of Odisha. At present, the library holds about 65,000 books and 18,000 back volumes of periodicals. It has purchased a license to access over 2000 online research journals on science and technology to foster local research activity. The BPCL is automated with integrated library software package called Libsys – Lsmart and modernised with latest radio frequency identification (RFID) based automation system that facilitates self check-in, self check-out and an automatic security system. This technology offers the fastest, the easiest and the most efficient way to track, locate and manage library materials. The RFID system counts more than 1.2 lakhs of transactions (issue, return, renewal) in a year.

- **SardarVallabhbhai National Institute of Technology (NIT), Surat**

The SardarVallabhbhai National Institute of Technology, Surat popularly known as National Institute of Technology, Surat (NIT Surat / SVNIT) is an engineering institute of higher education established by the Parliament of India in 1961. It is the Anchor Institute for the Auto and Engineering sector and will be training the workforce. The project is also designated as the "Centre of Excellence" in

water resources and flood management and is supported by the World Bank. NIT Surat is a premier institute that was established to train scientists and engineers to cater to the country's growing need for R&D and technological manpower.

SardarVallabhbhai Regional College of Engineering and Technology was established in June 1961 as a co-operative venture between the Govt. of India and the Govt. of Gujarat. It is named after India's first Home Minister SardarVallabhbhai Patel. On 4 December 2002, the institution was granted Deemed University status with the approval of the UGC/AICTE and was renamed SardarVallabhbhai National Institute of Technology. The motto of NIT Surat is "Charioteer of Science."

The NIT Surat Central Library established in 1968 is amongst the major technological libraries in the area of science, engineering and technology. It has completed nearly 35 years and has built a large collection of over 150,000 books and documents; and subscribes to more than 600 printed and online journals and conference proceedings. The library's transaction service is automated and online searches are possible through an Online Public Access Catalogue (OPAC).The Electronic Library section has a collection of databases, video lectures and miscellaneous other resources. Digital library allows students to have access over online journals and other periodicals through INDEST-AICTE Consortium.

- **National Institute of Technology (NIT), Kurukshetra**

National Institute of Technology Kurukshetra (or NIT Kurukshetra), is a public engineering institute located in Kurukshetra. In December 2008, it was accredited with the status of Institute of National Importance. In 2002, REC Kurukshetra was renamed to National Institute of Technology under the NIT Act and was given a Deemed University status. The motto of NIT Kurukshetra is "Hard work and consistent efforts."

The library was initially set up in 1965 and since then grown in size, collection and services. Presently, NIT Kurukshetra has a very spacious library with good collection of documents which includes text and reference books, CD-ROMs and large number of print and online journals. With its growing resources, space and services, the library caters to the need of the faculties, students and research scholars. The library is providing automated services in all sections of the library using Libsys software and documents are searched using Web-OPAC.

The NITK library is a core member of Indian National Digital Library in Engineering Science and Technology (INDEST) Consortium set up by MHRD. Approximately 4500+ e-resources are subscribed provided through the Consortium. Below are some of the e-resources subscribed through INDEST-AICTE Consortium.

- ASCE
- ASME
- IEL
- NATURE
- Springer
- Indian Standards
- Science Direct etc.

❖ **Malaviya National Institute of Technology (NIT), Jaipur**

The Malaviya National Institute of Technology Jaipur (MNIT Jaipur) is a public university located in Jaipur, India with emphasis on science, engineering and management. Formerly known as Malaviya REC (MREC) Jaipur, the institute is governed by a Senate as per NIT Statutes. The institute was upgraded to a National Institute of Technology and was declared a Deemed University on 26 June 2002. On 15 August 2007, MNIT and all the other NITs were declared Institutes of National Importance by the Govt. of India under the National Institutes of Technology Act, 2007. The institute is now under the MHRD, New Delhi.

The institute has a spacious and well equipped library which is being run according to an open access system. It has a rich collection of about 1, 33,600 volumes of books, periodicals, reports and reference materials.

❖ **National Institute of Technology (NIT), Tiruchirappalli**

The National Institute of Technology, Tiruchirappalli, referred to as NIT Trichy is a public research university near the city of Tiruchirappalli in Tamil Nadu, India. Founded in 1964, as the REC Tiruchirappalli under the affiliation of University of Madras, the institute became independent in 2003 and has acquired the deemed university status. It was declared as an Institute of National Importance by the Govt. of India under the National Institutes of Technology Act, 2007. The motto of NIT Trichy is “Truth alone triumphs.”

The institute has a modern Central Library with more than 2 and half lakhs of documents consisting of technical books, reports, standards etc. Digital Knowledge Centre has been established with Wi-Fi connection along with CCTV Web cameras

for surveillance. RFID Technology of Document identification and Library Security System have been implemented from 29th March, 2013.

Subscription of E-resources:

1.	No. of Databases subscribed through INDEST Consortium	10
2.	No. of e-journals subscribed	6000+
3.	No. of e-books (Springer e-books collection)	600+

Some of the Special Collections include:

Sl.No.	Details	Total No.
1.	TEQIP Collection	11170
2.	Competitive Examinations Guides & Manuals	650
3.	Book Bank	16750
4.	British Council Collection (UK-India RECs Project)	960

❖ **National Institute of Technology (NIT), Agartala**

The National Institute of Technology Agartala shortened to NIT Agartala or NITA is a technology-oriented institute of higher education established by India's MHRD, Govt. of India in Agartala, India. It was founded as Tripura Engineering College in 1965 and declared a National Institute of Technology in 2006. The institute was established in 1965 as Tripura Engineering College and was initially affiliated with Calcutta University and has some curriculum structure and examination system as Bengal Engineering College (currently IIEST Shibpur). On 23 February 2006, the Union Cabinet approved the proposal of the State Govt. for conversion of Tripura Engineering College to National Institute of Technology, a fully Central Govt. funded institution with Deemed to be University status. It also became a National Centre of Excellence.

The NIT Agartala has well facilitated reading room, back volume section; indexing and reference section; 34,000 books and 200 journals in the stock room and all e-journals are available in the digital library.

❖ **National Institute of Technology (NIT), Silchar**

National Institute of Technology Silchar (NITS) is one of the 31 NITs of India and was established in 1967 as a REC in Assam. In 2002, it was upgraded to the status of National Institute of Technology and was declared as Institute of National Importance under the National Institutes of Technology Act, 2007. In 2002, the institution was granted Deemed University status with the approval of the

UGC/AICTE. Now NIT Silchar is a premier engineering institute in Assam along with IIT Guwahati. The motto of NITS is "May our education be brilliant and radiant."

The Central Library established in 1977 has around 85,000 documents as of 31 March 2012. The library has been fully computerized and automated with Libsys software and has also implemented RFID and DVR technology for security purposes under TEQIP grant becoming the first library in the northeast region to implement RFID and DVR technology.

The library subscribes to 131 print journals specific to the academic and research needs of the academic community. Besides these, there are about 97 e-journals available in full-text through the online databases subscribed by the library and a collection of 4771 bound volume journals.The library also subscribes to 10 Institutional Database including 2 e-books and 11 INDEST Consortium.

The entire library collection including books, journals, etc. can be searched through web enabled OPAC.Each of the academic department of NIT Silchar subscribes e-resources.

❖ **National Institute of Technology (NIT), Hamirpur**

The National Institute of Technology Hamirpur or NIT Hamirpur/ NITH is a public engineering college located at Hamirpur, Himachal Pradesh, India. The institute offers a comprehensive curriculum for undergraduate and doctorate studies in various fields of engineering, pure sciences and humanities. The classes commenced at Govt. Polytechnic College, Hamirpur. On 26 June 2002, REC Hamirpur was awarded the status of deemed university.

The NITH library was set up in 1986 in one room of Govt. Polytechnic College, Hamirpur and was shifted to the institute campus in 1988 in Visvesvaraya Block. The library has more than 75,000 books and numerous scientific journals in both print and electronic format and is using Libsys and Web OPAC to cater to the needs of the users.

The library subscribes to the following e-resources:

- J-Gate@NIT Consortia
- JSTOR
- ACM Digital Library
- ASCE Library
- ASME Library

- ASTM International
- Emerald Insight
- IEEE Xplore Digital Library
- Science Direct
- Springer Link
- Taylor and Francis Online

The NITH library subscribes the following print journals:

- Cultural Studies Critical Methodologies
- Current Science
- Gender and Society
- Indian Science Abstract, etc.

❖ **National Institute of Technology (NIT), Jalandhar**

The Dr. B.R. Ambedkar National Institute of Technology Jalandhar (NITJ) is a public engineering institute located in Jalandhar, Bihar. NITJ is among the 31 NITs of India. It was founded as a joint venture between the governments of Punjab and India, originally under the name Punjab Regional Engineering College, Jalandhar (PREC).

The library is housed in a three storied building situated in the midst of all departments. Industrial establishments/ corporate houses can also avail of the library services on taking institutional/ corporate membership of the library. Library consultation facilities are also available to faculty and students of outside institutes/ organization on request. The NITJ library has a collection of 1,03,456 volumes comprising books, standards, theses, CD-ROM, bound volumes of journals and around 1850 video cassettes pertaining to various disciplines of Science, Engineering and Technology. It also subscribes to about 106 current journals and magazines in print form and almost all dailies. In addition to the above, with the help of special financial aid from MHRD, the library provides online access to the various electronic resources being published by almost all the major publishers of the world.

❖ **National Institute of Technology (NIT), Delhi**

The National Institute of Technology, Delhi (NITD) is one of the 10 newly set up NITs during the Eleventh Five Year Plan by the MHRD. The academic activities of NIT Delhi were initiated at NIT Warangal in the year 2010 which later moved to a temporary campus at Dwarka, New Delhi in June 2012 and now currently running at

IAMR Campus Narela on February 2014. The institution like the rest of the NITs has been declared as an Institute of National Importance by an Act of Parliament of India.

The library is housed on the first floor of the building in midst of the campus with beautiful surroundings which is easily accessible from the departments and hostels and is growing rapidly with exponential increase in number and type of collection to serve the information needs of the clientele in the field of Engineering, Science and Technology.

Further, the features of NITD have been given below.

- Web-based Libsys library automation software for the automation of various activities and services of the library and user notification facility for sending overdue notices via email or SMS alerts.
- Implementation of the Radio Frequency Identification (RFID) System in the year 2014.
- Total collection of approximately 13,000 books, 3500 book banks, 550 reference collection including dictionaries, handbooks, etc.

The library subscribes the following electronic databases through INDEST-AICTE Consortium in the year 2015 including more than 6000 journals given below.

- Elsevier's Science Direct
- American Physical Society
- Springer Link
- IEL/IEEE Online
- ACM Digital Library
- J-Gate Platform
- DELNET
- Knimbus E-Library mobile app

❖ **National Institute of Technology (NIT), Goa**

The NIT Goa (NITG) is an engineering college founded in 2010. The NITG is one of the 10 newly set up NITs during the Eleventh Five Year Plan by the MHRD where the fund was provided by Central Govt. During its initial years, NIT Goa was mentored by National Institute of Technology Karnataka, Surathkal and the Goa State Govt. had proposed that 50% of the seats should be reserved for the state of Goa.

The NITG library has a collection of Elsevier Engineering subject back file collection and also subscribes to databases of e-journals which are available at the campus through the Intranet given below.

- Science Direct
- IEEE Xplore Digital Library
- Springer Link
- Knimbus

NIT Goa uses OPAC for accessing the documents in their library. Further, the institution has an Institutional Digital Repository created with the help of DSpace preserving quality document, published in Open Domain which is a part of National Digital Library India. The e-resources are open and shared globally.

❖ **National Institute of Technology (NIT), Puducherry**

National Institute of Technology, Puducherry (NITPY) is an autonomous public engineering institute located in the Union Territory of Puducherry. It is one of the 31 National Institutes of Technology of India and is declared as an Institute of National Importance by the Govt. of India under NIT Act, 2007. The institute was established in 2010.

NITPY nestled in the scenes of Karaikal, a coastal enclave in the basin of river Kaveri is committed to produce effective and responsible technocrats who have the ability to serve the nation on its journey to growth and prosperity.

❖ **National Institute of Technology (NIT), Manipur**

NIT Manipur is a centrally funded institution to impart quality technical education to various levels of higher learning. It is one of the 10 newly set up NITs by the MHRD, Govt. of India. It has been established to cater the needs of the thousands of students from the North East and outside in the field of Technical Education with National Institute of Technology Agartala, as its mentor institute and tremendous support from the State Govt. of Manipur, NIT Manipur started its first session on 1st August, 2010. The institute was first established under the Manipur Societies Registration Act, 1989. Later, NIT Manipur was declared as a full-fledged NIT along with the 9 other new NITs and declared as an Institute of National Importance.

The Central Library NIT Manipur is one of the important central facilities of the Institute having 2 sections – one in permanent campus Langol and secondly in temporary campus, Takyel. The library currently has several volumes including textbooks, reference books, conference proceedings, back volumes, standards and non-book material such as CD-ROMs, audio tapes, video tapes and slides. The Central Library procures several e-books in different subject areas and also provides access to the Digital Library of ACm, IEEE and ASME.

❖ **National Institute of Technology (NIT), Meghalaya**

National Institute of Technology, Meghalaya or NITM is one of the 31 National Institutes of Technology situated in Shillong, Meghalaya, India. The classes were started in 2010 at the SardarVallabhbhai National Institute of Technology, Surat.

The Central Library of NITM houses popular titles in Engineering, Technology, Sciences, Humanities and Social Sciences and Management to enrich the students with requisite knowledge and expertise. It has a rich collection of around 10, 000 texts, reference books and electronic resources. In addition to this, the library provides access to the Digital Library of ACm, IEEE and ASME.

Some of the e-resources subscribed by the Central Library NITM are given below-

- Thin Tank Library (Pearson's E-book
- IEEE Xplore Digital Library
- ACM Digital Library
- ASME Digital Collection
- Science Direct
- Springer (1400+ Journals)
- ASCE Journals
- MathScinet

❖ **National Institute of Technology (NIT), Nagaland**

National Institute of Technology Nagaland, located at the Old DC Complex at Chumukedima is a higher education technology institute located at Dimapur, Nagaland, India. It is one of the 31 National Institutes of Technology. NIT Silchar has provided initial mentorship to NIT Nagaland for the initial 2 years of establishment.

The Central Library of NIT Nagaland supports teaching, learning, research and creative endeavours of the institute erstwhile providing modern collection of knowledge resources and innovative information through acquisition, organization and dissemination of knowledge resources and also provides demand access to the available intellectual resources and research products to NIT Nagaland faculties and students as well as to the greater community of learners beyond NIT Nagaland with the support o value added services to the users.

Presently, the Central Library has a collection of more than 7,200 books in the area of Engineering, Technology, Basic Sciences, Management, Economics, Social Sciences and Humanities including texts books and reference books; 1400+ of e-books on Electrical, Electronics, Communication, Civil, Mechanical and Computer

Science and other non-book materials such as NPTEL videos, CD-ROMs, etc. The library also has latest collections of periodicals, magazines and newspapers. The services and operations in the Central Library are fully computerized using Integrated Library Management Software with OPAC and RFID Technology. RFID tagging of entire collections are up-to-date.

❖ **National Institute of Technology (NIT), Sikkim**

National Institute of Technology Sikkim is a premier technical institute situated in the Indian State of Sikkim. It is one of the 31 NITs in India and has been declared as an Institute of National Importance by Government of India. It is an autonomous institute and functioning under the aegis of MHRD. The institute is currently being operated from temporary campus at the Barfung Block, Ravangla Sub Division of South Sikkim surrounded by great scenic beauty. Construction for a permanent building is on the way which will be situated at Pakyong, Sikkim. It is managed by the NIT Sikkim Society registered under the Societies Act.

The Central Library of NIT Sikkim designated as Knowledge and Information Centre (KIC) is rich in resources for students and research scholars. The KIC has total 7111 number of books and 1265 number of titles. It has 230 titles of e-books and 780 Kindle e-books along with 4 Kindle e-book reader. KIC has 24 hard copy of journals/magazines and 30 CD/DVDs for the KIC members for better understanding of the research topics. The library also provides 8 National/ Regional newspapers for the students to be up to date with the world.

❖ **National Institute of Technology (NIT), Uttarakhand**

The National Institute of Technology Uttarakhand is a public engineering institution in the Indian state of Uttarakhand.

The library has open access along with a reading room facility. The library houses a total collection of approximately 32,000 printed books (with more than 6000 titles) which includes text books and reference books in the field of Engineering and Technology, Sciences and Humanities, English Literature and Fiction. The library has a rich collection of e-books (26, 457titles) procured from various renowned publishers and the library subscribes various online databases to increase and enhance the quality of academic and research work. The library subscribes 69 magazines for the students as magazines play an important role in an educational institution or organization and supply the variety of news on a regular basis and keep the users updated about the latest news and happenings taking place in our country as well as the world at large.

The library uses OPAC to search for all the bibliographic records available in the library through a web based search i.e. WebOPAC.

❖ **National Institute of Technology (NIT), Arunachal Pradesh**

The National Institute of Technology, Arunachal Pradesh was inaugurated on 18thAugust, 2010 asa member of a group of 10 new NITs. These new NITs were established as centres of excellence in technical education to combat the growing need of technological professionals in India as well as in the World.

The Library of the institute is a knowledge centre. The Central Library of NIT, Arunachal Pradesh established on August, 2010 has a good number of books and journals which are supplemented on regular basis. It has a rich collection of information resources mainly in Engineering, Science and also Management. OPAC service is used for accessing e-books and e-journals while Libsys is used as library management software. At present the Central Library holds above 27,139 volumes, 4000+ numbers of titles, 32 numbers of journals and more than 26 numbers of magazines. Besides the Central Library the Institute also has departmental Libraries catering the need of students and researchers.

❖ **National Institute of Technology (NIT), Andhra Pradesh**

National Institute of Technology, Andhra Pradesh is the 31st institution among the chain of NITs started by the Government of India situated at Tadepalligudem, West Godavari District, Andhra Pradesh State. National Institute of Technology Warangal is the mentor institute of NIT Andhra Pradesh.

2.6 National Institute of Technology (NIT), Mizoram

National Institute of Technology, Mizoram also known as NIT Mizoram or NITMZ started in the year 2010 is one of the 31 NITs in India situated in Aizawl, Mizoram. NIT Mizoram was one of the 10 new NITs set up by the Govt. of India to meet the demand for technical and scientific education and to ensure every state in India having its own NIT. NIT Mizoram was established vide Ministry Of Human Resource Development, Govt. of India its order no. F- 23-13-2009-TS-III dated 30 October 2009. The institute started functioning from the camp Nagpur under the mentorship of VNIT Nagpur w.e.f. July 2010 with a total of 63 students in three branches of engineering viz., Electrical & Electronics Engineering, viz., Electronics & Communication Engineering and Computer Science & Engineering.

