CHAPTER – 1

Introduction
1.1 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. The application of computers to information processing has brought several products and services to the scenes. Consequently, the academic community has undergone tremendous changes during these years, assuming new dimensions influenced by technology-driven applications. Libraries have witnessed great metamorphosis in recent years both in their collection development and in their service structures. Thus, libraries are using technology to improve the management of scholarly information to strengthen and speedy access to scholarly information.

The rapid advancement of Information and Communication Technology (ICT) has brought a revolutionary change in the information scenario giving rise to a number of options to handle varied information sources conveniently and effortlessly as a result of which e-resources have become the most sought after modern library’s reserves in satisfying varied needs of students, teachers and researchers with minimum risk and time. Information technology has changed the world and has become one of the important tools for retrieving information. The electronic information resources have acquired a major portion of library collections. The value and use of information resources, particularly e-resources have increased with the time.

Technology has penetrated all areas of life and the use of Information and Communication Technology (ICT) has widened the procedures and approaches. Libraries use ICT for better services and satisfying diverse user needs. Libraries have transformed into digital and virtual libraries where books, journals and magazines have changed into e-books, e-journals and e-magazines. This has increased the global dissemination of information. Electronic resources are easily accessible in the remote areas. Electronic resources solve storage problems and control the flood of information.
Information is the vital element for human beings in today’s world. It has become the basic need of man unlike food, drink, dress and shelter. Since beginning the libraries have been trying to manage the available literatures. Even memories of kings, various countries and individual persons which are engraved on the clay tablets, coins and on leaves, etc. is still being managed by libraries. These rare documents are the only sources to reveal most of the hidden past of our ancient and medieval history. Invention of type writer or printing press had given momentum to keep records of day to day activities.

The emergence of electronic resources has drastically revamped the status of all the libraries and information centres across the world. There has been a rapid urge of the user community to get more and more information online. The development of the ICT devices, the rapid rise of electronic databases and modern e-book technologies have altogether changed the entire scenario of informatics. The users’ attitude to information is gradually shifting from the printed documents to electronic resources and thus, it has been their prerogative to know the details of the availability and organization of e-resources.

Electronic information resources, in reality have become the backbone of many academic organizations. The awareness and use of electronic resources by various persons depends mainly on skills of each individual to locate discrete knowledge elements. Information explosion have increased the amount of electronic information sources available on the web. Electronic resources help to expand access, increase usability and effectiveness and establish new ways for individuals to use information to be more productive in their endeavors.

Awareness of electronic resources may aid the users in keeping abreast with current developments in their respective subject fields, in contrast with print media. The use of electronic resources is necessary for users mainly because the electronic resources provide better, faster and easy access to information than information accessed through print media. Electronic resources can be relied upon for timely information which upholds the quote: right information to right user at right time.
1.2 E-resources: Concept

In the words of Saye (2001), “Electronic resources are the resources that are generated through some electronic medium and made available to a wide range of viewers both on-site and off-site via some electronic transferring machine or internet. “Therefore, electronic resources in its ambit include all kinds of digital collections in the form of e-books, e-databases, e-journals, electronic theses and dissertations (ETDs), e-standards and patents, e-reports, etc. Moreover, ICT has enabled the transformation of electronic information services in the forms of e-assignments, e-term papers, e-project reports in many educational institutions and Universities all across the world which impels the users’ community to use electronic resources for the betterment of their academic needs.

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. The phrase ‘electronic resources,’ has broadly been defined as, “information accessed by a computer, may be useful as bibliographic guides to potential sources but, as of yet, they infrequently appear as cited reference in their own right.”

Electronic resources and services refer to the variety of electronic and digital sources of information available to teachers and learners within an academic context. The change in traditional document delivery services, from print to electronic, has come about very quickly and libraries and information services have undergone significant transformation in order to effectively deliver electronic resources to the academic community.

E-resources in collaboration with Internet have become a sign of modern age being an invaluable tool for teaching, learning and research. The library and information landscape has transformed with the onset of the digital era and today traditional libraries have changed their roles to serve as ‘Knowledge Centres’ with priority on value added electronic information services.
Academic and research institutions are focusing on how best they can facilitate research by canalizing specific information services which compliment as cutting edge technology. With the advent of globalization in the realm of education, there has been an information explosion. Most of the science and technology, academic institutions as well as R&D organizations have changed their contemporary outlooks towards the functions, operations and services. The traditional environment has been rapidly changing to an electronic one and the demand for Internet and e-resources among the academic and research community has increased manifold over the years being the most popular source of undertaking research.

In the present age of information, which the world is witnessing information is held as a key resource for the economic, socio-cultural and political development of a nation. Organizations, especially academic libraries make greater use and to increase their effectiveness and competitive position. People use information more intensively in their day-to-day activities. The availability of the right information for the right user at the right time and at the right cost becomes all the more vital. The scenario has posed major challenges to the information sector whose prime function is to satisfy the complex and increasing technological advancements which are putting greater pressure on librarians. First, the technology of information work is vastly extending the scope of their work. It is now possible to gain access to and process much greater quantities of information than was possible and Internet have found increasing acceptance in library and information centres. Multimedia has shown much potential for library and information centres; and information networks have broken down time and space barriers. Secondly, user expectations are rising constantly, creating a demand for ever more sophisticated, high quality information services in academic libraries.

The academic libraries spent an enormous amount of money, expertise and other valuable electronic resources to come up to a stage where they are at present in terms of service delivery. It is true that by using a variety of Information Technology (IT) tools and techniques, library and information
centres are now able to generate various in addition to performing the routine tasks.

The development in Information and Communication Technology has created revolutionary changes in all fields of knowledge. Libraries being the reservoirs of knowledge are no exception to this development. People seek information for their research, education, reference and guidance from libraries. The media of communication is developing and the format of information delivery and exchange is also undergoing rapid change. People require most up-to-date information from libraries. Hence, the technological developments have to be adopted in libraries to meet the needs of user.

1.3 **E-resources: Meaning**

Bavakenthy et.al (2003) in discussing the concept viewed that e-resources are resources in which information is stored electrically and are accessible through electronic systems and networks. ‘E-resource’ is a broad term that includes a variety of publishing models, including OPAC, online databases, e-journals, e-books, internet resources, print-on-demand (POD), e-mail publishing, wireless publishing, electronic link and web publishing, etc. In this context, the term primarily denotes “any electronic product that delivers collection of data be it in text, numerical, graphical, or time based, as a commercially available resource.”

In view of IFLA ISBD (ER) 1:

An electronic resource consists of materials that are computer-controlled, including materials that required the use of a peripheral (eg. a CD-ROM player) attached to a computer; the items may or not be used in the interactive mode. There are two types of numbers, letters, graphics, images, and sound or a combination thereof) and, programs (instructions or routines for performing certain tasks including the processing of data and programme (eg. Online services, interactive multimedia). (Haridasan and Khan, 2009).
Graham (2003) says that, electronic resources are 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 from and can be accessed simultaneously from infinite points by a great number of audiences. The phrase “electronic resources”, has broadly been defined as information accessed by a computer, may be useful as bibliographic guides to potential sources but, as of yet, they infrequently appear as cited references in their own right. E-resources, therefore, refer to that kind of documents in digital formats which are made available to library users through a 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 e-resources through different search engines and web OPAC and, of course, some off-line databases in CD/DVD formats that can even be accessed without the help of Internet (Swain and Panda, 2009).