NIT Mizoram started functioning from its Mizoram campus from July 2011. VNIT Nagpur was the mentor institute till 1st December, 2011. The institute is now

governed by the NIT (Amendment) Act, 2012, No.28 of 2012 (An Act to Amend the NIT, 2007) and henceforth designated as an INI.

NIT Mizoram is, at present, functioning from temporarily hired buildings at Chaltlang, Aizawl. The permanent campus of the institute is coming up at Lengpui, Aizawl, near the airport. At present, 4 buildings are on rent and its vicinity for accommodating 1 Administrative block and 3 Academic blocks for conducting classes and laboratories. Other 4 buildings are on rent for 3 boys' hostel and 1 girls' hostel. The hostels are located at Tanhril, which is about 15 kms away from the academic buildings. The institute has around 5 buses for transportation of the students to and fro from hostels to academic buildings.

NIT Mizoram is an institute situated in the scenic beauty of Mizoram wrapped between clouds and mountain rocks which add to its beauty. Being amongst the most educated states of our country with the literacy rate of 91%, it beholds a very peaceful and calm environment suitable for studies. The institute, to cope with the present competitive needs, comprises of laboratories with the latest equipments and installed with best and latest software.

2.6.1 Central Library NIT, Mizoram

To give a detail profile of the NIT Central Library, Mizoram, this library is a new one compared to other NIT central libraries in North East as it started functioning in 2011. It, however, provides the basic services which include housekeeping services like, circulation, journal, reference etc. The library is tuned to the technology based system and is providing services such as OPAC, Wi-fi service, SMS alert services, inter library loan, digital library to share digital resources among the faculties, staffs and the students. Due to strategic location of the library in a hilly area, the library, however, is getting a poor internet connectivity causing stress and strain among the researchers. In spite of all odds, the library also maintains a separate collection of standards and special publications published by Bureau of Indian Standards, Indian Road Congress, American Concrete Institute, etc. to provide need based services. Given below in Table 2.6.1(A) is a brief profile about NIT, Central Library of Mizoram.

Table2.6.1(A) Profile of Central LibraryNIT, Mizoram

1.	Name of the Library	Central Library NIT, Mizoram
2.	Year of establishment	2011
3.	Name of the Librarian	Mr. V.Vanlalzawma
4.	Address	Central Library, NIT Mizoram Academic BlockII, Chaltlang
5.	E-mail	nitmz.library@gmail.com
6.	Total number of books	8561 volumes
7.	Total number of current journals	6 journals
8.	Library Building	Rented building
9.	OPAC Service	Provided
10.	Library Software	LIBMAN
11.	Host of Library Website	Computer Science Department
12.	Consortia	ESS Consortium/NIT Library Consortium
13.	Library Finance	Not Specified
14.	Online Information Access	Available
15.	Electronic Information	Web Access & Referral Access
16.	Database of E-Journals	Maintained
17.	Users of E-Journal	60-100 per day

Right from the beginning, NIT Central Library purchased materials which include books and journals for the students and teachers for research purpose. With the joining of the Director in NIT the whole scenario of the library changed and emphasis is on e-resources. The library subscribed to more e- resources which include mainly e-journals and became a member of the ESS consortium. While giving a brief account of the collection development of the library, till June 2016, it is having a total collection of 8561 volumes of books and the 6 current journals which are available in electronic form subscribed on renewal basis including procurement of e-books on perpetual basis. The titles of e-Journals subscribed which are on renewal basis by the Central Library, NIT and the e-Books which are purchased on perpetual basis are given in Table 2.6.1(B) and 2.6.1(C) respectively.

Further, the library provides referral access to the resources through web where it could be found that the numbers of users accessing the e-journals provided by the library are 60-100 users per day which is approximately 2100 per month.

Table 2.6.1(B): Name of Databases Vendors / Publishers

Sl.No.	Databases Vendors/ Publishers
1.	Springer Link (1400 + e-Journals)
2.	IEEE-IEL Online
3.	ASME Journals
4.	ASCE Journals
5.	Taylor and Francis Journals
6.	INDIASTAT (Single User)

Table 2.6.1(C): Publisher's wise Subject Collection

Sl. No.	Name of the Product	Subject Collection	No. of Titles
1.	ELSEVIER E-BOOKS	1. Engineering	1032
		2. Computer Science	
		3. Physics & Astronomy	
		4. Chemistry	
		5. Mathematics	
2.	TATA McGRAW HILL E-BOOK	1. Mechanical Engineering	406
		2. Electrical& Electronic Engg.	
		3. Core Engineering	
		4. Computer Science	
		5. Physics	
		6. Chemistry	
		7. Business Communication	

2.7 Conclusion

The researcher while ascertaining the other facts of the library, found that the use of e-resources compared to the traditional resources are more as the library facilitates the use of internet regulated through individual IP address for security reason.

NIT Mizoram has started Ph.D Programmes in various departments of Engineering, Science and Humanities & Social Sciences. In order to enhance research activity each faculty member is requested to propose their research plan in their field of specialisations and interests. The NIT Mizoram also has an Institute-Industry collaboration which aims to orient the academic programmes towards providing trained human resource to industry needs through meaningful and practical education to the students. The institute is in the process of exploring the linkages and interaction with industries, other institutes of repute and R&D laboratories.

The next chapter entitled “E-Resources – Access, Use, Pedagogical Issues and Copyrights” gives details about the types of e-resources and explains the Copyright Acts towards the violation and misuse of e-resources.

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3.1 Introduction

The twentieth century was shaped by sweeping changes in communication technologies. The emergence and use of information technology is the century's most significant development affecting scholarly communication. 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. The transition from print to electronic medium apart from resulting in a growth of electronic information has provided users with new tools and applications for information seeking and retrieval. Electronic resources are invaluable research tools that complement the print-based resources in a traditional library setting. If on one hand technology has enable us to use electronic sources of information, on the other hand there is no such sharp decline in the procurement and subscription of printed sources of information in libraries and other similar information centres.

The technological advancement in information transfer and communication process has brought a radical change in searching, utilizing and maintaining the information resources. Worldwide libraries have been exploring new technologies for providing better and faster access to vast information resources and efficient information services to their users. Information technology influences information retrieval in every sector of human activities. For instance, it has brought about revolutionary changes in the functions of libraries. With the application of information and communication technology particularly the internet, there has been a shift from traditional print journals to online journals.

Information Technology has offered better solutions to achieve greater level of efficiency, productivity and excellent services in libraries. Information Technology also fulfils the 4th law of S.R. Ranganathan's "Save the time of the reader." The application and accessibility of information technology facilitates the free flow of information, creative expression and effective management.

3.2 E-Resources- The Notion

Electronic resources are regarded as the mines of information that are explored through modern ICT devices, refined and redesigned and more often stored in the cyber space in the most concrete and compact form and can be accessed simultaneously from infinite points by a great number of audience. E-resources refer to that kind of documents in digital formats which are made available to library users through computer based information retrieval system. The Internet is said to be the

right and most extensively used channel to catch hold of the majority of the e-resources through different search engines (e.g. Google, Alta Vista, Yahoo, etc.), Web OPAC and some offline databases in CD/DVD formats that can even be accessed without the help of internet.

Therefore, it is perceptible that e-resources include online databases, sources from web pages, e-journal articles, electronic personal papers, e-mail messages, newsgroup postings, newsletters, government publications, e-theses and dissertations, e-newspapers, CDs/DVDs, e-books, e-databases, HTML links, digital library materials, institutional repositories, social networks, open access materials, etc.

3.3 Types of E-resources

Digital and virtual librarianship has entirely overpowered the traditional librarianship. The old concept of librarianship in the present time of science and technology has almost disappeared. In this fast growing generation, library users are also demanding for updated, nascent and quick information. To fulfil the information, knowledge and literature thrust of the end user; e-resources play a very prominent role. The emergence, in particular, of the internet has opened up many fresh opportunities for dissemination of content to large and small consumer. Print medium is increasingly giving way to the electronic form of materials. Innovation in the field of information and communication technology is boosting research and development activities around the world. Earlier libraries were facing various problems for managing print documents rescued by the electronic resources.

One of the major benefits gained from moving from print to electronic is the ability to provide remote access and increased access to individual titles. The introduction of technologies such as internet protocol (IP) authentication, Proxy servers, Web server and routers has enabled the library to offer remote access to its authorized users.

There are multiple types of e-resources and some of them are discussed below.

3.3.1 Electronic Book (e-book)

According to Encyclopaedic Dictionary of Library & Information Science (2010), an e-book is a digital version of a traditional print book designed to be read on a personal computer or an e-book reader which is a software application for use on a standard-sized computer or a book-sized computer used solely as a reading device. Generally, e-books are not free of cost but to promote marketing, the vendors explore means to provide them on internet domain which is exclusively to attract the users and

make use of them. This also not only facilitate the users to get access to the e-resources comparative less price than the print documents but also get an instant access to the documents including supplements, if any. However, free e-books are available from different URL sites like, Digital Library of Information Science and Technology (DLIST) (http://dlist.sir.arizona.edu/), Ebook4free.net (http://www.ebooks4free.net), Free-Books.org (http://www.free-books.org), Free-ebooks.net (http://www.free-ebooks.net/), Project Gutenberg (http://www.gutenberg.org/), Applied Mathematics e-books, Elsevier Science Direct which is a an advanced Web Delivery System that allows access the users over eight million full-text articles with a facility to access Back files of articles of the subscribed Journals in either Summary Plus, HTML & PDF format. The database also offers free access to Abstracts of more than 1800 Journals in 21 subjects published by Elsevier. Most of the publisher allows access through IP address for security reasons.

3.3.2 Electronic Journal (e-journal)

E-journal refers to journals which are available in electronic format referred to as 'electronic publishing', 'electronic serials', 'online journals' and 'electronic periodicals'. It is defined as the grouping of information that is sent out in electronic format, which is produced, published, and distributed electronically. E-journals are digital version of printed journals accompanied by extensive hyper linking. They can be read both through online and offline. It is the principal 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 or through license for access. A physical, printed version also is available in e-format. E-journal is a digital version of a print journal, or a journal-like electronic publication with no print counterpart made available via the Web, e-mail, or other means of Internet access. Electronic journals also known as periodicals, e-journals and electronic serials are the journals that contain scholarly communication and articles issued periodically in electronic form and can be accessed via electronic transmission. In practice, this means that they are usually published on the Web. Thus, either an e-journal can be electronic product such as CD-ROM or the entire information could be stored in the host computer.

Some examples of the availability of e-resources are given below.

J-Stage (Japan Science & Technology Information Aggregator, Electronic) is an example of e-journal containing free full-text of about 2624 e-Journals and e-Proceedings covering the following subject areas given in Table 3.3.2(A).

Table 3.3.2(A): J-Stage Contents

Sl.No.	Name of the subject	No. of journals
1.	Basic Sciences	377 journals
2.	Life Sciences	486 journals
3.	Medical and Health Sciences	607 journals
4.	Engineering and Technology	06 journals
5.	Information Sciences	149 journals
6.	Interdisciplinary Sciences	200 journals
7.	Humanities and Social Sciences	99 journals

Source: URL:http://www.jstage.jst.go.jp/

Directory of Open Access Journals database also provides full text of more than 3886 scientific and scholarly journals in electronic form covering the following subject areas which facilitate the users irrespective of the categories to promote teaching, learning and research. The list of the subjects covered under the Directory of Open Access Journals has been given in Table 3.3.2(B). Mention may be made that, this is the widest form of journals being used by the users for different academic purposes.

Table 3.3.2(B): Directory of Open Access Journals

Sl.No.	Name of the subject
1.	Agriculture and Food Sciences
2.	Arts and Architecture
3.	Biology and Life Sciences
4.	Business and Economics
5.	Chemistry
6.	Earth and Environmental Sciences
7.	General works
8.	Health Sciences
9.	Language and Literature
10.	Law and Political Science
11.	Mathematics and Statistics
12.	Philosophy and Religion
13.	Physics and Astronomy
14.	Science General
15.	Social Sciences
16.	Technology and Engineering
17.	History and Archaeology

Source: URL:http://www.doaj.org/

3.3.2.1 Types of e-journals

Electronic journals can be broadly categorised into two forms such as:

- **Open Access Journals**

Open access journals are scholarly journals that are available online to the reader "without financial, legal or technical barriers other than those inseparable from gaining access to the Internet itself." They remove price barriers (e.g. subscription, licensing fees, and pay-per-view fees) and most permission barriers (e.g. copyright and licensing restrictions). While open access journals are freely available to the reader, there are costs associated with the publication and production of such journals. Some are subsidized and some require payment on behalf of the author.

Example for open access journals in the field of Engineering:

- Advances in Production Engineering and Management
- Royal Society Open Science

- **Paid or Subscribe e-journals**

The paid e-journals can be obtained either directly from the publishers, or aggregators or agents by subscription or by joining in any consortium.

3.3.3 Electronic Encyclopaedias (e- encyclopaedias)

E-encyclopaedias and almanacs also offer search capabilities and even hyperlinks leading the reader to, a related article, but such tools do not always anticipate users' 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 version, for example, may be more up to date and easier to use than some online versions, and online versions 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 graphics 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-encyclopaedia is now supplemented with webopedia, wikipedia etc. which add substantial value to promote research work.

3.3.4 Electronic Mail (e-mail)

An abbreviation of electronic mail, e-mail is an Internet protocol that allows computer users to exchange messages and data files in real time with other users, locally and across networks. E-mail requires a messaging system to allow users to store and forward messages and a mail program with an interface for sending and

receiving. Users can send messages to a single recipient at a specific e-mail address or multicast to a distribution list or mailing list without creating a paper copy until hard copy is desired.

The explosive growth of the Internet has introduced us to the age of e-mail which is having a phenomenal effect on the way we communicate and is relatively a quick and efficient media of communication.

3.3.5 Electronic Magazine (e-zine)

E-zine is the abbreviation for electronic magazine. A periodical publication 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.

3.3.6 Electronic Newsletter (e-newsletter)

E-newsletters are offered by companies and organizations around the world. These newsletters are actually e-mail sent from list servers, 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 readers at once without postage. Electronic newsletters 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 than online newspapers 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.

3.3.7 Electronic Newspaper (e-newspaper)

E-newspapers, may copy the typography of their printed counterparts, even though they are not laid out as the print versions are, and they use frames or sidebars to list contents, on which readers may click in order to go straight to that section. There are photographs and other graphics in online newspapers, and often there are photo archives available online as well. Political and other cartoons are available in the online versions of some newspapers 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 newspapers offer web advertising that is linked 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. Newspapers have learned that most Internet users will eschew sites that cost money, so in order to have online readers they have to offer their products free of charge, relying on advertising to pay the bills. With over 5000 newspapers currently online it appears that, profitable or not, individuals far from home and with access to the Internet can always look at a newspaper from home, one close to home or, at the very least, a national newspaper with technology still advancing, profitability may be possible for those newspapers that are now losing money.

3.3.8 Electronic Reference (e-reference) Tools

Today vendors and publishers are providing users with various reference sources through their website and databases, such as dictionaries, yearbooks, encyclopaedias etc. via, Dictionaries online (www.dictionary.com, www.m-w.com, www.dict.leo.org, www.batleby.com) Yearbooks online (www.uia.org), Directories online (www.people.yahoo.com), Handbook online (www.ntu.edu.au), etc.

In reality electronic reference tools such as encyclopaedias, 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 programmed about language, and a brief history of the English language. It does not offer the reader an opportunity to brows the dictionary, nor does it offer the front and end matter found in its print dictionaries, including how to use the dictionary, a guide to pronunciation and a short style guide.

3.3.9 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 for both ongoing and completed projects electronically which allows 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 of reference material with regard to the development of innovative methods in the field of e-learning system for distance learning. It refers to activities of research, experimentation and 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.

3.3.10 Electronic Theses and Dissertations (ETD)

Electronic theses and dissertations, or ETDs, are defined as those theses and dissertations submitted, archived, or accessed primarily in electronic formats, which includes 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 Library of Congress's National Digital Library Project plans to digitize five million items by 2000, and many university, public, and private libraries worldwide are currently working on digitizing their collections as well. 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 versions of theses, dissertations, and technical papers that began in 1996 at Virginia Tech. The NDLTD reports that more than 20 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.

3.3.11 CD-ROM

A CD-ROM is a pre-pressed optical compact disc which contains data. The name is an acronym which stands for Compact Disc Read-Only Memory. Computers can read CD-ROMs, but cannot write to CD-ROMs which are not writable or erasable.

3.3.12 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 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.

3.4 INDEST-AICTE Consortium

The demand for new information sources are continuously progressing with the change that is happing fast in the technology era. Shortage of financial resources have resulted in the inability to procure information resources to satisfy users' needs making it necessary to enter into a collaborative arrangement in order to expand the resource base.

A consortium is an association of two or more individuals, companies, organizations and governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal.In library science, consortium is a group of libraries or other such organizations that form a partnership to achieve a goal such as shared cataloguing or resource sharing, which cannot be achieved by the individual alone. A consortium is helpful in getting co-operation from various libraries in acquiring electronic databases, communication of information and inter library loan.

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 recommendation of an Expert Group appointed by the Ministryunder the chairmanship ofProf. N. Balakrishnan. The Consortium was re-named as INDEST-AICTE Consortium in December 2005 with the AICTE playing a pivotal role in enrolling its approved engineering colleges and institutions as members of the Consortium for selected e-resources at much lower rates of subscription. The Ministry provides funds required for subscription to electronic resources for 62

centrally-funded Government institutions including NITs and few other institutions that are considered as core members of the Consortium. The total number of members in the Consortium has now grown to 1235. The IIT Delhi has been designated as the Consortium Headquarters to coordinate its activities.

The INDEST-AICTE Consortium is the most ambitious initiative taken so far in the country. It is the biggest Consortium in terms of number of member institutions in Asia. The Consortium subscribes to over 12,000 electronic journals from a number of publishers and aggregators. The mission of the consortium is to improve the productivity and quality of research and to promote advance teaching and learning.

Although INDEST-AICTE Consortium provides effective and efficient information in the field of engineering, NIT Mizoram has not yet taken initiatives or implementation of the consortium which may be due several constraints on the part of the administration.

3.5 E-Resources – Access and Use

Advent of information technology and its application in the library system irrespective of the types has resulted in reducing the size of libraries. In fact, the modern libraries are having rich potential of information which could be possible due to the enormous availability of electronic resources in various forms including digitization of information which practically converted the traditional resources to paperless records. Rapid and continuing innovation in web based technology has not only positive impact on various operations in the libraries and collections but also enhanced the expectation of end-users. The databases which were earlier accessible through CD-ROM are now accessible on web in the form of electronic publication i.e. e-resources.

The development in computer applications during the past decades has brought tremendous changes in the way information is stored, organized and retrieved. The IT application in information processing gave birth to many products, collaborative tools and designs, user friendly interface and various IT based services to access the information. Numerous search tools are available to locate appropriate sources and without these search tools, the chance of finding relevant information on the Web would be slim. Even with the help of search tools, users must be able to use sophisticated searching techniques and strategies of respective search tools in order to find relevant information.

Electronic resources are very useful to all institutions and individuals to get instant, relevant, comprehensive information at doorsteps. Today's users have their information needs met via number of options. They need not come physically to the library to use print formats but can stay at home or the office and have access to online library resources and services via network or authentication methods at any time. In order to exploit the current information explosion, use of e-resources in the libraries for rapid development is necessary and important. E-resources can be used for efficient retrieval and meeting information needs. This is very important for academic libraries since most of them call for more and more research work. This important fact is convincing many libraries to move towards e-resources which are found to be less expensive and more useful for easy access. The advent of e-resources has changed libraries and learning environment. It has not only enhanced the accessibility to library collection and services but also break the barrier of location and time. These benefits are attracting the libraries to opt for e-resources. The growth of dependency on e-resources has led to the recognition of electronic resource management. The reliance on e-resources is very useful to end-users but there are several other challenges in managing these e-resources which are being faced by the libraries like selection, acquisition, budget, access, lack of infrastructure etc.

Information communication technology has played an important and significant role in all spheres, and establishes an efficient information support and an effective communication system especially in the organization of libraries and information centres. Many documents in different subject areas are being published in electronic form and are more popular among library users. Use of e-resources is increasing day by day as compared to print documents. E-resources are playing a vital role in the creation, transmission and storage of information. Most of the institutes are giving preference to e-resources as it can be easily stored, accessed and delivered as and when required. Electronic resources play a very important role in academic library management in the age of digital technology.

3.6 E-Resources – Pedagogical Issues and Copyrights

Information is the primary 'commodity' for any R&D activity. The ever changing technological developments and the ever-growing number of publications in a multitude ofsubject fields led to a paradigm shift in library management. Due to the problems of 'plenty' and 'resource overload' coupled with budgetary constraints, library managers started providing access to information to the users rather than

acquiring and owning resources. The developments in information technologies have brought in new products and formats for storage, retrieval and dissemination. The digital information has greatly enhanced the quality and range of services provided in a library. The growing electronic publications including e-books, e-journals and the billions of web pages and Petbytes of information on internet have had a profound impact on the knowledge society.

3.6.1 Intellectual Property Right (IPR)

Intellectual Property Right (IPR) is a general term covering patents, copyright, trademark, industrial designs, geographical indications, protection of layout design integrated circuit and protection of undisclosed information (trade secrets). IPRs refer to the legal ownership by a person or business of an invention/ discovery attached to a particular product or processes which protect the author against unauthorized copying or imitation."

Intellectual Property (IP) refers to the product of a person's imagination and creativity and the rights of these people to control the use of their product. IP can be bought, sold or exchanged and licensed to other people or organizations by the IP holder. IP is insubstantial and is not linked to the tangible artistic, dramatic or musical work which may have resulted from it. IP is protected by intellectual property law. There are six major types of IP law: copyrights, patents, designs, trademarks, circuit layouts and new plants varieties; however, confidential information, the duty of fidelity, trade secrets, confidentiality and moral rights are also included.

3.6.2 Copyright in Digital Era

In the sweeping digital environment all over the world, the owners of the copyright of intellectual works are confronted and exploited by a variety of technological innovations. Computer programs and databases are also considered literary works and hence are protected by copyright even in India. Storing a work in electronic form by anyone other than the rightful owner is infringement and is not permitted under the copyright law of India even for research purpose or private use. The Information Technology Bill-1999 that was introduced in Parliament during November 1999 was a giant step taken by India in the new era. The protection of content on Internet which in all its form covers the classic definition of IPR and Copyright Act, however does not find a proper mention in the IT Act 2000. There is no real difference between Copyright and Electronic copyright. The distinction lies in the way the materials have to be decoded or read by the user. Works which are

published in electronic format such as CD-ROM, online databases, floppy disks, OCR etc., are protected in the same way as their printed equivalents.

Copyright is a right, which is available for creating an original literary, dramatic, musical or artistic work. Cinematographic films including sound track and video films and recordings on discs, tapes, perforated roll or other devices are covered by copyrights. Computer programs and software are covered under literary works and are protected in India under copyrights. The Copyright Act, 1957 as amended in 1983, 1984, 1994 and 1999 governs the copyright protection in India.

Copyright stands for the legal rights exclusively given for a definite period of time to the originator (authors or creators) of intellectual work such as a publication, or an artistic or literary work for sale or any other use. Copyright provides the creators (like writers, poets, composers, etc) of literary or artistic works, the rights of ownership for their works and legal protection against unlawful reproduction of such works. Although copyright is generally understood as a right or license to free copying of an existing work, in reality it is not so; in fact it is a legal right to prevent others from copying. By providing protection, copyright law assures and encourages the authors in pursuit of artistic, scientific or literary work. The law also recognizes their right to the benefits accrued by the usage of their creative work by others. This obviates an agreement between the authors and the publishers (or users).

3.7 Context of Copyright Act

Copyright law grants exclusive rights to authors in order to encourage the production of creative works, to the benefit of society as a whole. These exclusive rights are balanced by a range of limitations and exceptions that permit some uses of copyrighted works without the need for authorization. As copyright continues to grow in importance, the parallel rise of digital technologies has presented new opportunities, as well as a host of complex issues. Governments, including their judicial branches, along with private sector interests around the world have been grappling with these issues for over twenty years. Their efforts represent the continuation of a long process; the history of copyright is integrally entwined with and has always been shaped by technological change.

Copyright as an author's right is also intertwined with notions of authorship and originality that often emphasize the genius, originality or labour of creators of copyrighted works. Both within and outside of the traditional content publishing and distribution industries, a wide range of exciting new models for the enjoyment of

copyrighted works has emerged in recent years, some of which have achieved widespread consumer acceptance. One striking development has been what some have called the “democratization of publishing” – the ability of individual authors, musicians, videographers, and other artists to publish directly to a global audience, regardless of whether they are seeking to make money or simply have their creations seen or heard. The online marketplace for copyrighted works is still, however, a work in progress. It is not yet clear which of these models will prove economically viable, and existing offerings are neither consistent in catalogue depth nor seamless for purposes of broadbased licensing. Additional work needs to be done to ensure that licensing can extend smoothly to the full range of content in all sectors and media, for users large and small, and across borders.

In a 2016 copyright lawsuit, the Delhi High Court states that copyright is "not an inevitable, divine, or natural right that confers on authors the absolute ownership of their creations. It is designed rather to stimulate activity and progress in the arts for the intellectual enrichment of the public. Copyright is intended to increase and not to impede the harvest of knowledge. It is intended to motivate the creative activity of authors and inventors in order to benefit the public."

3.7.1 Digital Millennium Copyright Act, 1998

The Digital Millennium Copyright Act (DMCA) was passed in 1998 to address the use of copyright in the digital world. In 1996, the United States became a party to the World Intellectual Property Organization (WIPO) treaties; thus the US laws needed to change to reflect the International Copyright Laws.

There are five major sections to the DMCA, but the most controversial is the anti-circumvention provision. This section prohibits the circumvention of protection technologies to access copyrighted works. It also prohibits the manufacturing of technological devices that would circumvent the protection. Non-profit libraries and educational institutions are exempt from this section if they gain access to the protected material in order to evaluate it for acquisition. Under this new law, the Registrar of Copyright is required to conduct proceedings to review and evaluate the effective anti-circumvention provision has and to recommend to the ‘ Library of Congress’ class of works that should be exempted from the anti-circumvention provision of DMCA.

3.7.2 Information Technology Act, 2000

The Information Technology Act, 2000 hardly addresses itself to the broader problem of protection and enforcement of the IPR. The act provides for investigation, trial and punishment for certain offences like tampering with computer source documents, the computer system, publication of information and tampering with protected computer system, piracy, misuse and faking of digital signature certificate.
In fact, the IT Act, 2000 merely provides a framework for legal recognition of electronic documentation, storage of electronic data, licensing of Cyber organizations etc. This act is designed to provide legal recognition to transactions carried out by means of electronic data operations and other means of electronic communication, commonly referred to as "Electronic Commerce." It seeks to use alternatives of paper clogged communication and storage of information in a bid to facilitate electronic filing of documents.

3.7 3 Copyright Amendment Act, 2012

The Copyright Act, 1957 came into effect from January 1958. This Act has been amended 5 times since then, i.e., in 1983, 1984, 1992, 1994, 1999 and 2012 being the most substantial. The main reason for amendments to the Copyright Act, 1957 includes bringing the Act in conformity with WIPO Copyright Treaty (WCT) and WIPO Performances and Phonograms Treaty (WPPT) to protect the Music and Film Industry and address its concerns of the physically disabled; and to protect the interests of the author of the work; incidental changes; to remove operational facilities and enforcement of rights. Some of the important amendments to the Copyright Act in 2012 are extension of copyright protection in the digital environment such as penalties for circumvention of technological protection measures and rights management information, and liability of internet service provider and introduction of statutory licenses for cover versions and broadcasting organizations; ensuring right to receive royalties for authors, music composers, exclusive economic and moral rights to performers, equal membership rights in copyright societies for authors and other right owners and exception of copyrights for physically disabled to access any works.

3.8 Copyright of Software (Computer Programs)

A computer program (software) is defined as a set of instructions expressed in words, codes, schemes or in any other form including a machine readable medium, capable of causing a computer to perform a particular task or achieve a particular result. Downloading a computer software, freeware and shareware is a common

feature of the cyber environment. One cannot distinguish between the pirated software that is illegally sold or freely distributed and could be used as original ones.

In copyright law, the original software program is automatically covered by copyright as soon as the program is written and saved on a hard drive, floppy disk or by running a printer listing. The copyright of software only protects against the unauthorized copying of original software. In principle the copyright protects only the expression of the ideas in software and not the ideas themselves. The determination of what constitutes an idea and what is meant by an expression of an idea is of crucial importance in seeking protection of software under copyright laws.

3.9 Copyright Issues in Electronic Publishing

The world is passing through a revolution in information technology which has far-reaching impacts. The need to control and provide access to the ever-increasing information is felt much due to literature seepage and scattering. The increase in the cost of raw materials used in publishing has put rise to the increase in the cost of books and journals. Due to considerable time taken to bring out books, the potential and unique features of electronic media were identified and the emphasis shifted from conventional publishing to electronic publishing.

The term electronic publishing is generally used to imply the use of computers in the production of printed publications. Efforts are being made to adjust electronic publishing to international and national copyright regulations paving a way for the future development of library services. The Berne Convention of 1886 which is a basic agreement to protect literary and artistic works and World Intellectual Property Organisation Treaty (WIPO) are the remarkable achievements in this context. WIPO Treaty includes an international copyright agreement signed in Geneva in December 1996 stipulating copyright at international level and leaves potential exceptions and limitations to be devised at national level. In order to safeguard the rights of authors and for keeping a balance of interest of public access to information, a strengthened copyright protection with new fair use provisions have become a necessity in the changing environment. As multiple copies of digital works can be made and transmitted at ease, the issues surrounding copyright protection and licensing of electronic information are extremely important.

3.10 Technology for Protection of Copyright

The technological approaches to copyright protection fall under the broad umbrella of Digital Rights Management (DRM). DRM solutions are available to all

online publishers, vendors, distributors, etc. who run the encryption software. Here is an overview of the various approaches to copyright protection:

3.10.1 Cryptography

Cryptography is one of the oldest ways to ensure security and privacy of information. It has been in use for protection of Intellectual Property Right (IPR). It is a common practice to scramble the cable and satellite television signals to prevent unauthorized viewing. However, cryptography protects the work during transmission or distribution only. After the work is decrypted, it does not provide any protection. Encryption makes the file unreadable or un-understandable by others than the legitimate user who only can decrypt it. This protects confidential information against eavesdropping and illegal copying of software. Cryptography can be used as an envelope for information sent via e-mail and file transfer. Another method is employment of encryption protocols wherein the document server encodes, encrypts, compresses and sends to a registered user, where the software supplied by the network service provider decrypts and displays on the user's terminal. The document server authenticates the user requests before sending a document.

3.10.2 Digital Watermark Technology

Digital watermarking technology complements cryptography in that it embeds imperceptible signals in a document or message and the content can vary accordingly. Digital watermarks are signals, logos or patterns inserted into digital documents. A unique identifier can be used to identify the work, or the message might contain information regarding ownership, sender, recipient etc or information about copyright permission and a system consisting watermark generator, embedded and a watermark detector decoder. This technique enables protection of ownership rights of digital information. Unlike encryption which warrants file transportation and is not understandable unless encrypted, digital watermarking leaves the original document intact and viewable. These watermarks persist during viewing, printing or re-transmitting thereby establishing ownership. When an illegal copy bears a watermark, the source of the piracy can be established. The legal user can remove these watermarks with a predetermined algorithm. This technology is different from digital finger printing technology.

3.10.3 Digital Signature Technology

Digital signature includes the identity of sender (and receiver), date, time, any unique code etc., and can be added to digital products. This digitally marks and binds

a software product for transferring to a specified customer. The security and rights management system of the ISI Electronic Library project employs a digitally signed fingerprint to guarantee document authenticity.

3.10.4 Electronic Marketing

The Electronic marking and identification technique can be employed to distribute electronic information over networks at the same time discouraging illegal copying. In this technique, a unique and indiscernible mark is automatically generated by the system and put on each of the document copies. The system also registers the recipient of an illegally copied document. It is difficult for an illegal user to find the unique marking pattern in the user's document. This technique can be used to protect copyright, Intellectual Property Rights and in electronic publishing where documents are printed, copied or faxed.

The concept of copyright is founded on the dual premise that authors have a right to a return on the results of their intellectual efforts. While the public has a right to benefit from the knowledge which author make available but the enactment of a copyright law in any country is just a beginning. The real task is to create awareness among people about the existence of the copyright act and its implication.

3.11 Conclusion

In the IT era, academic libraries and information centres have radically changed the information environment leading higher education institution to subscribe to electronic resources in order to meet the users expectation.

The impact of e-resources on the students, faculties and research scholars, the usage of e-resources and technology, their experience with technology and their aptitudes in identifying areas for improvement and the success of services in the Central Library, NIT, Mizoram are analyzed and the findings are drawn in the following chapter entitled "Data Analysis and Findings."

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4.1 Introduction

The purpose of this research is to make an overall study on the use of e-resources by the faculties and students of National Institute of Technology (NIT), Mizoram. The scholar has made an attempt to get the feedback of 35 faculties and 173 students along with 2 research scholars of the institute. Altogether, 210 questionnaires were circulated out of which 23 faculties, 141 students and 2 research scholars responded constituting 166 (79%) of the questionnaires circulated.

The different components included in the questionnaire for the faculties and students are:

1. Analysis by Designation
2. Gender Analysis
3. Frequency of Library Visit
4. Preference of source of information
5. Frequency of e-resources use
6. Purpose of use of e-resources
7. Preference of e-resources by the users
8. Provision of e-resources
9. Rate of satisfaction with regard to e-resources
10. Analysis by awareness approach about e-resources
11. Use of OPAC
12. Problems in accessing e-resources
13. Suggestions from the users

4.2 Data Analysis

Data collected from the respondents are analyzed and interpreted in order to present the factual findings stated below.

4.2.1 Analysis by Designation

Data regarding the questionnaire circulated and received by the scholar for the study has been discussed and analyzed in Table 4.2.1 supplemented with Graph-1.

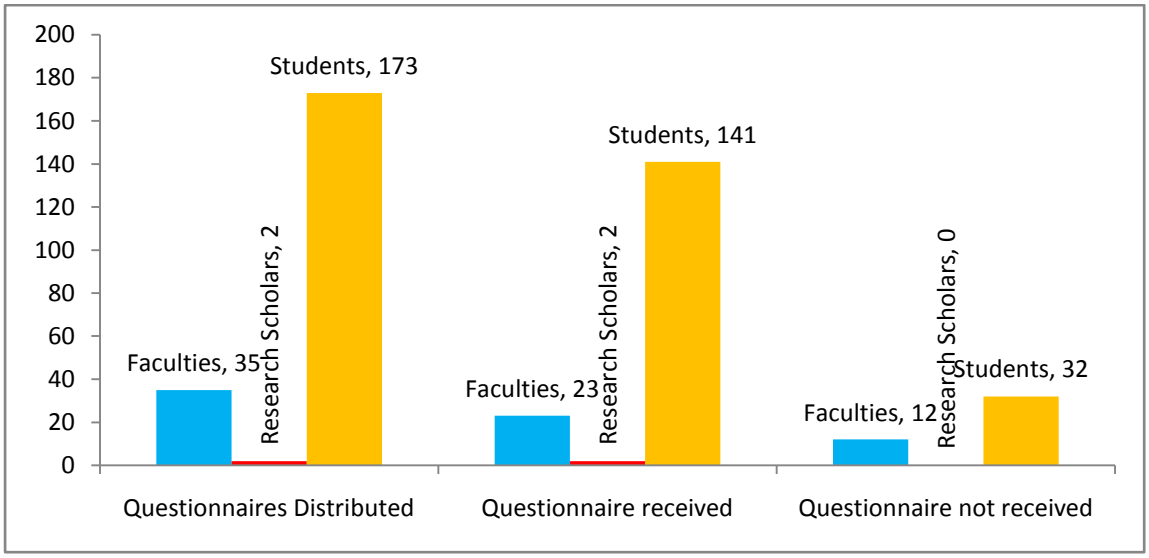
Table 4.2.1: Analysis by Designation

Sl.No.	Designation	Questionnaires Distributed	Questionnaire received	Questionnaire not received
1.	Faculties	35	23 (66%)	12 (34%)
2.	Research Scholars	2	2 (100%)	0

3.	Students	173	141 (82%)	32 (18%)
	Total	**210**	**166 (79%)**	**44 (21%)**

n= 166

Source: Questionnaire



Graph-1: Analysis by Designation

Altogether 210 questionnaires were circulated among the users of the Central Library, National Institute of Technology (NIT), Mizoram which include 35 Faculties, 2 Research Scholars and 173 students of different academic departments. Out of 210, a total number of 166 filled-in questionnaires were received constituting 79% remaining behind 44 that constitute 21%. While analyzing the above data it could be revealed that the users belonging to the category of research scholars consisting of only two individuals were found present during the data collection and responded maximum 100% followed by students and faculties which constitute 82% and 66% respectively. Apart from the responses received by the research scholar, the study clearly shows that the students gave a great emphasis with regard to the use of E-resources in the Central Library, NIT Mizoram.