However, electronic resources have become very important these days as they are up-to-date, multi-dimensional and directional in nature and also can be accessed as well as used anywhere, crossing all geographical boundaries. Such resources add value to all spheres of human activities. Information technology has revolutionized the field of library and information science. The collection of a modern library is not restricted to print media only but libraries are actively adding e-resources to their existing collections. With the increasing cost of print publications, majority of information seekers are opting for e-resources. Shim et al. has defined e-resources as those electronic information resources and services that user access electronically via a computing network from inside the library or remote to library. The users need not come to the library to meet all informational needs. They may use online catalogue, any web-based database, e-journal etc which are remote from library. 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 button. Related literature for past ten years consider that electronic resources like CD-ROM, databases, online databases and e-journals are important for research and allied activities. Introduction of e-resources has exposed the learners to much more resources
of information and have become an invaluable resource of current information. (Sanjeev Kumar and Yogitashen).

Information professionals have long sought to comprehend what factors are relevant in encouraging a person to seek out information. More recently, a particular focus of inquiry has been on those factors that play a role in deciding to use the library’s electronic resources to seek information as opposed to just surfing the Internet. These inquiries assume on even greater importance in light of the fact that more people are using the Internet to find information they need, information that is unmediated by the library. Informed library users know that libraries have resources that are more comprehensive and scholarly than most websites provide. Libraries provide access to scholarly literature that as a rule is not freely available on the web.

One obstacle to the use of a library’s resources, and in particular its electronic resources, is that they are not seen as being straight forward in contrast to an Internet search engine, where a single keyword search will usually result in thousands of hits, no matter what the topic, in the library, students have to choose a particular database and be more selective in the search words they use. Moreover, database subjects often overlap, with differences in dates, journal and subjects covered, and whether the material is full-text or not. In addition, the library may have a print subscription to a certain title that is not full-text electronically, or the title may be accessible full-text through another database than the one originally searched.

1.4 E-resources: Categories

Internet is a hub of worldwide information. All types of documents are available through it. Publishing industry has been heavily depending on it. To keep bibliographical control over the published information, with the help of information and communication technology, various methods have been developed and adopted by the libraries from time to time. Broadly, two types of e-resources are available to cater scholarly information needs of the users.
➢ **Licensed E-Resources**

Publisher is charging some fee to access the resource, which comes under this category. Access to products from the commercial publishers is mostly available on payment. Few of the leading publishers under this category are Royal Society of Chemistry, Elsevier, Springer, Blackwell Publishing Agency, Cambridge University Press, etc.

➢ **Open Source**

The list of this type of resources is quite long and it can be divided in few sub-categories like:

- **Open Access Journals:** Many of the publishers are providing free access to few of their journals and many organizations are making open access for their products.

- **Information available at Institutional Repositories:** Various Institutional Repositories are accessible to the world without any cost. For example: Institutional Repository of Dspace at the INFLIBNET ([http://dspace.inflibnet.ac.in](http://dspace.inflibnet.ac.in)) and Institutional Repository of Indian Institute of Science, Bangalore can be accessed freely.

- **Organizational/ Individual websites:** Organizational and Individual websites are also a source of accurate information. For example: Union Databases (books, serials and those available with Indian Universities) and other specialized databases which are being maintained and hosted by the Information and Library Network Centre (INFLIBNET) at its official website are good source of information.

- **Individual Blogs/ Professional Discussion Forums:** These are the latest and new web options on the Internet to share one’s views or opinions with other fellow professionals around the world. Day by day various forums, discussion groups and blogs are flourishing with explosive speed.
1.5 Universal Access to e-resources

Libraries have always served as access points for information service have evolved from the days of closed stacks, through shelf browsing and card catalogues, punch cards and OPACs to the concept of open access and institutional repositories. This historic migration has tried to satisfy the changing needs of library users, including ease of access, interaction richness, low interaction and low cost. Eisenberg (1990) remarks that, “Access is more important than ownership. The underlying issue becomes the provision of information resources in offices, hostels, classrooms, homes, etc. regardless of where the information is found”.

1.6 Attitude towards e-resources

Academic libraries now live in a superior new world. The rapid advancement of information and Communication Technology (ICT) has brought revolutionary change in the information scenario giving rise to a number of options to the users’ community to handle varied information sources conveniently and effortlessly. As a result, e-resources have become the lively substance to the modern library’s reserves in satisfying varied needs of students, teachers and researchers with minimum risk and time. For better planning, it is vital to have knowledge on the attitudes of users towards e-resources.

The library users’ attitude to information is gradually shifting from the printed documents to electronic resources and thus, it has been their prerogative to know the details of the availability and organization of e-resources like online journals and databases, electronic theses and dissertations (ETDs), government publications, online newspapers, etc. in libraries. Given technology increased use, it is important to understand how technologically rich environments are influencing faculty attitudes towards e-resources access. Many factors influence attitudes. The introduction of open access journals and other resources for instance is creating another attitudinal tendency towards e-resources. Open access is one of the cheapest route to electronic resources have grown and provided an affordable way to provide access to some journal
content. Supporters of open access argue that, when academic articles, dissertations and theses are put online and open to all, it helps in fighting duplication and plagiarism of other people’s intellectual works. Although the open access movement has brought access to many valuable resources, and provided libraries with an invaluable amount of resources, many open access projects still face an uncertain future.

Attitudes towards e-resources access could be attributed to problems faced when accessing e-resources. For instance in a situation where there is inadequate computer technologies to access e-resources or poor Internet connections, positive attitudes of the users could be affected. That is why the problems that affect e-resources access are addressed in higher learning institutions libraries.

1.7 Significance and Scope of the Study

The library happens to be the nucleus of information centers which supports and facilitate learning, teaching and research needs to the user communities by providing access to scholarly literature though various e-resources. Growth and change have always been predominant characteristics of the libraries. These generate collections and services within the library system. The library needs to be adapted as it responds both to the changes of the need of the users communities and to changes within the field of information technology. Hence collection of information must remain flexible enough to support to the causes of the information requirements of the users in the Central Library of Mizoram University in a changing technological scenario. Over and above access to electronic resources principally occupy a prevalent position and the users get benefit to a good array of literature with a cost effective and affordable price.

In the present days, adoptions of information technology have compelled the library to be dependent upon digital materials which could be collected through Internet on a WWW platform. The significance of the study is that it happens to be one of the leading libraries to provide e-resources services to its clienteles. Moreover, the work aims at evaluating the flexibility of this library
in this fluid environment as well as their capabilities in developing a process to integrate the changes in to a standard library practice to meet the current and update demands of the users’ communities. Further, the technology has changed the expectations of faculty members, their patience and their willingness to accept services that are available on demand. Electronic resources are making a significant growth as part of library collection. But without conducting a study, there is no way of knowing whether the e-resources are reliable or useful. Keeping these in view, the present study has been taken up to ascertain the current use of e-resources by the faculty members and its impact on the academic and research work and the problems encountered while accessing these e-resources.

To the extent of the knowledge of the scholar, no study has been undertaken so far to make an assessment of the use of electronic resources for teaching and research by the faculty members of Mizoram University. The advancement in ICT, the information explosion, multiple sources of information, emergence and growth of bibliographic tools, automation of library operations and introduction of sophisticated information services necessitated information literacy programmes geared to the requirements of the user groups under study for the maximum utilization of electronic resources. Further, the study will be helpful in assessing the use of electronic resources by the faculty members of Mizoram University.

The study is limited to only the faculty members of Mizoram University which constitute 30 academic departments spread over in seven schools. Further, it is limited to the usage of electronic resources for teaching and research by 136 faculty members out of total 158 faculty members of Mizoram University (on July 2012).
1.8 **Review of Literature**

A literature review summarizes, interprets and evaluates existing literature or published material in order to establish current knowledge of a subject. By doing so it relates to ongoing research and further develops the knowledge in the subject. The review of literature also helps to gather knowledge required for next steps including writing of the research report and providing justifications of the problems or questions related to the research study.

Literature review is a process of scientific enquiry for retrieving conceptual and relevant literature on the in-depth aspects of the study. Literature contains new ideas, methods, models, standardization and descriptive thoughts. It always indicates the pioneer works undertaken about the research topic, because any concept and idea does not develop overnight and it takes long period of time for any idea to emerge and get established. The basic advantage of literature review is that it helps to have conceptual understanding of the subject that helps to design a conceptual framework and provide the guidelines on how to conduct a research on a given research project.

A good literature review requires knowledge of the use of indexes and abstracts, similarly ability to conduct exhaustive bibliographic searches to organize the collected data meaningfully, describe, criticize and relate each source to the subject of enquiry, and present the organized review logically and correctly cite all sources mentioned.

During the last two decades, the amount of electronic information available in academic libraries and the diversity of tools to locate and access this information have increased tremendously. Both the increase in the amount of information available and the improvement in its accessibility have had a huge impact on academics’ information behaviour.

The unprecedented developments in electronic publishing and related digital technology have introduced a plethora of electronic information sources and services. Since their introduction, they have changed the makeup of library collections. In fact, information sources have changed in formats and diversity
and engendered a shift in collection development and management. Electronic information is becoming prevalent worldwide, and its use is growing exponentially as more and more users are recognizing the potential that it offers in terms of access and retrieval. However, there are a number of significant challenges and opportunities that arise as electronic information is reshaping the whole information landscape.

The digital revolution driven by information communication technologies had transformed academic libraries. It has an impact on every sphere of academic library activity. Computers and networked electronic resources have become an integral part of the academic library during the past decade. This has been underscored by the phenomenon of knowledge or information common in academic libraries, which refers to a specific environment in the library where a designated number of PC workstations are networked to databases and other e-resources are made available to the users. Library users may search the library’s online catalogue; use a subject guide or database to access citation from the Internet or access a full-text article from web-based journals; they may browse an electronic journal; fill out an interlibrary lending form; email a reference question via ask—a-librarian service or borrow an e-book.

Electronic resources, in reality have become the backbone of many academic organizations. The awareness and use of electronic resources by various persons depends mainly on skills of each individual to locate discrete knowledge elements. Information explosion have increased the amount of electronic information sources available on the web. Electronic information resources help to expand access, increase usability and effectiveness and establish new ways for individuals to use information to be more productive in their endeavours.

Awareness of electronic resources may aid the users in keeping abreast with current developments in their respective subject fields, in contrast with print media. The use of electronic information resources is necessary for users mainly because the electronic resources provide better, faster and easy access to information than information accessed through print media. Electronic
resources can be relied upon for timely information which upholds the quote: right information to right user at right time.

A literature search is a key starting point for any research process and it assists the researcher to identify previous and present research projects and provides valuable knowledge for the understanding of the theoretical and methodological issues surrounding the research topic.

Information professionals have long sought to comprehend what factors are relevant in encouraging a person to seek out information. More recently, a particular focus of inquiry has been on those factors that play a role in deciding to use the library and its resources as a place to seek information whether physically or virtually as opposed to just surfing the Internet. These inquiries assume an even greater importance in light of the fact that more people are using the Internet to find the information they need, information that is unmediated by the library (Kibirge, 2000).

The importance and wide ranging scope of electronic resources for general communication, information retrieval and instructional delivery to support teaching and research activities in tertiary educational institutions is acknowledged worldwide. The literature also shows that a number of relevant studies have been carried out on the use of e-resources by lecturers, research scholars and students worldwide.

A number of surveys on the use of electronic resources in academic libraries had been carried out during the last 15 years. Although all the surveys include faculty members among their participants, in many cases, these surveys examined the use of Internet, word processors, e-journals and so forth. Few of them were targeted towards faculty as well as students and their awareness to the availability and use of library’s electronic resources.

For the purpose of reviewing the literature available on the topic under study, the thematic classification has been done. The complete literature has been classified into the following themes:
1.8.1 Use of Electronic Resources

Natarajan and others (2010) survey of 117 faculty members and research scholars on use and user perception of electronic resources in Annamalai University reveals that despite the availability of wide range of e-resources, the frequency of their use was low. The reasons identified for this are lack of time, lack of awareness, lack of subject coverage and slow downloading.

Min and Yi (2010) report on a number of user surveys that have been undertaken at Tsinghai University in Beijing. It was shown that the users’ expectations of the library are rising and new needs are emerging.

Haridasan and Khan (2009) based on a survey conducted at National Social Science Documentation Centre (NASSDOC) reveals that majority of the users which include research scholars and scientists who were aware of most of the electronic resources.

Anderson (2009) highlighted that professional forums provide useful bibliographic information regarding e-resources for faculty and collection officers alike; additionally they provide a useful starting point for discussions of desired learning outcomes, leading to better support for technology/curricular needs.

Issa, et al (2009) conducted a study on use of e-resources among students of the University of Ilorin, Kwara State, Nigeria and found that most students are aware of the e-library resources but do not use them because they lack the skills. They have not been formally taught the use of e-library resources. Most of them also agree that Information Technology (IT) is relevant to their information products and performance just as many desired to learn more about e-library.
In a recent study, Warwick, et al (2008) mentioned that information resources such as libraries, archives, museums and research centres and the web pages that provide information about them are vital for humanities scholars. They consider university library web site to be the most important resource. “Digital resources have not replaced physical information resources and the people who staff them, thus both types of information continue to require funding”.

Gardner, et al (2008) conducted a survey of the electronic resource collections in the top 100 colleges and universities in the U.S. and discovered that the quality of library circulation and the ability to support faculty teaching and research has been improved tremendously by such collections.

Dilek-Kayaoglu (2008) examined the usage of electronic resources by a specific academic community in Istanbul, Turkey in which the majority of respondents supported the transition from print to electronic only. This support particularly came from the faculty of natural sciences.