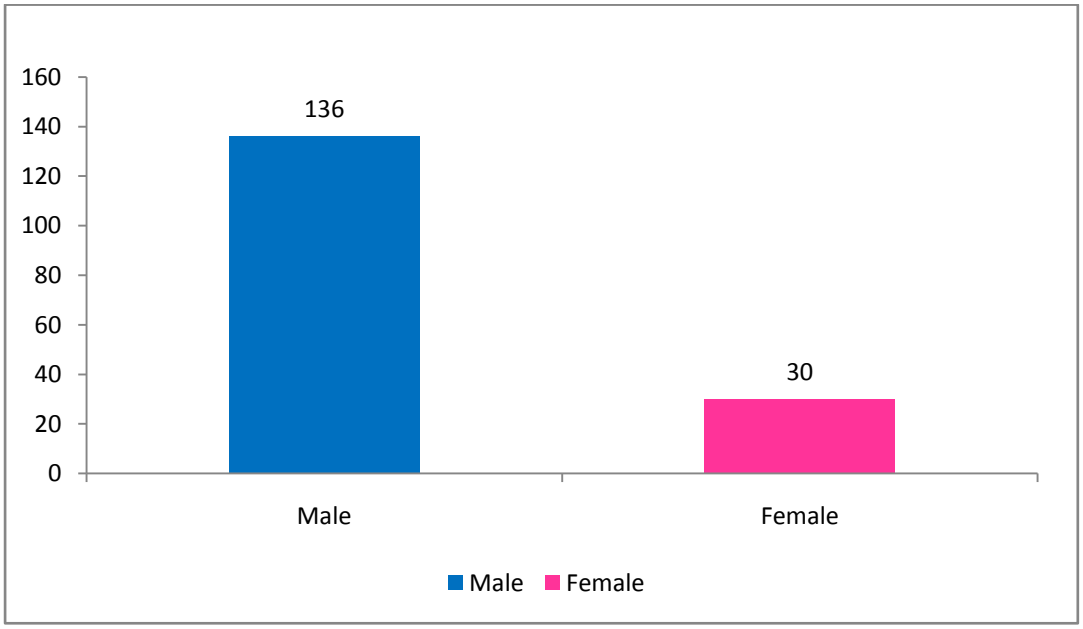
4.2.2 Gender Analysis

Gender analysis is important for knowing the interest of the students constituting both girls and boys while using the library and accessing the resources of the library. The scholar in Table 4.2.2 supported with Graph- 2 has discussed below the data relating to gender for analysis.

Table 4.2.2: Analysis by Gender

Sl. No.	Gender	No. of respondents	% of respondents
1.	Male	136	82
2.	Female	30	18
	Total	166	100

n= 166



Graph-2: Analysis by Gender

The data given in Table 4.2.2 revealed that out of 166 respondents, majority constitute male which comes to 136 (82%) while the remaining 30 (18%) consists of female respondents. This shows that the male members of the library are more prone to use the library compared to the girls which may be due to multiple factors.

4.2.3 Frequency of Library Visit

The frequency of visits to the library helps in finding out information regarding the use of library and use of library resources. Data relating to the component obtained through the questionnaire has been placed below in Table 4.2.3 followed by Graph-3 for analysis for clear understanding.

Table 4.2.3: Frequency of Library Visit

Sl.No.	Frequency	Students	Faculties	Research Scholars	Total
1.	Daily	37 (26%)	0	0	37 (22%)
2.	2-3 times a week	43 (30%)	4 (17%)	0	47 (28%)
3.	Weekly	50 (35%)	19(83%)	2 (100%)	71 (43%)
4.	Never	11 (8%)	0	0	11 (7%)
	Total	141	23	2	166

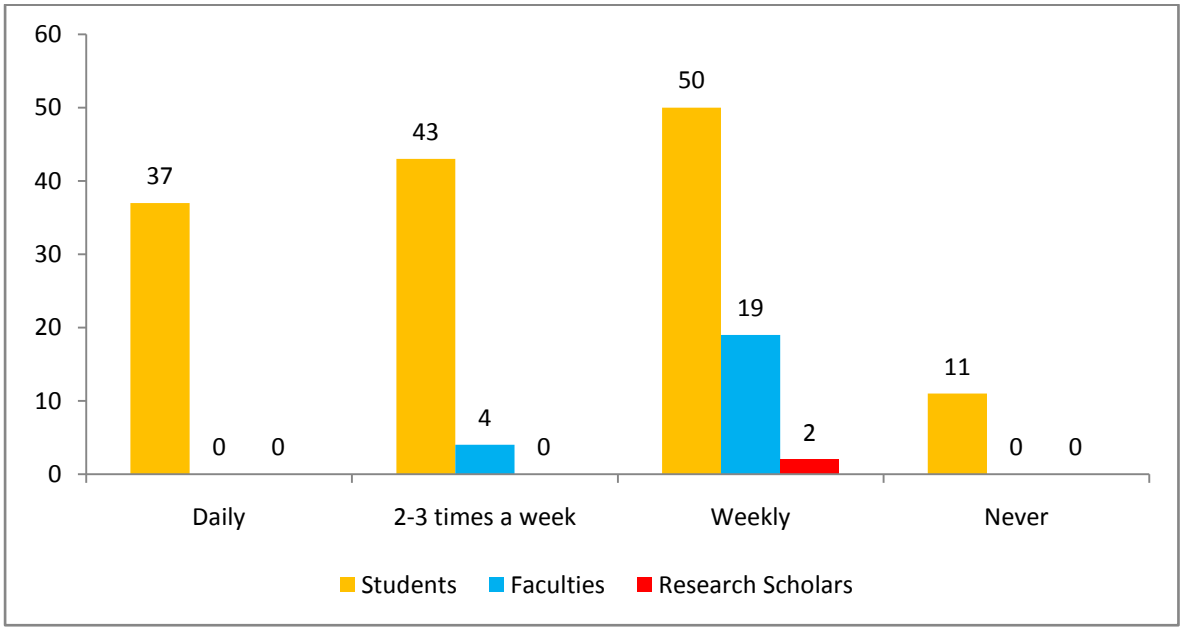
n= 166

Table 4.2.3(A): Values of Respondents

Sl.No.	Category	Mean value	Median value	Standard Deviation
1.	Students	35.25	40	17.01715
2.	Faculties	5.75	2	9.032349
3.	Research Scholars	0.5	0	1

Table 4.2.3(B): Frequency Values of Respondents

Sl.No.	Frequency	Mean Value by Frequency	Median Value by Frequency
1.	Daily	12.33333	0
2.	2-3 times a week	15.66667	4
3.	Weekly	23.66667	19
4.	Never	3.666667	0



Graph-3: Frequency of Library Visit

The frequency of library visits depends partially on the nature of library collections, services and the resources provided in the library. The data analyzed in Table 4.2.3 depicts the opinion of the users who responded to the question relating to the frequency of their Central Library visit to which maximum 50 (35%) of the students visit the library weekly followed by 43 (30%) who visit 2-3 times a week, 37 (26%) daily while, the remaining 11 (8%) of students never visit the library. However, with regard to faculties, 19(83%) visit the library weekly whereas the remaining 4 (17%) visit the Central Library 2-3 times a week and for the research scholars, 2 (100%) visit the library weekly. The study shows that majority of the students, faculties and research scholars visit the library weekly which may be due to several

reasons such as time constraint and system limitations in the library. The scholar in the study took up the liberty to calculate the mean value and median value where the students' rate comes to 35.25 and 40 followed by the rating for faculties while comes to 5.75 and 2. Likewise, while calculating the mean value by frequency and median value by frequency of library visit, the highest rate comes to 23.66667 and 19 on weekly visits, followed by the ratings for 2-3 times a week that comes to 15.66667 and 4, while 12.33333 is rated for daily visits and 3.666667 for no visits respectively.

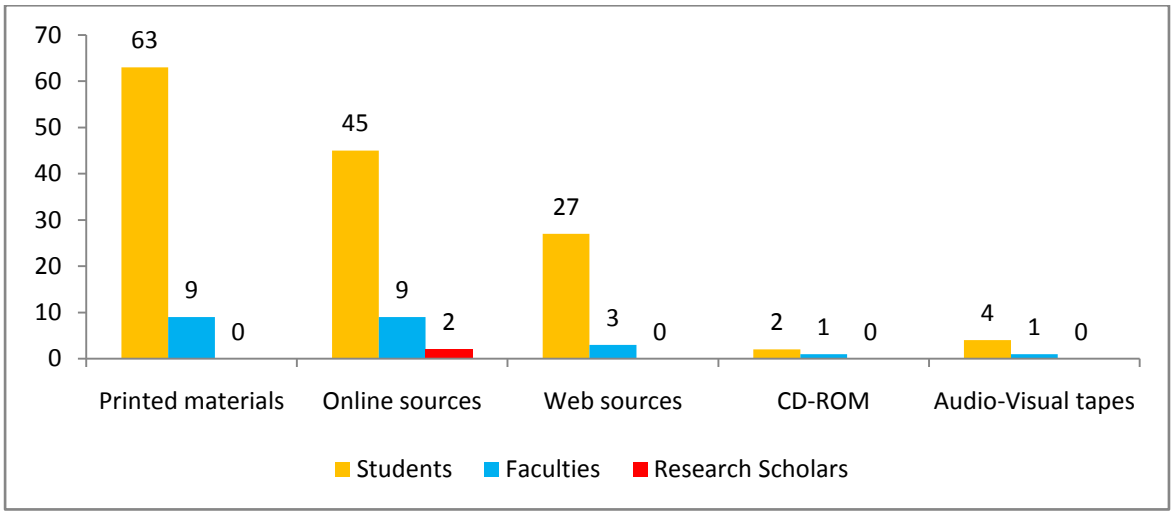
4.2.4 Preference of source of information

The users visit the library in order to acquire their information needs whether from printed documents or other e-resources in the library. The present study requires the users to indicate the different types of e-resources they prefer to use given in the questionnaire. Data relating to the component has been placed below in Table 4.2.4 for analysis and it has been supplemented with Graph- 4.

Table 4.2.4: Preference of source of information

Sl.No.	Source of information	Students	Faculties	Research Scholars	Total
1.	Printed materials	63 (45%)	9 (39%)	0	72 (43%)
2.	Online sources	45 (32%)	9 (39%)	2 (100%)	56 (34%)
3.	Web sources	27 (19%)	3 (13%)	0	30 (18%)
4.	CD-ROM	2 (1%)	1 (4%)	0	3 (2%)
5.	Audio-Visual tapes	4 (3%)	1 (4%)	0	5 (3%)
	Total	141	23	2	166

n= 166



Graph-4: Preference of source of information

The data given in the above table supplemented with Graph-4 revealed that72 (43%) number of users constituting Faculties, Students and Research Scholar prefer to use print materials followed by 56 (34%) and 30 (18%) users of the Central Library who prefer to use online sources and web sources respectively. Moreover, 5 (3%) of the users use audio-visual tapes while 3 (2%) use CD-ROM. This otherwise means that, the most preferred form of document is the print compared to other form of resources. This may be due to strategic location of the state and getting e-resources through Internet may result in difficulties due to the connectivity problem. The library is also facing equal problem to provide e-resources though it is convenient to access in today's electronic environment.

4.2.5 Frequency of e-resources use

Frequency of use of e-resources in the library helps to analyze the dependency of students, faculties and research scholars on e-resources which will determine the perceived impact of the resources on their academic efficiency. The data analyzed in Table 4.2.5 has been supported by Graph-5 to represent the frequency of use of e-resources by the users of Central Library, NIT.

Table 4.2.5: Frequency of e-resources use

Sl.No.	Frequency of E-resources use	Students	Faculties	Research Scholars	Total
1.	Daily	13 (9%)	7 (30%)	0	20 (12%)
2.	Weekly	19 (13%)	3 (13%)	2 (100%)	24 (14%)
3.	Monthly	6 (4%)	10 (43%)	0	16 (10%)
4.	Rarely	19 (13%)	3 (13%)	0	22 (13%)
5.	Never	84 (60%)	0	0	84 (51%)
	Total	141	23	2	166

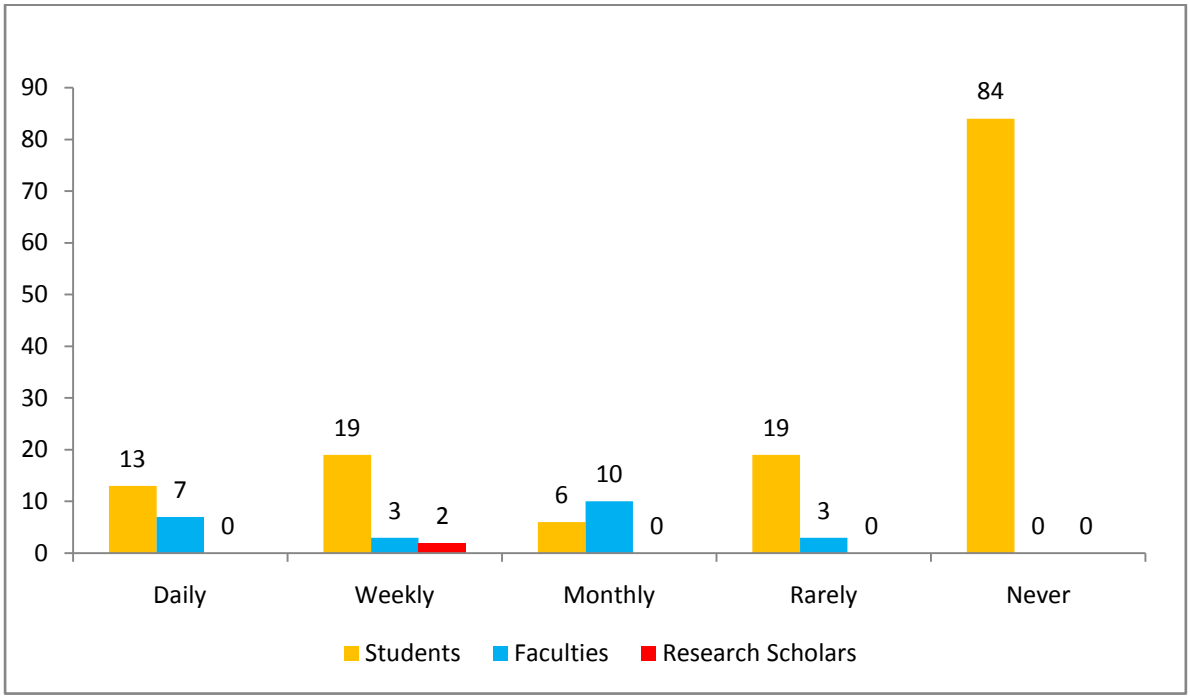
n=166

Table 4.2.5(A): Values of Respondents

Sl.No.	Category	Mean Value	Median Value	Standard Deviation
1.	Students	28.2	19	31.64964
2.	Faculties	4.6	3	3.911521
3.	Research Scholars	0.4	0	0.894427

Table 4.2.5(B): Frequency Values of Respondents

Sl.No.	Frequency	Mean Value by Frequency	Median Value by Frequency
1.	Daily	6.666667	7
2.	Weekly	8	3
3.	Monthly	5.333333	6
4.	Rarely	7.333333	3
5.	Never	28	0



Graph-5: Frequency of e-resources use

Based on the study, it is surprising to find out that majority 84 (51%) of the respondents are not using the e-resources of the library followed by total 24 (14%) who are using the e-resources weekly, 22 (13%) constitute those who rarely use the e-resources. The remaining minority 20 (12%) and 16 (10%) use the e-resources of the library daily and monthly. It is unfortunate to reveal that the total 84 (60%) students never use the e-resources of the library which may either be due to insufficient amount of resources, slow internet speed while some may also not understand the process of accessing e-resources in the library. The scholar in the study has found out the highest mean value 28.2 and median value 19belonging to the category of students, followed by the faculties that are 4.6 and 3 and the least 0.4 occupied by

research scholars. The scholar in the study calculated the mean value and median value where the students' rate comes to 28.2 and 19 followed by the rating for faculties which comes to 4.6 and 3, while the mean value rating for research scholars comes to 0.4. Subsequently, while calculating the mean value by frequency and median value by frequency of use of e-resources in the library, the highest rate comes to 28 that never use the e-resources of the library, followed by the ratings for weekly that comes to 8 and 3, while 7.333333 and 3 is rated for those that rarely use the e-resources, 6.666667 and 7 rated for daily users; and the lowest rate 5.333333 and 6 for monthly users of e-resources respectively.

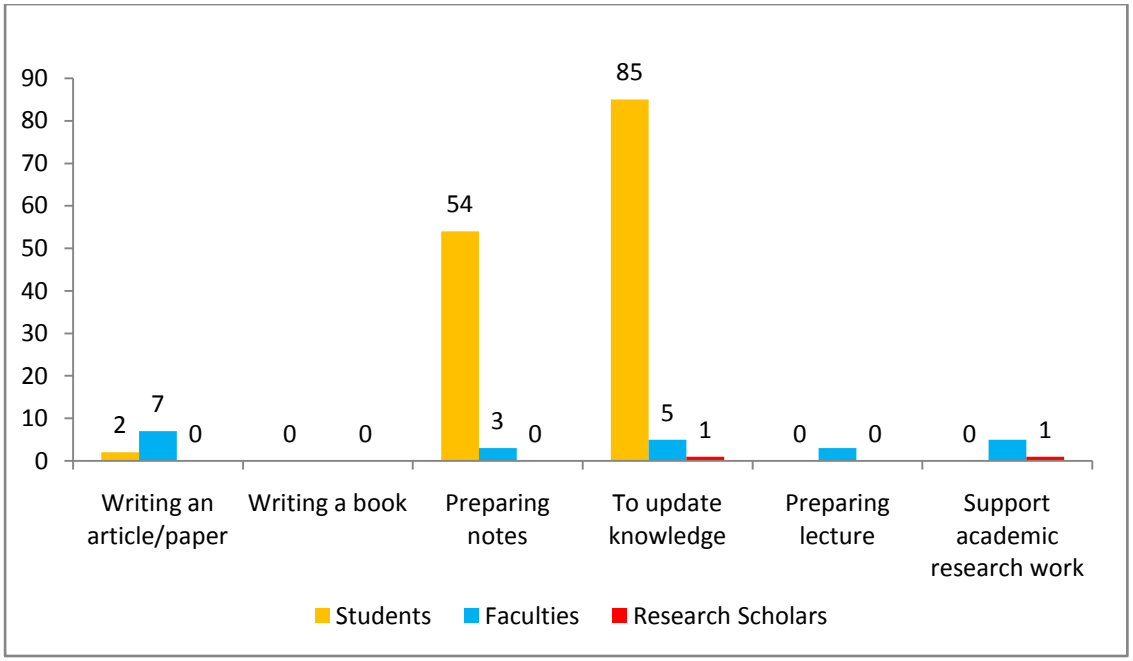
4.2.6 Purpose of use of e-resources

The respondents were asked to indicate the purpose of use of e-resources in the library which varies from one user to another. The main purpose of the use of e-resources was presented in the questionnaire circulated which formed the quantitative study indicating the core purpose of e-resources used by the users of Central Library. The data analyzed in Table 4.2.6 corroborated with Graph- 6 shows the purpose of use of e-resources by the users of the library.