In the context of developing countries, Okello-Obura and Magara (2008) investigated electronic information access and utilization at the East African School of Library and Information Science, Makerere University, Uganda. Out of the 250 targeted students, 190 responded, giving a response rate of 76%. The study revealed that users derived a lot of benefits from electronic resources gaining access to a wider range of information and improved academic performance as a result of access to quality information.

Sevukan and Sivaraman (2008) reveals that with regard to the satisfaction of users on the adequacy of e-resources provided by Pondicherry University library, above seventy percent of users were satisfied while the remaining thirty percent were not satisfied.

Shuling (2007) analyzed the use of electronic resources in Shaanxi University of Science and Technology. The sample consists of 909 respondents of all types of library users. The study found that nearly 80 percent of respondents knew little about electronic resources. Nearly half the respondents use both printed and electronic resources, followed by print periodicals.
Baruchson-Arbib and Bronstein (2007) compared the use of print and electronic information channels by 136 Jewish Studies scholars in Israel. The participants used more books and journals than electronic resources. The study concludes that the scholars “on the one hand are disinclined to abandon their traditional ways; they still based their research on printed books and journals and find new information by browsing the library stacks and following citations. On the other hand, these scholars have adopted and integrated into their work practices new information technologies that can advance and facilitate their research; they will not use an information resource or technology just because it is there. Electronic information sources and newly developed information technologies have great potential to further humanistic research; it would be a profitable approach for libraries to design information services and sources that support the research practices and the information habits of humanists.”

Liang (2007) carried out a questionnaire survey of 600 teachers and students in Dalian Nationalities University concerning the usage of library electronic resources. The results suggested that the users should be supported with more training in order to enhance their information seeking skills while using electronic resources.

Beard, et al (2007) in their study on “The impact of e-resources at Bournemouth University 2004/2006” observed that the use of and enthusiasm for electronic resources is widespread amongst students and staff of Bournemouth University (UK).

Kanugo (2007) highlighted the purposes and frequency of use of the internet by the social scientists, and their methods of locating, accessing and using information on the Internet at IGNOU.

Appleton (2006) in his research on “Perceptions of electronic library resources in further education” reveals personal experiences and perceptions of using electronic library resources and the influence they have on teaching and learning activity.
Korobil, et al (2006) found that, the great majority of the faculty of Technical Education Institution (TEI). Thessaloniki, Greece, use printed sources more than e-sources, but they also use e-sources quite frequently. Use is mostly of books, web sites and printed journals. The results of this study further indicated that the use of e-sources is higher in the School of Business Administration and Economics among those who hold a PhD degree.

Another study conducted by Maharana and Nayak (2006) measures the amount of web resources used, and analyzes the nature and type of web resources of 95 scholarly papers in the area of LIS in India. The study found a rising trend of using and citing web resources in the bibliographies of papers authored by LIS professionals in India. Out of the total number of 837 citations, 545 (65.12 percent) were from printed resources and 292 (34.88 percent) were web citations, providing a significant correlation between the use of Internet resources and research productivity of LIS professionals in India. Citations from scholarly sources such as: books, journals, and conference proceedings constituted 188 (22.5 percent), 181 (21.6 percent) and 162 (19.3 percent) of the total number, respectively.

According to Walker (2006), the resources that libraries make available must be integrated with one another and within the library environment and library services must support the learning and research of users. Furthermore, users often want to access and use items from more than one content provider, so they have no choice but to interact with various user interfaces. But even then, each service has a different user interface for discovery, with its unique set of “presentation services” that the user must learn and understand.

Ali (2005) highlights the use of electronic information services among the users of Indian Institute of Technology (IIT) Library in Delhi, India. Data was collected from 300 IIT library users. Results reveal that 95 percent of users have awareness about EIS provided by the library.

Dadzie (2005) investigated the use of electronic resources by students and faculty of Ashesi University, Ghana to determine the level of use, the type of information accessed and the effectiveness of the library’s communication
tools for information research and problems faced in using electronic resources. Results indicate that 85 percent of respondents used the Internet to access information, and that respondents mainly accessed information in the library by browsing the shelves.

Perpetua (2005) conducted a study that sets out to investigate the use of electronic resources by students and faculty of Ashesi University, Ghana in order to determine the level of use, the type of information accessed, and the effectiveness of the library’s communication tools for information research. The study found a high level of general computer usage for information access, and a high usage of some internet resources, compared to a low use of scholarly databases. The low percentage was attributed to inadequate information about the existence of these library resources. The study recommends the introduction of information competency within the curriculum and the introduction of computer courses to be taught at all levels and the provision of more PCs on campus.

1.8.2 Use of Electronic Databases

Khan, et al (2009) did a survey on the use of online databases by faculty members and research scholars of Jawaharlal Nehru University and Jamia Millia Islamia, New Delhi. The survey revealed that all the faculty members and research scholars were aware of the availability of online databases and largely used them for reference purposes in their research work and studies. It indicated that the degree of usefulness and utilization of online databases was high among the faculty members and research scholars. It was also found that the respondents from both Universities were aware of the search options for accessing online databases, and they used field searching and Boolean operators to access information.

Ozoemelem (2009) examined the use of electronic resources by post graduate students of the Department of Library and Information Science of Delta State University, Abraka, Nigeria. The study showed that 100% students were familiar with the electronic databases, and they all used the databases very
often. Some of the basic problems encountered while using electronic resources were large mass of irrelevant information and the need to filter the results from search.

Soyizwapi and Hoskins (2009) investigated the utilization of electronic databases by post-graduate students at the University of KwaZulu-Natal, Pietermaritzburg’s Faculty of Science and Agriculture in South Africa. The study showed that students learnt about the databases from a variety of sources such as friends, library orientation programmes and academic staff. It also indicated that the students encountered several problems in using the databases.

Swain and Panda (2009) in the process of evaluating librarians’ opinion found that availability of some key online databases are exclusively confined to only a selected few B-school libraries of the state and the Internet-based e-resources are being well used compared with CD-ROM databases.

Atakan, et al (2008) conducted a survey on electronic databases usage at Ankara University Digital Library. According to the results of the survey, the increased number of the faculty members of Ankara University knew about the existence of the digital library after the informative activities on databases and many of the faculty members used electronic databases. The most preferred databases were Web of Science, Science Direct and EBSCO.

Bayugo and Agbeko (2007) reported on a survey of convenient access to, and use of, electronic databases (CD-ROM and Online) with full-text journals and their effect on information seeking behaviour of health sciences faculty at the College of Health Sciences of the University of Ghana. The survey documented faculty’s preferences of print and electronic resource, and the specific databases and full-text journals. The results showed that faculty members were unaware of the two full-text journal databases available in the library. They concluded that most faculties now prefer using electronic access to information (CD-ROM/Online) to traditional print indexes and abstracts.
A survey by Hemminger, et al (2007) found that the overwhelming majority (97 percent) of university Science researchers preferred to use electronic databases and journals to search for information. It would be an oversimplification to merely state that the growth of libraries’ electronic collections reflects the decline of print materials.

Atilgan and Bayram (2006) report the results of a survey on the use of e-databases at Ankara University. Their results show that most of the respondents (86.5 percent) indicated that they knew of the existence of digital library resources in Ankara University. The majority of the faculty members (88 percent) used electronic databases. The most preferred databases were Web of Science, Science Direct and EBSCO.

Al-Jarf (2004) investigated the availability of OPACs and electronic databases at Arab University libraries. The major findings of the study were that about 80 percent of the Arab University libraries were still traditional and lacked electronic databases. The study recommended that all Arab universities and research centres should have a network of electronic resources and that Arabic specialized electronic databases be created and new documents be indexed and stored on a regular basis.

Bar-Ilan, et al (2003) made a survey on the use of electronic databases and electronic journals accessed through web by the academic staff of Israeli universities. The findings of the survey revealed that the use of electronic sources was widespread among the respondents and more than 50 percent of the respondents found the electronic services indispensable. 48.9 percent of the respondents preferred the electronic version of the titles, 28.2 percent preferred the printed version, and 22.9 percent expressed no preference.

Lee (2002) presents a handbook on building electronic resource collections, beginning with a definition of electronic databases and the general principles of collection development and discusses the purchase and use of e-books and e-journals, as well as methods of user access. The author highlights the collection development activities of assessing, acquiring, and delivering
electronic databases from initial appraisal through acquisition, budgeting, installation, marketing and evaluation.

Shim and McClure (2002) did a survey to improve the database vendors’ usage statistics reported through collaboration between vendors and libraries. These revealed that with the databases, the libraries had become twenty four hours a day access point to information services where users obtained services and resources on their terms, and when they wanted to use such services, they did not need to come to the libraries personally.

Weingart and Anderson (2000) investigated electronic database awareness and use by 856 administrators and teaching faculty. Responses to this survey revealed the need for greater publicity regarding new electronic acquisitions, training opportunities, and methods of remote access.

1.8.3 Use of Electronic Journals

Early studies on electronic journals emphasized the need for electronic journals to emulate the usefulness of print journals.

Nicholas, et al (2010) discussed the results of the second phase of a Research Information Network study, which sought to establish the impact of e-journals on the scholarly behaviour of researchers in the UK. The first phase of the project was a deep log analysis of the usage and information-seeking behaviour of researchers in connection with the Science Direct and Oxford Journals databases. This paper reports on the second phase, which sought to explain and provide context for the deep log data by taking the questions raised by the quantitative study to the research community via interview, questionnaire and observation. Nine major research institutions took part, six subjects were covered, and the behavior of about 1,400 people was analyzed. The findings show that academic journals have become central to all disciplines and that the e-format is the prime means of access. Most importantly, the study demonstrates that computer usage logs provide an accurate picture of online behavior.
Kaur and Verma (2009) studied use and impact of electronic journals in the Indian Institute of Technology, Delhi, India. It has been found that awareness among the users motivates them to use e-resources and services of the library. The main users of library e-resources were post-graduates, research scholars and faculty. The maximum numbers of users preferred to use both the formats of the documents, i.e. print as well as electronic for seeking information.

The study by Shearer, et al (2009) evaluates the results of a previously reported method for creating a core medical electronic journal collection for a new medical school library, validates the core collection created specifically to meet the needs of the new school, and identifies strategies for making cost-effective e-journal selection decisions. Usage data were extracted for four e-journal packages (Blackwell-synergy, Cell Press, Lippincott Williams & Wilkins and Science Direct). The results indicated that the development of the core list was a valid method for creating a new twenty-first century, community-based medical school library. Thirty-seven journals were identified for addition to the FSU COM core list based on use by the COM, and areas of overlapping research interests between the University and the COM are identified based on use of specific journals by each population.

Tenopir, et al (2009) sought to examine how faculty members in science, technology, medicine and social sciences from 1977 to the present in a university located, obtained, read and used scholarly articles and how this has changed with the widespread availability of electronic journals and journal alternatives. The paper found that the average number of readings per year per science faculty member continues to increase while the average time spent per reading is decreasing.

Dilek-Kayaoglu (2008) mentioned that Istanbul University faculty was surveyed to examine their use of electronic journals in particular to determine whether the users would be pleased by the cancellation of the printed or parallel published journal subscriptions in favour of the e-only journals. In that web-based user study, the majority of respondents supported the transition from print to e-only. The faculty in the fields of natural sciences and health
sciences gave the strongest support for the transition from print to e-only, while the humanities and social scientists gave the least support, respectively. Three-fifths of the respondents, regardless of discipline, reported that the major barrier to use of e-journals was the lack of sufficient subscriptions in their discipline.

Murthy (2008) conducted a study regarding usage of UGC-Infonet resources and found that “the trend of high use of e-resources by the Indian scholars helped in reducing information gaps between rural and urban, privileged and less privileged, reachable and unreachable frontiers within the country. This has revolutionized the Indian University Campuses with a digital culture.”

Borrego, et al (2007) presented the results of a survey on the use of electronic journals by the academic staff of the universities belonging to the consortium of Academic Libraries of Catalonia (CBUC). The results showed that a high proportion of staff was aware of the collection of electronic journals and there was an increasing preference for the electronic to the detriment of the printed format.

A study of electronic journal collections in Argentinian private academic libraries by Gonzalez Boncerino and Molteni (2007) indicated an increase in the use of electronic journals (40.7 percent; 11 out of 27 libraries). This increase was attributed to user training, guidelines, manuals and tutorials prepared and delivered to users.

Nikam and Pramodini (2007) in their study on “Use of e-journals and databases (subscribed by UGC-Infonet consortium) by the users of University of Mysore” examined the utilization and satisfaction levels of users in respect to the e-resources and presents the use of Internet by the users of University of Mysore unfolding the usage trend.

Zainab, et al (2007) examined the users and their use of electronic journals published in a hosting system called EJUM (Electronic Journal of the University of Malaya), their perceived satisfaction with the e-journals, and the preferred features in electronic journals in general, and the problems they
face when using them. The findings reveal that e-journals are used for searching for new information, reading full-text articles, reading abstracts and browsing tables of contents. Users are led to EJUM by chance while browsing the internet (41.8 percent), when searching Google, through citations obtained from conference papers, from articles or from citations in databases. Respondents prefer keywords (28.9 percent) and titles (24.3 percent) for searching databases.

Abouserie (2006) surveyed on use of electronic journals by Library and Information science faculty members at the School of Information science at the University of Pittsburgh. The study showed a difference in using various information sources, where the study found variability in the sources used according to rank and gender. Also, there was a variance satisfaction with electronic sources, where faculty members were most satisfied with index, abstracts and full text databases and electronic journals. Faculty members considered electronic journals highly credible, most accurate, highly reasonable and most supportive and convenient to meet their needs.