Table 4.2.6: Purpose of use of e-resources

Sl.No.	Purpose	Students	Faculties	Research Scholars	Total
1.	Writing an article/paper	2 (1%)	7 (30%)	0	9 (5%)
2.	Writing a book	0	0	0	0
3.	Preparing notes	54 (38%)	3 (13%)	0	57 (34%)
4.	To update knowledge	85 (60%)	5 (22%)	1 (50%)	91 (55%)
5.	Preparing lecture	0	3 (13%)	0	3 (2%)
6.	Support academic research work	0	5 (22%)	1 (50%)	6 (4%)
	Total	141	23	2	166

n= 166



Graph-6: Purpose of use of e-resources

Data given in Table 4.2.6 revealed that the majority 91 (55%) of users constituting of students, faculties and research scholars use the e-resources of the library to update their knowledge while others use it for preparing notes that constitute 57 (34%), 9 (5%) to write their articles. Moreover, 6 (4%) users use the e-resources of the library to support their research work while 3 (2%) faculties for preparing lecture. The table also indicates that among the users community, the purpose of use of e-resources vary from category to category. Among the users, 85 (60%) students use e-resources to update knowledge ranking the first followed by 54 (38%) number of students to prepare notes. The study shows that students are keen to upgrade and enhance their knowledge and have interest in the advancement of information technology that keeps growing at high pace.

4.2.7 Preference of e-resources by the users

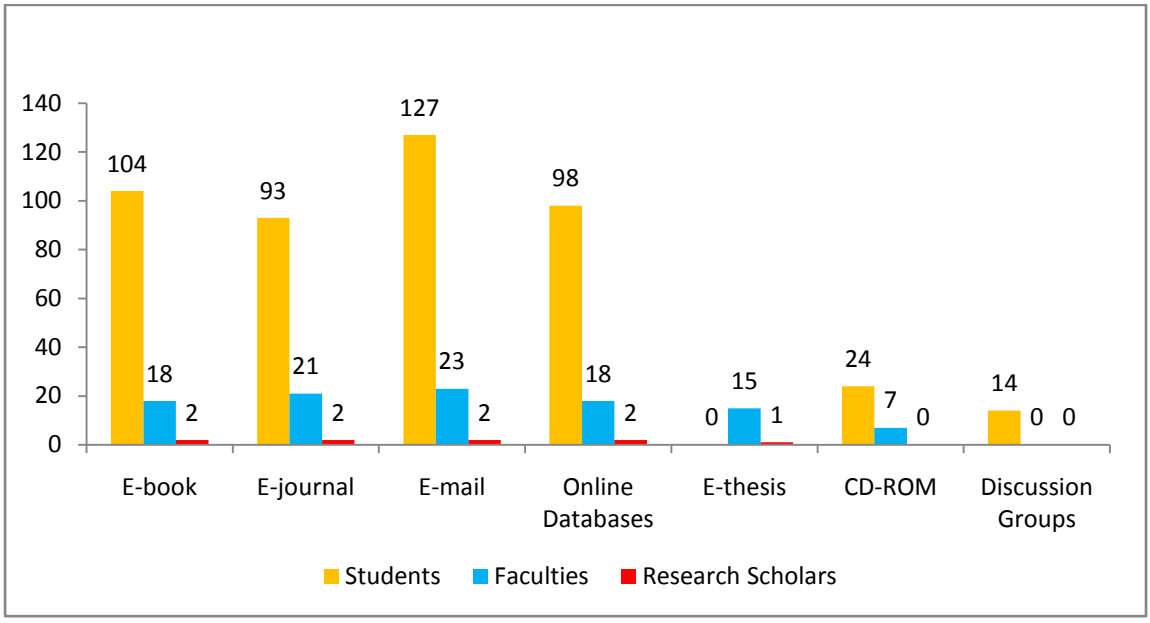
Data represented in Table 4.2.7 supplemented by Graph-7 placed below revealed the e-resources that are frequently used by the users at Central Library, NIT. In order to analyze the frequently used electronic resources available in the library, the e-resources have been classified into 10 categories as shown in Table 4.2.7.

Table 4.2.7: Preference of e-resources by the users

Sl.No.	E-resources	Students	Faculties	Research Scholars	Total
1.	E-book	104 (23%)	18 (18%)	2 (22%)	124 (22%)
2.	E-journal	93 (20%)	21 (21%)	2 (22%)	116 (20%)

3.	E-mail	127 (28%)	23 (23%)	2 (22%)	152 (27%)
4.	Online Databases	98 (21%)	18 (18%)	2 (22%)	118 (21%)
5.	E-thesis	0	15 (15%)	1 (11%)	16 (3%)
6.	CD-ROM	24 (5%)	7 (7%)	0	31 (5%)
7.	Discussion Groups	14 (3%)	0	0	14 (2%)
	Total	460	102	9	571

N=166, n=571



Graph-7: Preference of e-resources by the users

Out of 166 respondents constituting students, faculties and research scholars, majority 152 (27%) of them prefer to use their E-mail followed by 124 (22%) and 118 (21%) using E-book and Online databases; and 116 (20%) prefer to use E-journal. Moreover, 31 (5%) of the users are using CD-ROM to acquire their needs while 16 (3%) of users constituting both faculties and research scholars are using E-theses and 14 (2%) students make use of discussion groups as a platform to retrieve information. The study shows that E-mail being most preferably used by the users is inevitable since it takes only a few minutes for mail to arrive at its destination resulting in less time consumption. E-book, E-journal and Online databases play a pivotal role in the present information technology age where they provide automatic link, using hypertext to related information and can be accessed by several users simultaneously.

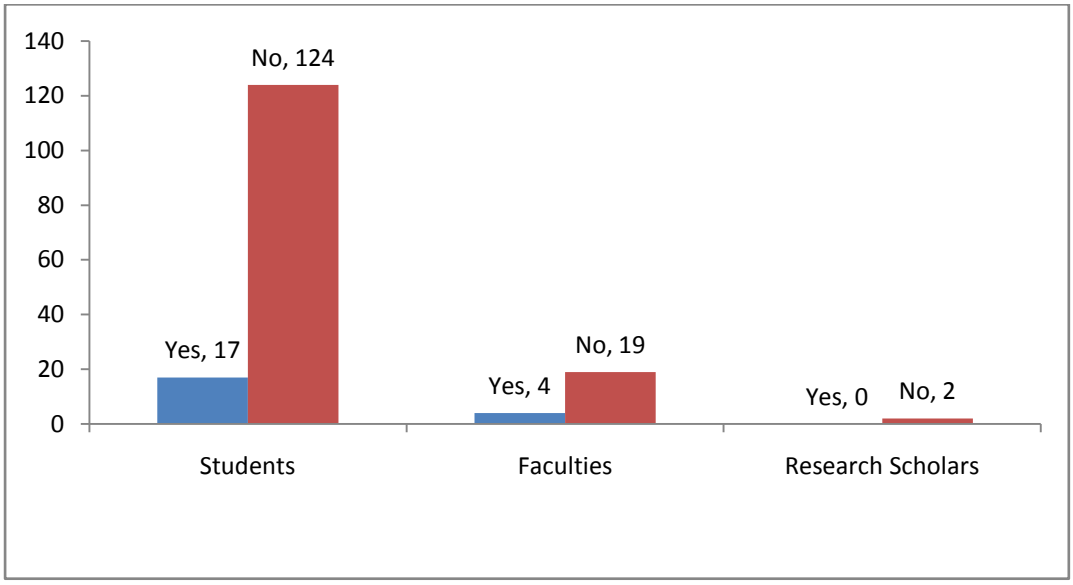
4.2.8 Provision of e-resources

Information about providing e-resources in the library was obtained by the scholar and data for the same is placed below in Table 4.2.8 corroborated with Graph-8 for analysis.

Table 4.2.8: Provision of e-resources

Sl.No.	Provision of e-resources	Students	Faculties	Research Scholars	Total
1.	Yes	17 (12%)	4 (17%)	0	20 (12%)
2.	No	124 (88%)	19 (83%)	2 (100%)	146 (88%)
	Total	141	23	2	166

n=166



Graph-8: Provision of e-resources

Even if there is constraint in providing e-resources in the library, the professionals are taking effort in many ways to satisfy the need of the users by providing e-resources. Data given in Table 4.2.8 revealed a rather surprising feedback where out of 166 respondents, 20 (12%) felt that adequate amount of e-resources are provided while 146 (88%) felt that required e-resources are not provided in the library. This shows that the institution has yet to acquire new e-resources which will have effective and efficient impact on the academic career of the students, faculties and research scholars.

4.2.9 Rate of satisfaction with regard to e-resources

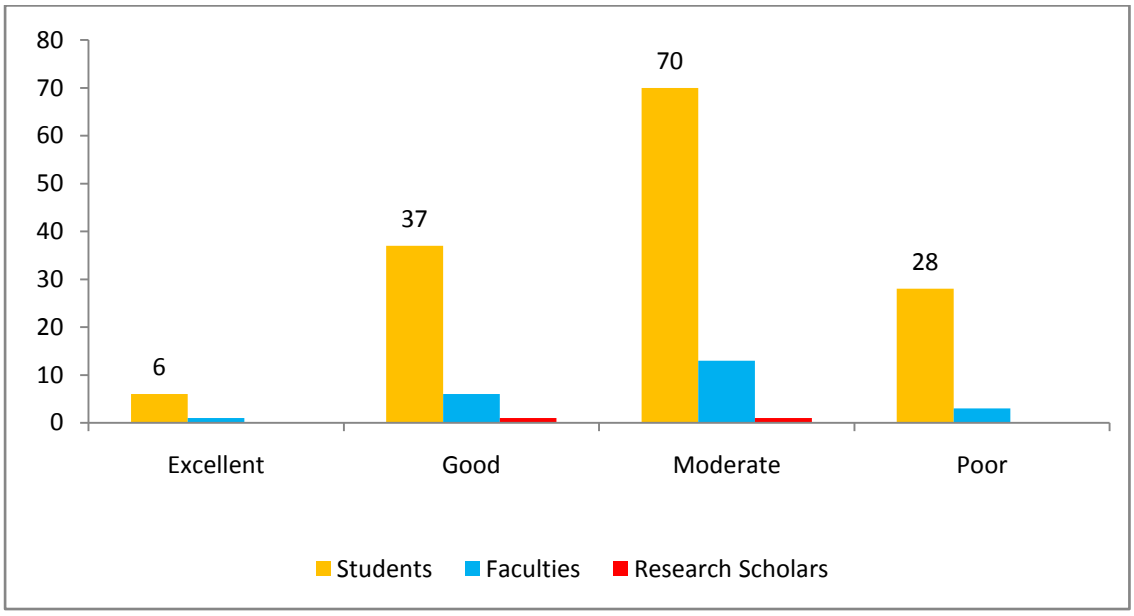
The rate of satisfaction is an important factor to measure the standard and accuracy of library services. In this study, the scholar measured the satisfaction rate

according to the scale of excellent, good, moderate and poor obtained through the questionnaire. Data given in Table 4.2.9 on analysis supported by Graph-9 shows the rate of satisfaction of the users in using the e-resources of the library.

Table 4.2.9: Rate of satisfaction of e-resources

Sl.No.	Rate	Students	Faculties	Research Scholars	Total	Mean
1.	Excellent	6 (4%)	1 (4%)	0	7 (4%)	2.333333
2.	Good	37 (27%)	6 (26%)	1 (50%)	44 (27%)	14.66667
3.	Moderate	70 (50%)	13 (57%)	1 (50%)	84 (51%)	28
4.	Poor	28 (20%)	3 (13%)	0	31 (19%)	10.33333
	Total	141	23	2	166	

n=166



Graph-9: Rate of satisfaction of e-resources

While analyzing the above data with regard to rate of satisfaction of e-resources by the users of the library under study could be found that 84 numbers of users constituting students, faculties and research scholars which comes to 51% viewed their opinion as moderate, followed by 44 (27%) who viewed good and 31 (19%) users opined poor. Likewise, while calculating the mean value, the moderate rate comes to 28 followed by the rating for good while comes to 14.66667 and 10.33333 as poor. On an average, it could be found that the library provides services where the users rate their satisfaction as moderate.

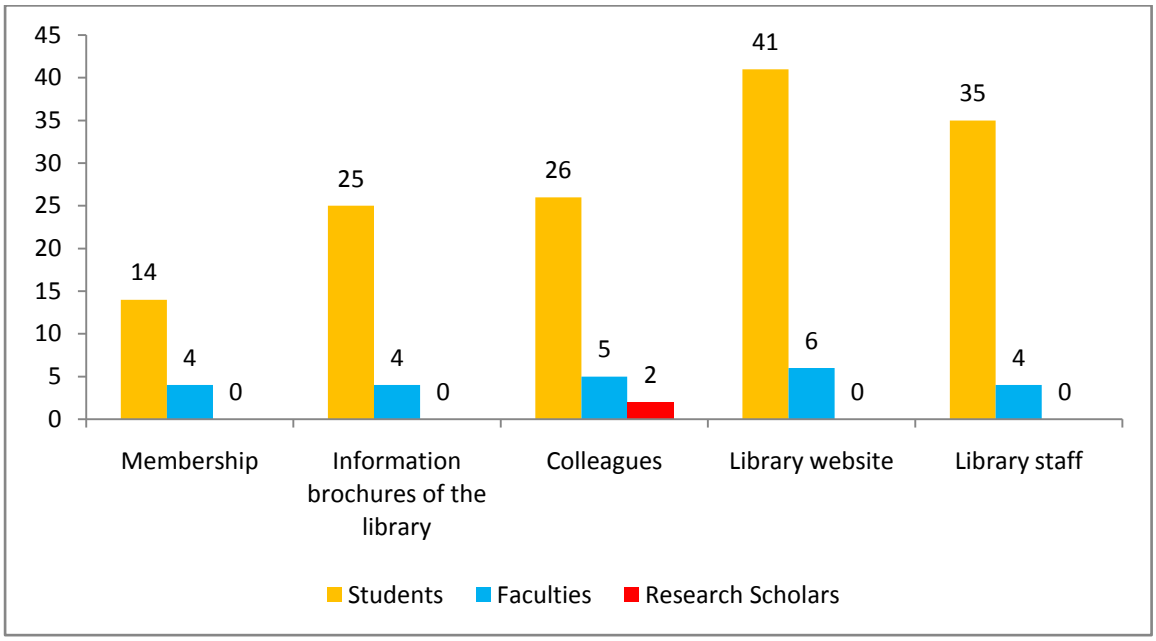
4.2.10 Awareness approach about e-resources

The scholar in Table 4.2.10 provides a question to ascertain the source for use of e-resources through 5 categories supplemented with Graph-10 for analysis.

Table 4.2.10: Awareness approach about e-resources

Sl.No.	Awareness Source	Students	Faculties	Research Scholars	Total
1.	Membership	14 (10%)	4 (17%)	0	18 (11%)
2.	Information brochures of the library	25 (18%)	4 (17%)	0	29 (17%)
3.	Colleagues	26 (18%)	5 (22%)	2 (100%)	33 (20%)
4.	Library website	41(29%)	6 (26%)	0	47 (28%)
5.	Library staff	35 (25%)	4 (17%)	0	39 (23%)
	Total	141	23	2	166

n= 166



Graph-10: Awareness approach about e-resources

The above tableindicated that among the respondents, 47 (28%) number of users noted the availability of e-resources through the library website, followed by 39 (23%) number of users who found out through the library staffs, 33 (20%) number of users through their colleagues, 29 (17%) respondents through information brochures of the library and the least i.e., 18 (11%) respondents knew about the e-resources through membership.Most of the respondents became aware of the e-resources available in the library through the concerned library website. The study also revealed the skill of the professionals of the library who use to provide the information about the availability of e-resources in the library.

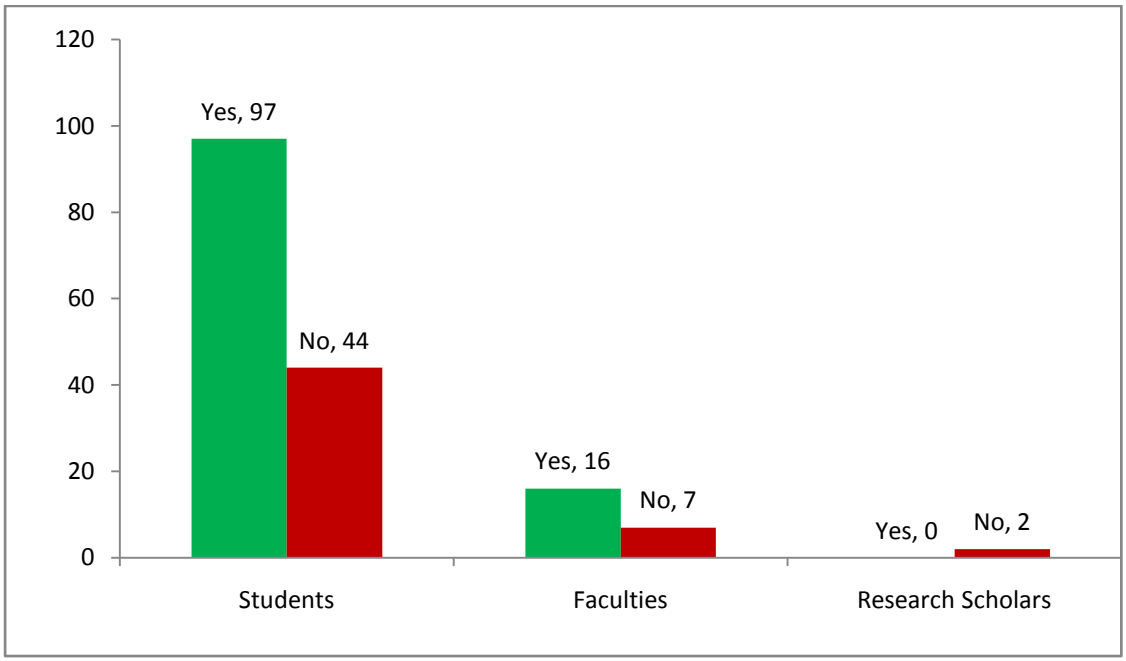
4.2.11 Use of OPAC

An OPAC allows online access of the user to search and retrieve records of any document available in the library. The Central library under study uses Libman library software where OPAC can be accessed throughout different administrative blocks of the institution. The scholar has put forth below Table 4.2.11 data relating to the use of OPAC in the library corroborated with Graph-11 for analysis.