Raza and Upadhyay (2006) carried out a survey to examine the usage of e-journals by the researchers at Aligarh Muslim University. They used questionnaire method to find out the purpose and place used by research scholars for using e-journals. The survey reveals that all the researchers were aware of e-journals in AMU. Many research scholars were consulting e-journals from their departmental labs and computer centre, not only for research purposes but also to update their own knowledge. Some problems like lack of training and slow downloading has been found and the researchers felt about the need for print journals as well as electronic journals.

A Dutch study by Voorbij and Ongering (2006) also indicated that faculty members in all disciplines were using a larger variety of journals when they were available in electronic form, and they believed that besides making searching quicker, electronic journals have stimulated interdisciplinary research.
Vinod (2005) has also carried out a questionnaire based users survey to find the use and usage of e-journals of the INDEST-AICTE consortium by the faculty members, Research Scholars, Post-Graduates (PG) and Under-Graduates (UG) at Indian Institute of Technology, Kharagpur, India. One of the major findings of the study was that “78 percent faculty members, 92 percent research scholars and 100 percent PG students are regularly accessing and using e-journals for their study”.

Tenopir, et al (2003) made a study of the patterns of journal use by faculty at three universities in the USA confirmed that making electronic journals available to faculties have increased the average reading, and this was especially true for faculties in the science and technology fields.

1.9 Statement of the Problem

Mizoram University (MZU) was established as a Central University by an Act of Parliament which appeared in the Gazette of India (extraordinary) on 25th April 2000 and formally functioning since 2nd July 2001. The objectives of the University are: to disseminate and advance knowledge by providing instructional and research facilities in such branches of learning as it may deem fit; to pay special attention to the improvement of the social and economic conditions and welfare of the people of the state, their intellectual, academic and cultural development. Keeping these objectives in view, Mizoram University has embarked on various programmes in terms of academic and administrative development.

University library is an important organ of a University to support and promote its teaching, research, extension education programmes by providing literature and information support. To achieve this end, Mizoram University Library is in the process of building a qualitative collection to serve as a source of information and organizes it so that it can be used or exploited fully, conveniently and expeditiously. Simultaneously, all efforts are made to promote the use of library resources, and to disseminate information from books, periodicals, reference sources and bibliographical tools to achieve the
objectives of the library effectively. Besides, procurement of electronic resources have added value to Mizoram University Library such as Web-OPAC, UGC-Infonet Digital Library Consortium, etc.

Since Mizoram University Library is fully computerized, it is necessary to educate the faculty members for optimum use of electronic resources provided through Central Library. Besides, Internet access had been provided to each faculty member in their respective rooms. It is in this context, the researcher had been motivated to undertake this study to make an assessment of use of electronic resources for teaching and research by the MZU faculty members.

1.10 Objectives of the Study

Electronic resources in academic libraries are making a significant growth as part of library collection. A huge amount is invested in the development of electronic resources in the libraries. But without conducting a study, there is no way of knowing whether the users accept them or not, do they find the electronic resources easy to use, reliable and useful or are e-resources effectively in use. The study offers to identify the acceptance and use of electronic resources in the library under study along with its advantages, performances, user’s satisfaction and barriers faced while using the electronic resources.

The study is designed to seek the opinion of faculty members concerned with the use of electronic resources in Mizoram University Library. The objectives of the study were to:

- Appraise the type of electronic resources and their use for teaching and research including electronic resources provided by Mizoram University Central Library.

- Make a study on the impact and know the degree of utilization of existing electronic resources for teaching and research by the Mizoram University faculty members.
• Suggest measures to overcome the problems associated with the use of electronic resources for teaching and research.

• Conclude that electronic resources provide opportunity of access to academic world.

1.11 Hypotheses

The term hypotheses is derived from the Latin word ‘Hypo’ which means ‘less than or less certain’ and ‘theses’ means generally ‘held view or belief’. It is regarded as a tentative guess or supposition with the aim of providing directions to the researchers in its process. A hypotheses is a tentative assumption drawn from knowledge and theory which is used as a guide in the investigation of other facts and theories that are yet unknown.

The testing of hypotheses is an important characteristic of scientific method. It is a prerequisite of any successful research, for it enables one to get rid of vague approaches and meaningless interpretations. It establishes the relationship of concept with theory and specifies the test to be applied especially in the context of a meaningful value judgement. The hypotheses, therefore, plays a pivotal role in the scientific research method.

Webster’s New International Dictionary of English Language, 1956 defines the word “hypotheses” as “a proposition, condition or principle which is assumed, perhaps without belief, in order to draw out its logical consequences and by this method to test its accord with facts which are known or may be determined”.

The formulation of hypotheses, thus, is very crucial and the success or the failures of a research study depends upon how best it has been formulated by the researcher. Keeping in view the objectives and scope of the study, the following hypotheses have been framed.
Electronic Resources reduce use of print resources in the library.

Electronic Resources supplement teaching and research.

Internet connectivity and access has impact on teaching and research.

Availability of Electronic Resources on the web is much more as compared to print resources in the library.

1.12 Research Methodology

Research in common parlance refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation. The Advanced Learner’s Dictionary of Current English lays down the meaning of research as “a careful investigation or inquiry especially through search for new facts in any branch of knowledge.”

Research is an academic activity and as such the term should be used in a technical sense. According to Clifford Woody, “research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last testing the conclusions to determine whether they fit the formulating hypothesis. Research is, thus, an original contribution to the existing stock of knowledge making for its advancement.

It is the pursuit of truth with the help of study, observation, comparison and experiment. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. The systematic approach concerning generalization and the formulation of a theory is also research. As such, the term ‘research’ refers to the systematic method consisting of enunciating the problem, formulating hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions towards the concerned problem or in certain generalizations for some theoretical formulation.
Research is an intellectual activity of gathering information needed to solve a problem, which in turn contributes significantly towards innovation, technical change and nation’s progress. The universities are the centres of higher education, training and research. The university libraries play an important role for promoting research in universities and the researchers are the users of pinpointed, exhaustive and up-to-date information. The electronic or digital information resources are increasingly becoming available due to application of information and communication technologies (ICT). As a result, the use of electronic resources is growing more rapidly indicating a shift in user’s preferences towards electronic resources.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. The various steps that are generally adopted by the researcher in studying his research problem along with the logic behind them need to be studied. It is necessary for the researcher to know not only the research methods or techniques but also the methodology. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem.

1.12.1 Questionnaire Method

The collection of data through questionnaire is one of the most popular methods used these days. A questionnaire contains many questions pertaining to the field of enquiry and provides space for answers. A questionnaire may be defined as an instrument for collecting information from a number of persons, supposed to possess it by making them record their replies to a number of questions.

In order to conduct the present study “A study on use of electronic resources for teaching and research by the faculty members of Mizoram University”,
questionnaire method was adopted for collecting information from the faculty members regarding the use of electronic resources, facilities and services and the extent of their use for teaching and research. A structured questionnaire was distributed to the 158 faculty members of the university covering all the 30 academic departments of the university. A total number of 136 faculty members responded to the questionnaire. Data was collected through personal visits to faculty members. As a follow up measure, several phone calls and visits were made to the individual respondents whenever necessary. In order to maximize the response rate, reminders along with the questionnaire were sent a number of times to the respondents.

1.12.2 Interview Method

As a research tool or as a method of data collection, interview is different from general interviewing with regard to its preparation, construction and execution. Research interview is prepared and executed in a systematic way, it is controlled by the researcher to avoid bias and distortion, and it is related to a specific research question and a specific purpose. Bingham and Moore (1924) have described the interview as “a conversation with a purpose”. In research interview, the interviewer asks specific questions pertaining to research objectives and the respondent restricts his answers to specific questions posed by the interviewer.

While conducting the study, the researcher had made several discussions with senior faculties, Heads of Departments and Deans of Schools with regard to their use of electronic resources for teaching and research in their area of study. This interview method helped the researcher to provide valuable suggestions for optimum use of electronic resources and the possible solution to overcome the problems faced by them while accessing the electronic resources.
1.12.3 Case Study Method

Case study is an intensive study of a case which may be an individual, an institution, a system, a community, an organization, an event, or even the entire culture. Yin (1991) has defined case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used”.

For a vibrant knowledge-based society, knowledge is the primary resource. Efficient utilization of existing knowledge can create comprehensive wealth of the nation, and also improve the quality of life. Ability to create and maintain the knowledge infrastructure, develop knowledge workers and enhance their productivity through creation, growth and exploitation of new knowledge will be the key factors in deciding the prosperity of a society or nation. Library and Information Centres (LIC) in institutions of higher learning play the central role in facilitating dissemination and creation of new knowledge.

In today’s high-tech learning environment, the LIC as a learning resource is taking up increasingly more academic space and time in the life of a learner. Thus, it is timely to identify a set of best practices that can lead LICs to improve their processes and activities, optimize resource utilization, and deliver high quality, value added services to their users.

The best practices adopted by six academic libraries in India through random selection had been taken as a model in terms of its optimum use of the available electronic resources by the faculties which will include CD-ROM database, web-OPAC, Internet, UGC-Infonet Digital Library Consortium, e-books, etc for teaching and research.
1.12.3.1 Delhi University Library System (DULS), University of Delhi

Delhi University Library System (DULS) comprises of 34 libraries in its fold. These libraries spread throughout the university campus to meet the information requirements of various academic communities.

However, access to electronic resources is provided to larger user communities, which also encompasses the colleges in addition to the university campus. In terms of e-resource subscription, DULS is at par with any international university of repute. It subscribes to 58 electronic databases in different subjects and disciplines that are available to the user community of the University. In addition to this 26 databases are accessible through UGC-Infonet Digital Library Consortium. Important open access e-resources are regularly culled out and listed on the DULS website for access.

- **DULS e-resources promotional activities.**

Keeping in view the large amount of information resources, especially the e-resources, the huge amount being spent on its subscription; the heterogeneous user community including the under-graduate and post-graduate students, researchers, scientists and faculty members; the wide geographical spread of users to the colleges, Delhi University Library System (DULS) has planned and regularly conducted various e-resource promotional activities under Information Literacy Program (ILP).

The deliberations at the planning of ILP found various reasons that affect the use of e-resources in teaching, learning and research. Surveys showed that lack of access, lack of knowledge of what is available, conservative attitudes and lack of computer skills were often significant obstacles to the use of e-resources.

- **E-resource Orientation for Faculty Members.**

In addition to its vast university campus, University of Delhi has also got large number of constituent colleges in different locations spread over throughout
Delhi. All the e-resources are also available to the information users of these colleges. It was again inevitable on the part of DULS to orient the users of these colleges to all the available e-resources.

1.F1: DULS homepage (http://crl.du.ac.in/)

1.12.3.2 Indira Gandhi Memorial Library, University of Hyderabad

Indira Gandhi Memorial Library (IGM), University of Hyderabad is one of the important central facilities of the university catering to the information needs of faculty, research scholars and students. It is the home for one of the largest and richest collection of learning resources in the country on Arts, Humanities, Social Sciences, Management, Sciences and Engineering. The main objective is to make the Library the most effective Learning Resource centre to contribute to the quality of higher education. The library supports study, teaching and research activities of the university by acquiring the learning resources and providing information services that enhance their usefulness, accessibility and availability.

The library also created learning environment by establishing OPAC searching area, Internet browsing area for accessing e-resources, Laptop zone with WI-FI facility, specialized workstations and software for visually-challenged
persons. At present the print collection reached to 4.00 lakhs that include monographs, text books, back volumes of journals, theses and dissertations, CDs/DVDs. The library is subscribing around 500 print journals in various disciplines of the university and providing access to more than 25000 e-resources including e-books.

1.2.3.3 Central Library, Indian Institute of Technology, Bombay

Central Library occupies a place of pride in IIT Bombay and is an essential component of the institute’s outstanding research and educational mission. It enables learning, promotes discovery, scholarship and advancement of knowledge. The mission of the central library is to facilitate creation of new knowledge through acquisition, organization and dissemination of knowledge.

1.F2: IGM Library Homepage (http://www.uohyd.ac.in/)
resources and providing for value added services. It is a major resource centre for engineering, science and technology information in this part of the world.

In order to be able to provide world class services to the users, the library adopts processes and practices that are not only considered to be the best but are comparable with the best in the market. An attempt is being made to discuss and disseminate these processes and practices under the following categories:

- Resource development and management
- User services
- ICT-enabled services
- Users empowerment and information literacy
- Other activities.

1.F3: Central Library, IIT, Bombay Homepage (http://www.library.iitb.ac.in/)

Central library has computerized all its operations and activities. The library has 12 servers, 70 PCs and other accessories adequate to cater to its needs. 25 PCs are meant for users to access OPAC, databases, e-books, e-journals and other e-resources. The reading area in the library has been WI-FI enabled.
The library portal is a gateway to its resources and services. The purpose of an information gateway of this type is to help users discover high quality, relevant web-based information quickly and effectively. The portal allows access to the OPAC and provides direct link to e-resources on publishers’ site. Multimedia library links to CD-ROM collection available in the library.

The central library provides web-based access to over 450 e-books, 10000 full-text journals and 10 databases 24x7 on institute network. Appropriate links have been provided from library website to access these e-resources. Users have also been provided with guidelines for fair use of e-resources.

1.12.3.4 University of Madras Library

The Public Petition dated 11-11-1839 initiated the establishment of Madras University. It was in January 1840 with Mr. George Norton as its President, that the University Board was constituted. In 1854 after a lapse of 14 years, the Government of India formulated a systematic educational policy for India and as a sequel to this on 5th September 1857 by an act of legislative council of India the University was established. The University was organized in the model of London University.

Madras University is the mother of almost all the old Universities of southern India. The University area of jurisdiction has been confined to, however, 3 districts of Tamil Nadu in recent years. This is consequent to establishment of various universities in the State and demarcation of the University territories. This University has been growing from strength to strength while widening its teaching and research activities.