Table 4.2.11: Use of OPAC

Sl.No.	Use of OPAC	Students	Faculties	Research Scholars	Total
1.	Yes	97 (69%)	16 (70%)	0	113 (68%)
2.	No	44 (31%)	7(30%)	2 (100%)	53 (32%)
	Total	141	23	2	166

n= 166



Graph-11: Use of OPAC

According to the data analyzed in Table 4.2.11, it could be revealed that out of 166 respondents, 113 (68%) are using the OPAC service of the library to find out their information needs and whether it is available in the premises or not followed by 53 (32%) users that are not accessing the library software due to many reasons such as lack of computer skills, technical issues and search techniques. Analysis further revealed that majority 97 (69%) constituting students use OPAC followed by 16 (70%) of faculties. This inevitably shows that among all the users, students have the competency to use the computers in the library as a medium for retrieving their source of information.

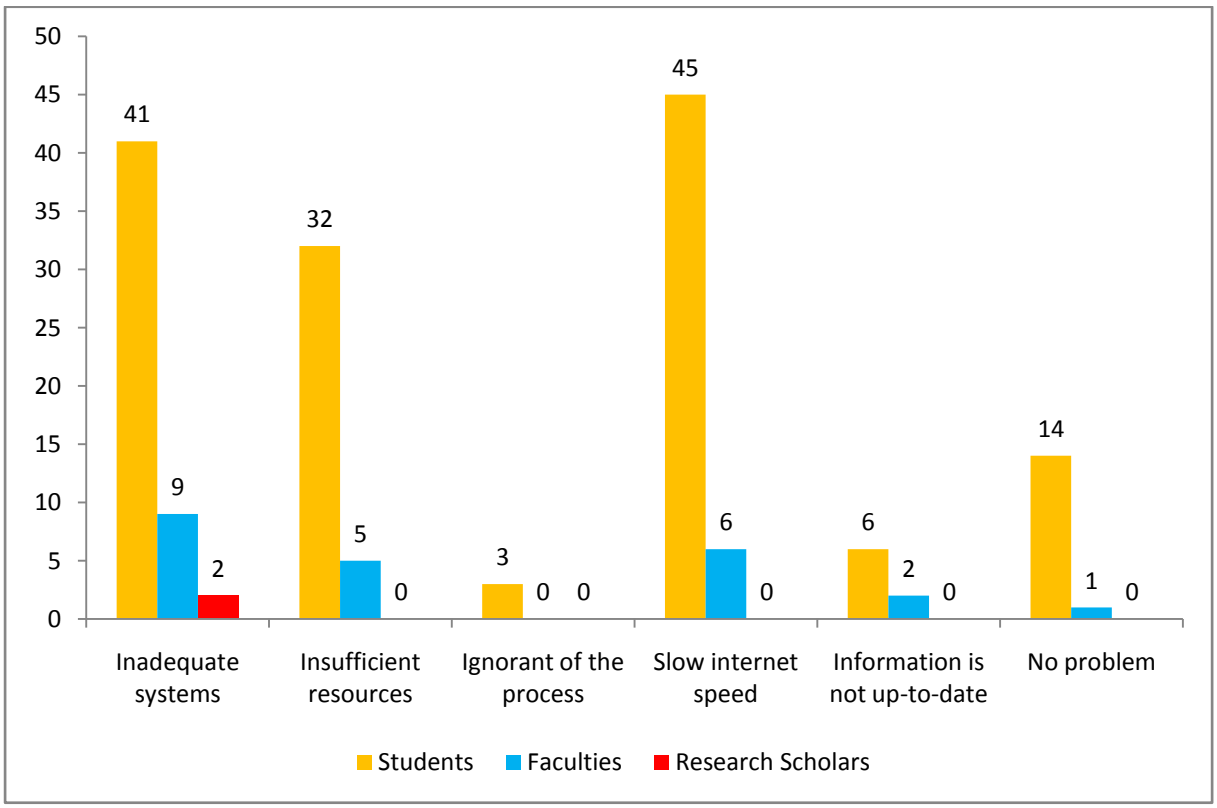
4.2.12 Problems in accessing e-resources

The study is designed to find out the main problems encountered by the users while accessing the e-resources in the library. In order to minimise the problems faced by the users of the library, the problems are categorised into 5 different categories as shown in Table 4.2.12 for analysis supplemented by Graph-12.

Table 4.2.12: Problems in accessing e-resources

Sl.No.	Problems	Students	Faculties	Research Scholars	Total
1.	Inadequate systems	41 (29%)	9 (39%)	2 (100%)	52 (31%)
2.	Insufficient resources	32 (23%)	5 (22%)	0	37 (22%)
3.	Ignorant of the process	3 (2%)	0	0	3 (2%)
4.	Slow internet speed	45 (32%)	6 (26%)	0	51 (31%)
5.	Information is not up-to-date	6 (4%)	2 (9%)	0	8 (5%)
6.	No problem	14 (10%)	1 (4%)	0	15 (9%)
	Total	141	23	2	166

n= 166



Graph-12: Problems in accessing e-resources

The scholar obtained the view of the users through Yes or No in the questionnaire while accessing internet. From the above Table4.2.12 it can be identified that 52 (31%) respondents have issues regarding the limited availability of computer systems in the library followed by 51 (31%) and 37 (22%) complaining about slow internet speed and insufficient resources while 8 (5%) of them feel that the information is not up-to-date. Moreover, it could be observed that 3 (2%) are ignorant of the process. This shows that the users need to be more technically oriented for using the internet along with other software i.e., the newly developed e-resources of the Central Library. There is a requirementof the execution of more orientations and training programmes as the information age today is becoming more innovative and developed. As witnessed in this particular study, the library needs more systems to acquaint the users for more access of e-resources in the library and most importantly need to come up with a solution involving the upgrade of the bandwidth for quick and speedy access of information in the Central Library, NIT.

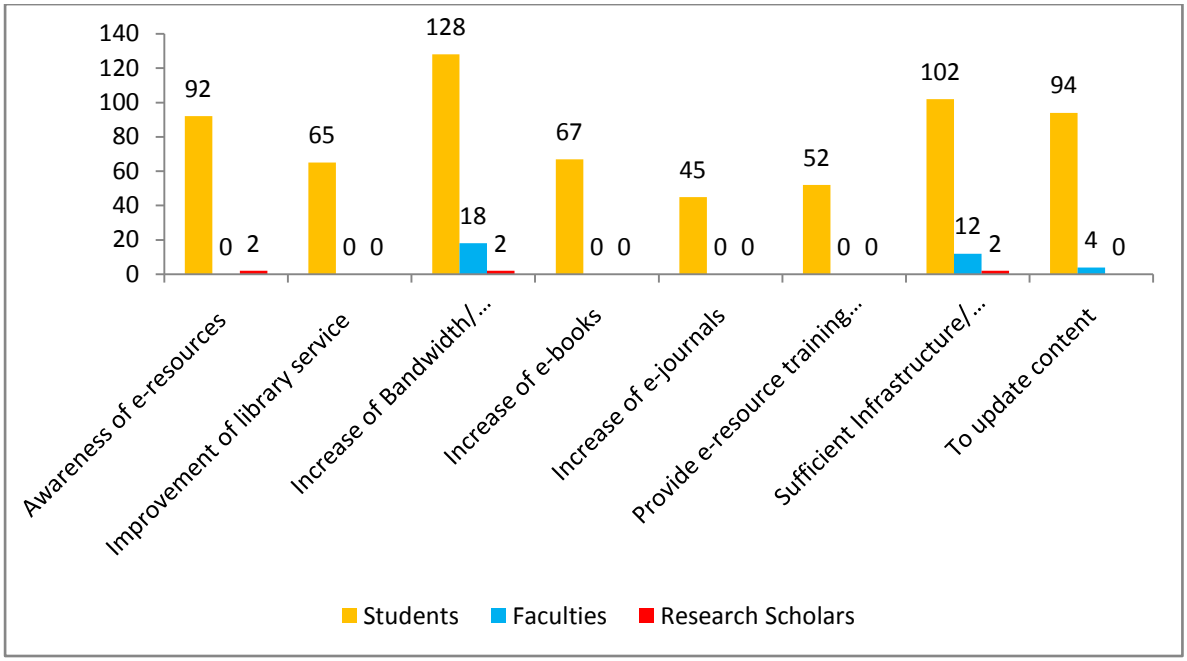
4.2.13 Suggestions from the users

The scholar obtained suggestions from the respondents for the development of e-resources and improvement of library services in the Central Library NIT, Mizoram which has been tabulated in Table 4.2.13 corroborated with Graph- 13 for analysis. The suggestions obtained from the respondents have been grouped under headings as shown in Table 4.2.13 respectively.

Table 4.2.13: Suggestions from the users

Sl.No.	Suggestions	Students	Faculties	Research Scholars	Total
1.	Awareness of e-resources	92 (14%)	0	2 (33%)	94 (14%)
2.	Improvement of library service	65 (10%)	0	0	65 (9%)
3.	Increase of Bandwidth/ Internet Speed	128 (20%)	18 (53%)	2 (33%)	148 (22%)
4.	Increase of e-books	67 (10%)	0	0	67 (10%)
5.	Increase of e-journals	45 (7%)	0	0	45 (7%)
6.	Provide e-resource training programs	52 (8%)	0	0	52 (8%)
7.	Sufficient Infrastructure/ Systems	102 (16%)	12 (35%)	2 (33%)	116 (17%)
8.	To update content	94 (15%)	4 (12%)	0	98 (14%)
	Total	645	34	6	685

N= 166, n=685



Graph-13: Suggestions from the users

The total number of users i.e.148 (22%) constituting students, faculties and research scholars opt for increase in bandwidth followed by 116 (17%) users who viewed for increase in computer systems in the library, 98 (14%) number of users lay emphasis towards updating the content of the resources while 94 (14%) of respondents opined for awareness of e-resources in the library. The other respondents, however, have emphasized for increase in the number of e-books constituting 67 (10%) of the users whereas 65 (9%) opted for improvement of library services. Other suggestions by the respondents include imparting e-resource training programs and increase in the number of e-journals in the Central Library. The data analyzed in Table 4.2.13 represents the fact that internet connectivity/ bandwidth has to be speeded up in order for the users to have quick and on the spot access of resources in the library. Space limitation for printed materials and insufficient amount of systems seems to be an inevitable problem for the users based on analysis provided by the scholar. This clearly indicates that the users are keen towards the use of e-resources in the library.

4.3 Findings

After analyzing the questionnaires placed in the NIT, Mizoram with the help of tables to represent them, the scholar has come up with the following findings:

1. A total number of 210questionnaires werecirculated constituting amajority of the responses received i.e., 2 (100%) belonging to research scholars, seconded by the

students at 141 (82%) and third by 23 (66%) of faculties which rounds up to 166 (79%) total respondents. This shows that students are interested to use the e-resources in the library.

2. The frequency of library visit is weekly among all types of users which may be due to time constraint and system limitation in the library.
3. The users of the NIT Library preferred print document over other forms of resources available in the library.
4. Majority of the users constituting 84 (60%) of students never use the e-resources provided by the library. This may be partially due to slow internet connectivity and inadequate computer systems in the library.
5. Users make use of the e-resources in the library as a means of updating their knowledge and for preparing notes.
6. 127 (28%) of students, 23 (23%) of faculties and 2 (22%) of research scholars use e-mail and constitute the first, second and third rank respectively. E-mail is preferably used by the respondents since it is proven to be most convenient with less time consumption.
7. 20 (12%) of the users feel that the amount of e-resources provided in the library as sufficient while 146 (88%) feel that the adequate amount of e-resources are not provided by the library. The library has to take measures regarding the provision of e-resources to acquaint the students with the latest trends in technology.
8. Considering the rate of satisfaction of the use of e-resources, it has been discovered that majority of respondents constituting 84 (51%) expressed their views as moderate.
9. The study indicated that most of the users are aware of the e-resources available in the library through the concerned library website which reveals the activeness, competencies and efficiency of the library professionals in providing the required information about the availability of e-resources in the library.
10. OPAC being the gateway to library's collection has been used by students in the library as a medium for information retrieval.
11. The users need to be more of a technical literate for accessing the internet along with other newly developed e-resources further recommending orientation and training programs in the library.
12. Total number of users 148 (22%) constituting students, faculties and research scholars have suggested to increase the bandwidth and download speed of the

internet; 116 (17%) opined for increasing the number of computer systems and space limitations in the library followed by 98 (14%) and 94 (14%) number of users requesting for more updated content of materials and to publicize the availability of e-resources in the library. The study shows that the internet connectivity of the library has to be faster so that the users can have maximum access to the resources and retrieve their information needs at a higher speed in the most limited time for most effective and efficient use.

5.1 Conclusion

The National Institutes of Technology (NITs), the autonomous instituteshappen to be a group of premier engineering institutions publicly available in India for providing engineering and technical educations irrespective of the subjects to contribute factors for national building. Referred to as Regional Engineering Colleges (RECs) previously, the institutes were being administered by the respective State Governments. Now, RECs were turned to NITs since 2007 which contribute promoting regional diversity and multi-cultural understanding in India.

Committed to deep and broad-base involvement with society, all NITs including NIT, Mizoram find resonance with the needs and aspirations of the people. The centre of excellence in engineering and technical education, the NITs act as the forefront of bridging the digital divide, income asymmetries and rural-urban differentiation in the country, especially, in view of the 'Make in India' and the 'Digital India' initiatives unveiled by the Government and act as the connecting force between rural innovations, local employment and world class manufacturing.

These premiere institutes contribute immensely to research and innovation which emerged as front runners in imparting quality education in the field of scientific and technical education in India. The sustainable economic growth and education progress in NITs share a symbiotic relationship.

Discussing about the library of NIT, Mizoram, it acts as a centre of interaction of ideas for sustainable growth and development of education, research and the state as a whole in the field of science, technology, economy. It acts as a dynamic knowledge centrecommitted to develop the society by providing resources to the patrons.

It goes without saying that, Information and Communication Technology opened new multiple vistas for the library to conglomerate intellectual wealth both in tacit and explicit form so as to extend wide range of services to the patrons. This also has become imminent on the part of the NIT library under study due to growth of literature and awareness among the users. Adaptability of Information Technology in Libraries altered the complexion of present library scenario. NIT Library, Mizoram has no longer been regarded as a store house of knowledge but became an effective platform to disseminate information in electronicform.

With the development of automation and computing and a knowledge society, it evolved to become information generator and provider as well rather than an

informationaccumulator. Added to this, the Internet technology added new and admirable features for the libraryto provide electronic information to the users. World Wide Web (WWW) and emersion of elevatedweb browsers have provided viable platform for interface between the system and the user's forretrieving mammoth data irrespective of the subjects. This not only added value for theusers for teaching, learning and research but also substantially incorporated sufficient input incollection development with regard to e-resources in the library and its management through databasefor retrieval and preservation The library is still in the process of development of e-collections is to maintain the ability for storage, retrieve and use information in the face of rapidly changing technological and organizationalinfrastructures.

E-resources have become imminent in the present environment in NIT Library as electronic resources are gaining momentum among the faculties, and thestudents as well. The e-resources are having equal importance in the collection development inlibraries due to its update; instant, wide coverage etc. and prosperous collection of e-resources regardless of media reflect the academic prioritiesin the technical education levelresulting to a high productive value in teaching and research. From the aforesaid discussions on various aspects of library services provided by NIT Mizoram, it is progressing well and venturing to new ideas, innovations for better and effective services in spite of lack of manpower, inadequate budget, absence of a permanent building etc. The library, however, is making all efforts to the development of education and research.

5.2Suggestions

Based on the feedback received from the respondents through the analysis of the data obtained from questionnaires and interview, the researcher developed suggestions for the improvement regarding the use of e-resources by faculties and students of NIT, Mizoram. The suggestions incorporated are listed below:

1. **Physical Resources/ Infrastructure**

The NIT Central Library is still functioning in a rented building which leads to inadequate space. Inadequate space in turn leads to system limitation which is a bane for the users of the library. Adequate space should be provided for the library so that more systems can be set up.

Physical connectivity to the library from the NIT is another unavoidable constraint for the usersdue to the location of the library which is far off from the main building and

hence, users are unable to make use of their leisure time. So, the library should be located in the premises of the main building so that the time of the users can be saved. However, with the ongoing construction of the NIT's permanent building at Lengpui, this issue will be resolved within a period of time.

2. Human Resources

Lack of professional manpower is another way of causing impediment in getting the documents processed causing thereby suffering to the users.There should be sufficient number of qualified professional staff working in the library so that users can be provided prompt and efficient services.

3. Information Resources/ Collections

The Central Library should procure more electronic resources for use by the faculties, researchers and the students. A comprehensive collection development policy of e-resources may be framed and maintained by the libraries under study in order to follow a set of standard practices for acquisition and management of electronic information resources. The library should procure adequate resources both print and electronic to support their learning and research; and also subscribe to national and international database which will strengthen the work of the faculties and students particularly in the area of research.

NIT, being an Institute of National Importance and an engineering institute, must be a member of certain consortium such as INDEST-AICTE Consortium in order to acquaint the students, research scholars and faculties to the latest trends emerging in the field of science and technology.

4.Services

Installation of RFID technology in the library should be completed as early as possible so that efficient services can be provided with the help of technology and along with it, the library should provide mobile OPAC for assisting the users in locating the content of the Central Library.

High speed internet connectivity is a must in the age of ICT. Hence, it is the duty of the librarian to take necessary actions in providing the users with high speed internet connectivity.

Information literacy programme /Orientation programme must be mandatory for the new users in every semester to create awareness among the users about the collections and services of the library. On the contrary, with busy schedules, there are time constraints on the part of the users to visit the library daily. To minimise this issue,

there should be radical changes in the working hours of the library implying that the library should be open on all days including weekends so that users can have access to the resources available and be benefitted from it.

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Appendix – 1

National Institute of Technology

Questionnaire for Faculties, Students and Research Scholars on the topic

Use of E-resources by Faculties and Students of National Institute of Technology (NIT), Mizoram: A Study

1.Name of the respondent: _____

E-mail address: _____

2.Category to which you belong:

Student ☐
Faculty ☐
Research Scholar ☐
Others ☐

3.Sex:

Male ☐
Female ☐

4. Name of the Department: _____

5.Do you visit the library? Yes ☐ No ☐

If yes, frequency of visit to the library

Daily ☐
2-3 times a week ☐
Weekly ☐
Never ☐

6. Which information sources you prefer to use?

Printed material ☐ CD-ROM ☐
Online sources ☐ Audio/Video Tapes ☐
Web sources ☐ Others (please specify) _____

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

If yes, how often do you use the e-resources?

Daily ☐ Monthly ☐
Weekly ☐ Rarely ☐
Never ☐

8. Purpose of using the e-resources:

Writing an article/paper ☐ To update knowledge ☐
Writing a book ☐ Preparing lecture ☐
Preparing notes ☐ Supporting academic research work ☐
Others (please specify) _____

9.Type of e-resources frequently used

E-book ☐ E-journals ☐ E-mail ☐ ☐
E-thesis ☐ Discussion groups ☐ Online databases ☐ CD-ROM Databases ☐ Others ☐
_____ ☐

10. Is the library providing the required e-information?

Yes ☐ No ☐

11.Are you satisfied by the library e-resource services?

Yes ☐ No ☐

12. How do you rate your satisfaction?

Excellent ☐ Moderate ☐

Good ☐ Poor ☐

13.What is your awareness approach about e-resources?

Membership ☐ Library website ☐

Information brochures of library ☐ Library staff ☐

Colleagues ☐ Other Sources _____

14.Are you using the OPAC? Yes ☐ No ☐

If yes, what is your OPAC access point?

Through the library ☐ Through the department computer ☐

Through internet ☐ Others (please specify)_____

15.Do you face any problem while accessing the e-resources? Yes ☐ No ☐

If yes, what are those problems?

Inadequate systems ☐ Slow Internet speed ☐

Insufficient Resources ☐ Information is not up-to-date ☐

Ignorant of the process ☐ No Problem ☐

Others (please specify) _____

16.Please give suggestions for the development of e-resources services in the library and increase its efficiency.

_____

_____

Date: Signature of the Respondent

ABSTRACT ON

USE OF E-RESOURCES BY FACULTIES AND STUDENTS OF NATIONAL INSTITUTE OF TECHNOLOGY (NIT) MIZORAM: A STUDY

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

Submitted by
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2016

The Dissertation entitled **"Use of E-Resources by Faculties and Students of National Institute of Technology (NIT) Mizoram: A Study"** covers the following chapters.

Chapter 1:

1. Introduction

Information Technology has brought revolutionary changes in the functions of libraries which include variety of applications in libraries. It helps libraries in creating database for collections and making them available for easy access to users inside and outside the libraries through networks. Because of this feature, Information Communication Technology (ICT) is enabling the libraries to provide the most efficient and specialized information services on information pertaining to literature. ICT establishes an efficient information support and an effective communication system in the organisation of libraries. Electronic resources play a very important role in academic library management in the age of digital technology.

E-resources provide access to substantial portion of world's literature expeditiously, exhaustively, efficiently, pin-pointedly, up-to-date and authentically at a simple touch of a button. With the introduction of e-resources, it has exposed the learners to much more resources of information and has become an invaluable resource of current information. E-resources are very common in academic libraries but their maximum use and management is a matter of concern today.

The world of digital information is interwoven by communication technology in the present frame of time. Library, being a responsible organization of social memory and processing contributes as a carrier of knowledge and thus establish a powerful communication link between knowledge generators, knowledge utilizers and knowledge evaluators. The role and responsibilities of libraries are also changing because of the proliferations in digital forms of information resources and support sophisticated information and communication technology and its extensive use by the community. These drive enforced library and information professionals to keep pace by re-shaping the storage and dissemination of information and knowledge.

2. Significance and Scope of the Study

The study assumes great importance in the current electronic environment for effective and efficient teaching, learning and research. The institution is expected to

make use of the electronic resources for both teaching and learning by the NIT academic fraternity.

The scope of the study is exclusively confined to NIT, Mizoram and no other central institutes are covered under the purview of the study. The present study further covers the students including research scholars and the faculties of NIT, Mizoram is concentrated on the evaluation of the use of electronic resources in terms of use and user satisfaction in the esteem institution. Being aware of the necessity and inevitability of the use of e-resources in technological institutes, the scholar is keen on working on the study and has been motivated to undertake this particular research problem. The strength of the teachers and the students (as on March, 2016) has been shown in Table 1.2.

Table 1.2: Name of the Department with Faculties and Students

Sl.No.	Name of the Department	Total No. Of Faculties	Total No. of Students
1.	Computer Science & Engineering	7	63
2.	Electrical and Electronics Engineering	8	59
3.	Electronics and Communication Engineering	7	64
4.	Mechanical Engineering	5	59
5.	Civil Engineering	1	46
6.	Humanities and Social Sciences	7	0
	Total	**35**	**291**

Source: Central Library, NIT

3. Review of Literature

Considerable amount of literature are available in the area under study. The scholar made an extensive survey of literature available in the concerned field so as to get abreast with the information. The scholar has taken a thorough review of published literature out of which 25 review of literature has been included.

4. Research Gap

On the analysis of the above literature review, it has been observed that there are sufficient numbers of research conducted on E- Resources in various fields. But no other studies have been conducted on the use of e-resources by faculties and students of National Institute of Technology in Mizoram in particular. This research gap motivated the scholar to undertake the area of study.

5. Statement of the problem

The present research attempts to find out the use of e-resources available in the Central Library, NIT by the user community. This facilitated the researcher to find out the relevance and length of the e-resource services provided by Central Library, NIT as well as the Librarian to compare usage statistics from different vendors, make better decisions and plans for sound infrastructure. Considering the fact that, it is time for the information professionals to study the different key dimensions of e-resources and to successfully channelize them into the inquisitive minds of users by identifying and addressing some of the issues relating to the use of e-resources, the scholar was motivated to take up this research problem.

6. Objectives of the study

The objectives of the present research problem are to:

1) Ascertain the types of e-resources available in the Central Library NIT, Mizoram.
2) Find out the usage of e-resources by the faculties and the students.
3) Identify the problems encountered while accessing e-resources.
4) Suggest mechanism to make use of e-resources.

7. Research Methodology

i.) Data Sources

The study is based on primary and secondary sources. Primary sources provide foundation for this particular study. The primary data is collected through structured questionnaires distributed among the faculties and students including research scholars of NIT Mizoram (Appendix 1). Out of 35 faculties and 291 students and 2 research scholars which comes to a total of 328, a sample size of 210 (64%) was selected. Out of 210 (64%) a total of 166 (79%) responded to the questionnaire. Care was taken to cover the respondents from all subject areas.

The scholar during the study interacted in person with the Librarian of the Central Library of the institution to find out the extent of use of e-resources by the academic fraternity and technological barriers faced by them along with possible solutions to overcome them.

Secondary data has been collected from Annual report of NIT, articles from different journals, books and from internet sources.

ii.) Data Analysis and Interpretation

The analysis and interpretation was based on the feedback from the faculties, students including research scholars and the librarian of the Central Library, NIT Mizoram through structured questionnaires distributed among 175 students including research scholars and 35 faculties. The primary data collected were analyzed and interpreted with the help of Microsoft Excel Software. Simple analysis tools such as mean scores, median scores and standard deviation were used so as to derive appropriate statistical measures and findings.

iii.) Limitations of the Study

The study relies principally on primary data, where the questionnaire is designed to obtain relevant and updated data on the use of e-resources by the faculties and students of NIT Mizoram and depends on the authenticity of responses received from the questions presented before them. Generally, there is a risk of getting different answers from the same individual when ask queries regarding their extent of use of e-resources in the NIT Central Library. The primary data acquired from this particular study may not be free from the risk of manipulation and therefore, making it possible to receive a biased views which may crop up from the effect of the present external environmental factors or the mood of the respondents.

The scholar also referred to the Annual report of NIT Mizoram and several other books and articles from journals and online sources which constitute the secondary data. The accuracy of the data depends on the truthfulness of the information presented in these data collected.

Chapter 2: National Institutes of Technology (NITs) in India with Special Reference to Mizoram

17 Regional Engineering Colleges (RECs) were established from 1959-1987 onwards in the states namely Warangal, Calicut, Durgapur, Kurukshetra, Jamshedpur, Jaipur, Nagpur, Rourkela, Srinagar, Surathkal, Surat, Trichy, Bhopal, Allahabad, Silchar and added two others located at Hamirpur and Jalandhar. In 2002, MHRD decided to upgrade all the RECs to "National Institutes of Technology" (NITs).

The current 31 NITs in India with their year of establishment are shown in Table 2.2 where the NITs in North East India are highlighted. The rankings of 31 NITs are also shown in Table 2.3.

Table 2.2: National Institutes of Technology (NITs) in India

Sl.No.	Year of Establishment	Institute	Place
1.	1886	NIT	Patna
2.	1956	NIT	Raipur
3.	1959	NIT	Warangal
4.	1960	NIT	Bhopal
5.	1960	NIT	Jamshedpur
6.	1960	NIT	Nagpur
7.	1960	NIT	Surathkal
8.	1960	NIT	Durgapur
9.	1960	NIT	Srinagar
10.	1961	NIT	Allahabad
11.	1961	NIT	Calicut
12.	1961	NIT	Rourkela
13.	1961	NIT	Surat
14.	1963	NIT	Kurukshetra
15.	1963	NIT	Jaipur
16.	1964	NIT	Trichy
17.	1965	NIT	**Agartala**
18.	1967	NIT	**Silchar**
19.	1986	NIT	Hamirpur
20.	1987	NIT	Jalandhar
21.	2010	NIT	Delhi
22.	2010	NIT	Goa
23.	2010	NIT	Pondicherry
24.	2010	NIT	**Manipur**
25.	2010	NIT	**Meghalaya**
26.	2010	NIT	**Mizoram**
27.	2010	NIT	**Nagaland**
28.	2010	NIT	**Sikkim**
29.	2010	NIT	Uttarakhand
30.	2010	NIT	**Arunachal Pradesh**
31.	2010	NIT	Andhra Pradesh

Source: MHRD

Table 2.3: Ranking of NITs

Sl.No.	Year of Establishment	Institute	Place	Edu-Rand Rankings (2015)	NIRF (2016)
1.	1886	NIT	Patna	57^{th}	87
2.	1956	NIT	Raipur	61^{st}	63

3.	1959	NIT	Warangal	-	28
4.	1960	NIT	Bhopal	25th	-
5.	1960	NIT	Jamshedpur	34th	78
6.	1960	NIT	Nagpur	14th	18
7.	1960	NIT	Surathkal	-	-
8.	1960	NIT	Durgapur	-	30
9.	1960	NIT	Srinagar	-	67
10.	1961	NIT	Allahabad	9th	23
11.	1961	NIT	Calicut	35th	35
12.	1961	NIT	Rourkela	21st	19
13.	1961	NIT	Surat	-	15
14.	1963	NIT	Kurukshetra	32nd	48
15.	1963	NIT	Jaipur	20th	37
16.	1964	NIT	Trichy	-	12
17.	1965	NIT	Agartala	-	52
18.	1967	NIT	Silchar		65
19.	1986	NIT	Hamirpur	30th	51
20.	1987	NIT	Jalandhar	42nd	42
21.	2010	NIT	Delhi	-	92
22.	2010	NIT	Goa	-	76
23.	2010	NIT	Puducherry	-	-
24.	2010	NIT	Manipur	-	-
25.	2010	NIT	Meghalaya	-	57
26.	2010	NIT	Mizoram	-	-
27.	2010	NIT	Nagaland	-	-
28.	2010	NIT	Sikkim	-	-
29.	2010	NIT	Uttarakhand	-	-
30.	2010	NIT	Arunachal Pradesh	-	-
31.	2010	NIT	Andhra Pradesh	-	-

Source: MHRD

While this chapter includes the Central Facilities and Services provided by the esteemed institutions, a special reference to NIT Mizoram has been given as follows.

The education system in National Institute of Technology (NIT), Mizoram envisages achieving qualities such as professional competency and ability, personality development, exercise the habits of punctuality and sincerity by undertaking an integrated and balanced blend of curricular, co-curricular and extra-curricular activities among students, teachers and supporting staff and by creating congenial and close relations among all. NIT Mizoram, at present, offers 5 UG courses, viz., Electrical & Electronics Engineering, Electronics & Communication Engineering, Computer Science & Engineering, Civil Engineering and Mechanical Engineering.

The Central Library NIT, Mizoram provides basic services which include housekeeping services like, circulation, journal, reference etc. The library is tuned to the technology based system and is providing services such as OPAC, Wi-fi service, SMS alert services, inter library loan, digital library to share digital resources among the faculties, staffs and the students. Due to strategic location of the library in a hilly area, the library, however, is getting a poor internet connectivity causing stress and strain among the researchers. In spite of all odds, the library also maintains a separate collection of standards and special publications published by Bureau of Indian Standards, Indian Road Congress, American Concrete Institute, etc. to provide need based services. Given below in Table 2.6.1(A) is a brief profile about the Central Library NIT, Mizoram.

Table 2.6.1(A) Profile of Central Library NIT, Mizoram

1.	Name of the Library	Central Library NIT, Mizoram
2.	Year of establishment	2011
3.	Name of the Librarian	Mr. V.Vanlalzawma
4.	Address	Central Library, NIT Mizoram Academic Block II, Chaltlang
5.	E-mail	nitmz.library@gmail.com
6.	Total number of books	8561 volumes
7.	Total number of current journals	6 journals
8.	Library Building	Rented building
9.	OPAC Service	Provided
10.	Library Software	LIBMAN
11.	Host of Library Website	Computer Science Department
12.	Consortia	ESS Consortium/NIT Library Consortium
13.	Library Finance	Not Specified
14.	Online Information Access	Available
15.	Electronic Information	Web Access & Referral Access
16.	Database of E-Journals	Maintained
17.	Users of E-Journal	60-100 per day

Source: Central Library, NIT

Right from the beginning, NIT Central Library purchased materials which included books and journals for the students and teachers for research purpose. With the joining of the Director in NIT the whole scenario of the library changed and emphasis is on e-resources. The library has subscribed to more e- resources which include mainly e-journals and became a member of the ESS consortium. While giving a brief account of the collection development of the library, till June 2016, it is having

a total collection of 8561 volumes of books and the 6 current journals which are available in electronic form subscribed on renewal basis including procurement of e-books on perpetual basis. The titles of e-journals subscribed which are on renewal basis by the Central Library, NIT and the e-books which are purchased on perpetual basis are given in Table 2.6.1(B) and 2.6.1(C) respectively.

Further, the library provides referral access to the resources through web where it could be found that the numbers of users accessing the e-journals provided by the library are 60-100 users per day which is approximately 2100 per month.

Table 2.6.1(B): Name of Databases Vendors / Publishers

Sl.No.	Databases Vendors/ Publishers
1.	Springer Link (1400 + e-Journals)
2.	IEEE-IEL Online
3.	ASME Journals
4.	ASCE Journals
5.	Taylor and Francis Journals
6.	INDIASTAT (Single User)

Table 2.6.1(C): Publisher's wise Subject Collection

Sl. No.	Name of the Product	Subject Collection	No. of Titles
1.	ELSEVIER E-BOOKS	1. Engineering	1032
		2. Computer Science	
		3. Physics & Astronomy	
		4. Chemistry	
		5. Mathematics	
2.	TATA McGRAW HILL E-BOOK	1. Mechanical Engineering	406
		2. Electrical & Electronic Engg.	
		3. Core Engineering	
		4. Computer Science	
		5. Physics	
		6. Chemistry	
		7. Business Communication	

Chapter 3: E-Resources – Access, Use, Pedagogical Issues and Copyrights

The twentieth century was shaped by sweeping changes in communication technologies. The emergence and use of information technology is the century's most significant development affecting scholarly communication.

The technological advancement in information transfer and communication process has brought a radical change in searching, utilizing and maintaining the

information resources. Worldwide libraries have been exploring new technologies for providing better and faster access to vast information resources and efficient information services to their users. Information technology influences information retrieval in every sector of human activities. For instance, it has brought about revolutionary changes in the functions of libraries. The advent of e-resources has changed libraries and the learning environment. It has not only enhanced the accessibility to library collection and services but also break the barrier of location and time. With the application of information and communication technology particularly the internet, there has been a shift from traditional print journals to online journals.

Information Technology has offered better solutions to achieve greater level of efficiency, productivity and excellent services in libraries. Information Technology also fulfils the 4th law of S.R. Ranganathan's "Save the time of the reader." The application and accessibility of information technology facilitates the free flow of information, creative expression and effective management.

This chapter discusses about the types of e-resources, the use and access of e-resources; explains the pedagogical issues, copyrights which are clarified by the evolution of Copyright Acts to create awareness among people about the existence of the Acts; and further gives elaborations on the copyright of software (computer programs) and copyright issues in electronic publishing. The chapter is concluded with the technological approaches to copyright protection that fall under the broad umbrella of Digital Rights Management (DRM) given below:

- Cryptography
- Digital Watermark Technology
- Digital Signature Technology
- Electronic Marketing

In the IT era, academic libraries and information centres have radically changed the information environment leading higher education institution to subscribe to e-resources in order to meet the users expectation. Erstwhile, the concept of copyright is founded on the dual premise that authors have a right to a return on the results of their intellectual efforts. While the public has a right to benefit from the knowledge which author make available but the enactment of a copyright law in any country is just a beginning.

Chapter 4: Data Analysis and Findings

The scholar had an overall study on the use of e-resources by the faculties and students of National Institute of Technology (NIT), Mizoram and made an attempt to get the feedback of 35 faculties and 173 students along with 2 research scholars of the institute. Altogether, 210 questionnaires were circulated out of which 23 faculties, 141 students and 2 research scholars responded constituting 166 (79%) of the questionnaires circulated.

The different components included in the questionnaire for the faculties and students are:

1. Analysis by Designation
2. Gender Analysis
3. Frequency of Library Visit
4. Preference of source of information
5. Frequency of e-resources use
6. Purpose of use of e-resources
7. Preference of e-resources by the users
8. Provision of e-resources
9. Rate of satisfaction with regard to e-resources
10. Analysis by awareness approach about e-resources
11. Use of OPAC
12. Problems in accessing e-resources
13. Suggestions from the users

DATA ANALYSIS

Data collected from the respondents are analyzed and interpreted in order to present the factual findings stated below.

Analysis by Designation

Data regarding the questionnaire circulated and received by the scholar for the study has been discussed and analyzed in Table 4.2.1 supplemented with Graph- 1.

Table 4.2.1: Analysis by Designation

Sl.No.	Designation	Questionnaires Distributed	Questionnaire received	Questionnaire not received
1.	Faculties	35	23 (66%)	12 (34%)
2.	Research Scholars	2	2 (100%)	0
3.	Students	173	141 (82%)	32 (18%)

	Total	**210**	**166 (79%)**	**44 (21%)**

n= 166

Source: Questionnaire

Gender Analysis

Gender analysis is important for knowing the interest of the students constituting both girls and boys while using the library and accessing the resources of the library. The scholar in Table 4.2.2 supported with Graph- 2 has discussed below the data relating to gender for analysis.

Table 4.2.2: Analysis by Gender

Sl. No.	Gender	No. of respondents	% of respondents
1.	Male	136	82
2.	Female	30	18
	Total	166	100

n= 166

Frequency of Library Visit

The frequency of visits to the library helps in finding out information regarding the use of library and use of library resources. Data relating to the component obtained through the questionnaire has been placed below in Table 4.2.3 followed by Graph- 3 for analysis for clear understanding.

Table 4.2.3: Frequency of Library Visit

Sl.No.	Frequency	Students	Faculties	Research Scholars	Total
1.	Daily	37 (26%)	0	0	37 (22%)
2.	2-3 times a week	43 (30%)	4 (17%)	0	47 (28%)
3.	Weekly	50 (35%)	19(83%)	2 (100%)	71 (43%)
4.	Never	11 (8%)	0	0	11 (7%)
	Total	141	23	2	166

n= 166

Table 4.2.3(A): Values of Respondents

Sl.No.	Category	Mean value	Median value	Standard Deviation
1.	Students	35.25	40	17.01715
2.	Faculties	5.75	2	9.032349
3.	Research Scholars	0.5	0	1

Table 4.2.3(B): Frequency Values of Respondents

Sl.No.	Frequency	Mean Value by Frequency	Median Value by Frequency
1.	Daily	12.33333	0
2.	2-3 times a week	15.66667	4

3.	Weekly	23.66667	19
4.	Never	3.666667	0

Preference of source of information

The users visit the library in order to acquire their information needs whether from printed documents or other e-resources in the library. The present study requires the users to indicate the different types of e-resources they prefer to use given in the questionnaire. Data relating to the component has been placed below in Table 4.2.4 for analysis and it has been supplemented with Graph- 4.

Table 4.2.4: Preference of source of information

Sl.No.	Source of information	Students	Faculties	Research Scholars	Total
1.	Printed materials	63 (45%)	9 (39%)	0	72 (43%)
2.	Online sources	45 (32%)	9 (39%)	2 (100%)	56 (34%)
3.	Web sources	27 (19%)	3 (13%)	0	30 (18%)
4.	CD-ROM	2 (1%)	1 (4%)	0	3 (2%)
5.	Audio-Visual tapes	4 (3%)	1 (4%)	0	5 (3%)
	Total	141	23	2	166

n= 166

Frequency of e-resources use

Frequency of use of e-resources in the library helps to analyze the dependency of students, faculties and research scholars on e-resources which will determine the perceived impact of the resources on their academic efficiency. The data analyzed in Table 4.2.5 has been supported by Graph- 5 to represent the frequency of use of e-resources by the users of Central Library, NIT.

Table 4.2.5: Frequency of e-resources use

Sl.No.	Frequency of E-resources use	Students	Faculties	Research Scholars	Total
1.	Daily	13 (9%)	7 (30%)	0	20 (12%)
2.	Weekly	19 (13%)	3 (13%)	2 (100%)	24 (14%)
3.	Monthly	6 (4%)	10 (43%)	0	16 (10%)
4.	Rarely	19 (13%)	3 (13%)	0	22 (13%)
5.	Never	84 (60%)	0	0	84 (51%)
	Total	141	23	2	166

n=166

Table 4.2.5(A): Values of Respondents

Sl.No.	Category	Mean Value	Median Value	Standard Deviation
1.	Students	28.2	19	31.64964
2.	Faculties	4.6	3	3.911521
3.	Research Scholars	0.4	0	0.894427

Table 4.2.5(B): Frequency Values of Respondents

Sl.No.	Frequency	Mean Value by Frequency	Median Value by Frequency
1.	Daily	6.666667	7
2.	Weekly	8	3
3.	Monthly	5.333333	6
4.	Rarely	7.333333	3
5.	Never	28	0

Purpose of use of e-resources

The respondents were asked to indicate the purpose of use of e-resources in the library which varies from one user to another. The main purpose of the use of e-resources was presented in the questionnaire circulated which formed the quantitative study indicating the core purpose of e-resources used by the users of Central Library. The data analyzed in Table 4.2.6 corroborated with Graph- 6 shows the purpose of use of e-resources by the users of the library.

Table 4.2.6: Purpose of use of e-resources

Sl.No.	Purpose	Students	Faculties	Research Scholars	Total
1.	Writing an article/paper	2 (1%)	7 (30%)	0	9 (5%)
2.	Writing a book	0	0	0	0
3.	Preparing notes	54 (38%)	3 (13%)	0	57 (34%)
4.	To update knowledge	85 (60%)	5 (22%)	1 (50%)	91 (55%)
5.	Preparing lecture	0	3 (13%)	0	3 (2%)
6.	Support academic research work	0	5 (22%)	1 (50%)	6 (4%)
	Total	141	23	2	166

n= 166

Preference of e-resources by the users

Data represented in Table 4.2.7 supplemented by Graph-7 placed below revealed the e-resources that are frequently used by the users at Central Library, NIT.

In order to analyze the frequently used electronic resources available in the library, the e-resources have been classified into 10 categories as shown in Table 4.2.7.

Table 4.2.7: Preference of e-resources by the users

Sl.No.	E-resources	Students	Faculties	Research Scholars	Total
1.	E-book	104 (23%)	18 (18%)	2 (22%)	124 (22%)
2.	E-journal	93 (20%)	21 (21%)	2 (22%)	116 (20%)
3.	E-mail	127 (28%)	23 (23%)	2 (22%)	152 (27%)
4.	Online Databases	98 (21%)	18 (18%)	2 (22%)	118 (21%)
5.	E-thesis	0	15 (15%)	1 (11%)	16 (3%)
6.	CD-ROM	24 (5%)	7 (7%)	0	31 (5%)
7.	Discussion Groups	14 (3%)	0	0	14 (2%)
	Total	460	102	9	571

N=166, n=571

Provision of e-resources

Information about providing e-resources in the library was obtained by the scholar and data for the same is placed below in Table 4.2.8 corroborated with Graph-8 for analysis.

Table 4.2.8: Provision of e-resources

Sl.No.	Provision of e-resources	Students	Faculties	Research Scholars	Total
1.	Yes	17 (12%)	4 (17%)	0	20 (12%)
2.	No	124 (88%)	19 (83%)	2 (100%)	146 (88%)
	Total	141	23	2	166

n=166

Rate of satisfaction with regard to e-resources

The rate of satisfaction is an important factor to measure the standard and accuracy of library services. In this study, the scholar measured the satisfaction rate according to the scale of excellent, good, moderate and poor obtained through the questionnaire. Data given in Table 4.2.9 on analysis supported by Graph-9 shows the rate of satisfaction of the users in using the e-resources of the library.

Table 4.2.9: Rate of satisfaction of e-resources

Sl.No.	Rate	Students	Faculties	Research Scholars	Total	Mean
1.	Excellent	6 (4%)	1 (4%)	0	7 (4%)	2.333333
2.	Good	37 (27%)	6 (26%)	1 (50%)	44 (27%)	14.66667
3.	Moderate	70 (50%)	13 (57%)	1 (50%)	84 (51%)	28

4.	Poor	28 (20%)	3 (13%)	0	31 (19%)	10.33333
	Total	141	23	2	166	

n=166

Awareness approach about e-resources

The scholar in Table 4.2.10 provides a question to ascertain the source for use of e-resources through 5 categories supplemented with Graph- 10 for analysis.

Table 4.2.10: Awareness approach about e-resources

Sl.No.	Awareness Source	Students	Faculties	Research Scholars	Total
1.	Membership	14 (10%)	4 (17%)	0	18 (11%)
2.	Information brochures of the library	25 (18%)	4 (17%)	0	29 (17%)
3.	Colleagues	26 (18%)	5 (22%)	2 (100%)	33 (20%)
4.	Library website	41(29%)	6 (26%)	0	47 (28%)
5.	Library staff	35 (25%)	4 (17%)	0	39 (23%)
	Total	141	23	2	166

n= 166

Use of OPAC

An OPAC allows online access of the user to search and retrieve records of any document available in the library. The Central library under study uses Libman library software where OPAC can be accessed throughout different administrative blocks of the institution. The scholar has put forth below Table 4.2.11 data relating to the use of OPAC in the library corroborated with Graph-11 for analysis.

Table 4.2.11: Use of OPAC

Sl.No.	Use of OPAC	Students	Faculties	Research Scholars	Total
1.	Yes	97 (69%)	16 (70%)	0	113 (68%)
2.	No	44 (31%)	7(30%)	2 (100%)	53 (32%)
	Total	141	23	2	166

n= 166

Problems in accessing e-resources

The study is designed to find out the main problems encountered by the users while accessing the e-resources in the library. In order to minimise the problems faced by the users of the library, the problems are categorised into 5 different categories as shown in Table 4.2.12 for analysis supplemented by Graph- 12.

Table 4.2.12: Problems in accessing e-resources

Sl.No.	Problems	Students	Faculties	Research Scholars	Total
1.	Inadequate systems	41 (29%)	9 (39%)	2 (100%)	52 (31%)
2.	Insufficient resources	32 (23%)	5 (22%)	0	37 (22%)
3.	Ignorant of the process	3 (2%)	0	0	3 (2%)
4.	Slow internet speed	45 (32%)	6 (26%)	0	51 (31%)
5.	Information is not up-to-date	6 (4%)	2 (9%)	0	8 (5%)
6.	No problem	14 (10%)	1 (4%)	0	15 (9%)
	Total	141	23	2	166

n= 166

Suggestions from the users

The scholar obtained suggestions from the respondents for the development of e-resources and improvement of library services in the Central Library NIT, Mizoram which has been tabulated in Table 4.2.13 corroborated with Graph- 13 for analysis. The suggestions obtained from the respondents have been grouped under headings as shown in Table 4.2.13 respectively.

Table 4.2.13: Suggestions from the users

Sl.No.	Suggestions	Students	Faculties	Research Scholars	Total
1.	Awareness of e-resources	92 (14%)	0	2 (33%)	94 (14%)
2.	Improvement of library service	65 (10%)	0	0	65 (9%)
3.	Increase of Bandwidth/ Internet Speed	128 (20%)	18 (53%)	2 (33%)	148 (22%)
4.	Increase of e-books	67 (10%)	0	0	67 (10%)
5.	Increase of e-journals	45 (7%)	0	0	45 (7%)
6.	Provide e-resource training programs	52 (8%)	0	0	52 (8%)
7.	Sufficient Infrastructure/ Systems	102 (16%)	12 (35%)	2 (33%)	116 (17%)
8.	To update content	94 (15%)	4 (12%)	0	98 (14%)
	Total	645	34	6	685

N= 166, n=685

FINDINGS

After analyzing the questionnaires placed in the NIT, Mizoram with the help of tables to represent them, the scholar has come up with the following findings:

1. A total number of 210 questionnaires were circulated constituting a majority of the responses received i.e., 2 (100%) belonging to research scholars, seconded by the

students at 141 (82%) and third by 23 (66%) of faculties which rounds up to 166 (79%) total respondents. This shows that students are interested to use the e-resources in the library.

2. The frequency of library visit is weekly among all types of users which may be due to time constraint and system limitation in the library.
3. The users of the NIT Library preferred print document over other forms of resources available in the library.
4. Majority of the users constituting 84 (60%) of students never use the e-resources provided by the library. This may be partially due to slow internet connectivity and inadequate computer systems in the library.
5. Users make use of the e-resources in the library as a means of updating their knowledge and for preparing notes.
6. 127 (28%) of students, 23 (23%) of faculties and 2 (22%) of research scholars use e-mail and constitute the first, second and third rank respectively. E-mail is preferably used by the respondents since it is proven to be most convenient with less time consumption.
7. 20 (12%) of the users feel that the amount of e-resources provided in the library as sufficient while 146 (88%) feel that the adequate amount of e-resources are not provided by the library. The library has to take measures regarding the provision of e-resources to acquaint the students with the latest trends in technology.
8. Considering the rate of satisfaction of the use of e-resources, it has been discovered that majority of respondents constituting 84 (51%) expressed their views as moderate.
9. The study indicated that most of the users are aware of the e-resources available in the library through the concerned library website which reveals the activeness, competencies and efficiency of the library professionals in providing the required information about the availability of e-resources in the library.
10. OPAC being the gateway to library's collection has been used by students in the library as a medium for information retrieval.
11. The users need to be more of a technical literate for accessing the internet along with other newly developed e-resources further recommending orientation and training programs in the library.
12. Total number of users 148 (22%) constituting students, faculties and research scholars have suggested to increase the bandwidth and download speed of the

internet; 116 (17%) opined for increasing the number of computer systems and space limitations in the library followed by 98 (14%) and 94 (14%) number of users requesting for more updated content of materials and to publicize the availability of e-resources in the library. The study shows that the internet connectivity of the library has to be faster so that the users can have maximum access to the resources and retrieve their information needs at a higher speed in the most limited time for most effective and efficient use.

Chapter 5: Conclusion and Suggestions

Conclusion

The National Institutes of Technology (NITs), the autonomous institutes happen to be a group of premier engineering institutions publicly available in India for providing engineering and technical educations irrespective of the subjects to contribute factors for national building. Referred to as Regional Engineering Colleges (RECs) previously, the institutes were being administered by the respective State Governments. Now, RECs were turned to NITs since 2007 which contribute promoting regional diversity and multi-cultural understanding in India.

Committed to deep and broad-base involvement with society, all NITs including NIT, Mizoram find resonance with the needs and aspirations of the people. The centre of excellence in engineering and technical education, the NITs act as the forefront of bridging the digital divide, income asymmetries and rural-urban differentiation in the country, especially, in view of the 'Make in India' and the 'Digital India' initiatives unveiled by the Government and act as the connecting force between rural innovations, local employment and world class manufacturing.

These premiere institutes contribute immensely to research and innovation which emerged as front runners in imparting quality education in the field of scientific and technical education in India. The sustainable economic growth and education progress in NITs share a symbiotic relationship.

Discussing about the library of NIT, Mizoram, it acts as a centre of interaction of ideas for sustainable growth and development of education, research and the state as a whole in the field of science, technology, economy. It acts as a dynamic knowledge centre committed to develop the society by providing resources to the patrons.

It goes without saying that, Information and Communication Technology opened new multiple vistas for the library to conglomerate intellectual wealth both in

tacit and explicit form so as to extend wide range of services to the patrons. This also has become imminent on the part of the NIT library under study due to growth of literature and awareness among the users. Adaptability of Information Technology in Libraries altered the complexion of present library scenario. NIT Library, Mizoram has no longer been regarded as a store house of knowledge but became an effective platform to disseminate information in electronic form.

With the development of automation and computing and a knowledge society, it evolved to become information generator and provider as well rather than an information accumulator. Added to this, the Internet technology added new and admirable features for the library to provide electronic information to the users. World Wide Web (WWW) and emersion of elevated web browsers have provided viable platform for interface between the system and the user's for retrieving mammoth data irrespective of the subjects. This not only added value for the users for teaching, learning and research but also substantially incorporated sufficient input in collection development with regard to e-resources in the library and its management through database for retrieval and preservation The library is still in the process of development of e-collections is to maintain the ability for storage, retrieve and use information in the face of rapidly changing technological and organizational infrastructures.

E-resources have become imminent in the present environment in NIT Library as electronic resources are gaining momentum among the faculties, and the students as well. The e-resources are having equal importance in the collection development in libraries due to its update; instant, wide coverage etc. and prosperous collection of e-resources regardless of media reflect the academic priorities in the technical education level resulting to a high productive value in teaching and research. From the aforesaid discussions on various aspects of library services provided by NIT Mizoram, it is progressing well and venturing to new ideas, innovations for better and effective services in spite of lack of manpower, inadequate budget, absence of a permanent building etc. The library, however, is making all efforts to the development of education and research.

Suggestions

Based on the feedback received from the respondents through the analysis of the data obtained from questionnaires and interview, the researcher developed

suggestions for the improvement regarding the use of e-resources by faculties and students of NIT, Mizoram. The suggestions incorporated are listed below:

1. **Physical Resources/ Infrastructure**

The NIT Central Library is still functioning in a rented building which leads to inadequate space. Inadequate space in turn leads to system limitation which is a bane for the users of the library. Adequate space should be provided for the library so that more systems can be set up.

Physical connectivity to the library from the NIT is another unavoidable constraint for the users due to the location of the library which is far off from the main building and hence, users are unable to make use of their leisure time. So, the library should be located in the premises of the main building so that the time of the users can be saved. However, with the ongoing construction of the NIT's permanent building at Lengpui, this issue will be resolved within a period of time.

2. **Human Resources**

Lack of professional manpower is another way of causing impediment in getting the documents processed causing thereby suffering to the users. There should be sufficient number of qualified professional staff working in the library so that users can be provided prompt and efficient services.

3. **Information Resources/ Collections**

For starters, the Central Library should procure more electronic resources for use by the faculties, researchers and the students. A comprehensive collection development policy of e-resources may be framed and maintained by the libraries under study in order to follow a set of standard practices for acquisition and management of electronic information resources. The library should procure adequate resources both print and electronic to support their learning and research; and also subscribe to national and international database which will strengthen the work of the faculties and students particularly in the area of research.

NIT, being an Institute of National Importance and an engineering institute, must be a member of certain consortium such as INDEST-AICTE Consortium in order to acquaint the students, research scholars and faculties to the latest trends emerging in the field of engineering and technology.

4. **Services**

Installation of RFID technology in the library should be completed as early as possible so that efficient services can be provided with the help of technology and

along with it, the library should provide mobile OPAC for assisting the users in locating the content of the Central Library.

High speed internet connectivity is a must in the age of ICT. Hence, it is the duty of the librarian to take necessary actions in providing the users with high speed internet connectivity.

The conduction of information literacy programme and orientations must be mandatory for the new users in every semester to create awareness among the users about the collections and services of the library. On the contrary, with busy schedules, there are time constraints on the part of the users to visit the library daily. To minimise this issue, there should be imperative changes in the working hours of the library implying that the library should be open on all days including weekends so that users can have access to the resources available and be benefitted from it.

The research problem is supported with appendices, tables and graphs for better clarity of the study.

Each chapter is followed by references along with a comprehensive bibliography at the end, arranged in alphabetical order (based on APA 6th edition Format) to authenticate the research work under study and scientific communication.