The University is offering teaching and Research programmes in 4 Campuses of Madras University. The 68 University Departments of study and research are spread over in 4 Campuses organized into 18 Schools each of which offer Post Graduate Courses in respective specialization, part time and full time Ph.D. Programmes, Diploma and Certificate programmes.
1.F4: University of Madras Homepage (http://www.unom.ac.in)

- Sekhizhar (Taramani) Campus Library, University of Madras

Situated in Taramani, in the vicinity of many Information hubs of Chennai, the library of the Madras University’s primary mission is to support the educational and research programmes of the university by providing physical and intellectual access to information, consistent to the present and anticipated educational and research functions of the university.

1.F5: Sekhizhar Campus Library Homepage (http://www.unom.ac.in/)
Equipped with all modern facilities for a university library, like Online Information Zone (OLIZ), Electronic Resource Centre (ERC), Online Public Access Catalogue (OPAC), Digital Library of PhD theses, Reprographic facilities etc, this library serves as an Information Centre not only for the faculty, researchers and students of the Madras University, but also to the other scientific and research institutions around the science city area. As a centre of regular intellectual inquiry, the Madras University shares the university’s aspirations to be one of the most dynamic learning environments of the nation. Some of the services provided by the library are as:

- **Electronic Information Services**
  
  - **Library Web Portal**

    A specially designed and developed Web Portal for the library is available on the Intranet, which enables the users to access many useful information frequently required by them, like Online Public Access Catalogue (OPAC), links to online journals subscribed, links to electronic resources available through consortia of the UGC-Infonet programme, link to Guindy Campus Library, Madras University web page, subject gateways, etc. This portal is also used to communicate the campus news, important events and other related information to the users through the campus Intranet.

  - **Online Information Zone (OLIZ)**

    A modern online zone with 20 computers connected to the Internet is exclusively used by the research scholars and students for accessing scientific information not only from the online journals subscribed by the university, but also from the electronic journals and resources made available in the UGC-Infonet consortia.

  - **Digital Library**

    In marching abreast with the world class libraries and adapting the current trend of setting up digital libraries, digital library of thesis is created and are in the process of digitizing other information available. Sekhizhar Campus
Library is the first in the university’s library system to successfully create and host a digital library for its readers through the campus Intranet.

1.12.3.5 University of Calcutta Library

The Calcutta University Act of 1904 provided a special clause which empowered the University to maintain Libraries, Museums and Art Galleries. Henceforth, the University began to allot larger sums towards the purchase of books. The first notable acquisition by the University Library was the purchase in 1909 of the entire library of Prof. R. Pischel of Berlin. His collections contained practically everything that had been published within the preceding thirty or forty years in Europe and North America in the fields of Sanskrit, Prakrit, Pali, Philosophy including comparative Philosophy, in addition to many other works of interest.

1.F6: University of Calcutta Library Homepage (http://www.caluniv.ac.in/libraries/)

The University Library was originally meant for the use of the Resident Fellows only, although permissions were granted from time to time to bonafide research workers to use the library. Later on, rules governing the use of the
library were revised and included Resident Registered Graduates and University teachers and scholars as well.

The composition of the University library has undergone periodic changes. At present, the University library system consists of the Central Library, two campus libraries, thirty nine departmental libraries and two libraries of the Advanced Centres. The libraries are spread over seven campuses. Departmental libraries are located within the department concerned.

Computerization and networking of the University library has been undertaken under the INFLIBNET programme of the UGC. The University library has started automation of the library activities using SOUL, a versatile and user-friendly software from INFLIBNET Centre. The library has its own local Network connected with a server with terminals inside the library. Online Public Access Catalogue (OPAC) of the library has databases of books, journals, theses, CD-ROMs and microfilms. In addition, the University provides access to nearly 4000 electronic journals to its users in all the campuses under the UGC-Infonet programme.

The University library has posted an online catalogue in the University website consisting of records of books, PhD theses, Medical dissertations, BNCC collection, Peace Studies Collection and others. Now users from across the globe can get information on the collection of the University library.
Tezpur University was established by an Act of Parliament in 1994. The objects of this Central University as envisaged in the statutes are that it shall strive to offer employment-oriented and inter-disciplinary courses to meet the regional to national aspirations and the development of the state of Assam and also offer courses and promote research in areas which are of special and direct relevance to the region and in the emerging areas in science and technology.

1.12.3.6 Tezpur University Library

Tezpur University was established by an Act of Parliament in 1994. The objects of this Central University as envisaged in the statutes are that it shall strive to offer employment-oriented and inter-disciplinary courses to meet the regional to national aspirations and the development of the state of Assam and also offer courses and promote research in areas which are of special and direct relevance to the region and in the emerging areas in science and technology.

1.F7: Tezpur University Library Homepage (http://www.tezu.ernet.in/Library/)

- Central Library

The Central Library, Tezpur University was established in 1994 along with the establishment of the University. The library holds 51432 volumes of print documents and subscribed to 906 titles of current journals (print 139, online 767) and three databases through INDEST - AICTE Consortium and other publishers. The UGC-Infonet Consortia of INFLIBNET Centre is providing access facility to 7500 e-journals and eleven databases. Library users can access book database, theses database, journal database, e-journals and other e-resources from any terminal within the University campus.
The library at present is maintaining two parallel collection of reading materials such as traditional and electronic resources to satisfy the varied needs of the user communities. Further, the Library and Information Centres require availability and accessibility to a variety of information resources and formats such as digital full-text, sound, graphics, images, multimedia and hypertext. In view of the financial constraints faced by the university libraries, Central Library, Tezpur University is unable to procure sufficient reading ad research materials both in traditional and e-form for teaching and research purpose.

- **Improved Service**

There is no doubt that e-journals opened up many exciting service opportunities for Central Library, Tezpur University. E-journals have enabled it to provide for access to many journals for its faculty, research scholars and students to support their academic and research work. E-journal titles greatly exceeded the number of titles the library previously subscribed to in print format. Access to these e-journals support the faculty, students and research scholars in an effective and efficient manner.

- **Enhanced Access**

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

1.12.4 **Data Analysis and Interpretation**

Statistical data has no meaning unless it is analyzed and interpreted to draw results from it. The information received through the filled-up questionnaire from the faculty members was analyzed and interpreted. Although the University Academic fraternity includes faculty members, researchers and students, only the faculty members are taken as samples from the total population. The present study includes all the faculty members from the 30
academic departments and the scholar received response from 136 faculty members representing all the academic departments of Mizoram University. Data collected are scientifically analyzed and interpreted using quantitative data analysis software namely MS Excel in order to derive appropriate findings, suggestions and conclusions.

1.12.5 Manual used for bibliographic references

For giving the In-text citations and Bibliographies at the end of various chapters and the Bibliography at the end of the Thesis, 6th Edition of American Psychological Association Style (APA) has been used. Some relevant examples for different types of sources used in the study are given below:

- **In-Text Citations**

  The author-date method of in-text citation has been followed. (Author’s last name, year).

  Example: (Jones, 2009).

- **Bibliographical References**

  A. **Book**

  i. **Single Author**


  ii. **Two or more authors**


  iii. **Article or Chapter in an Edited Book**

B. Journal Article

i. Article in Print Journal


ii. Article from an Online Periodical with DOI Assigned


iii. Article from an Online Periodical with no DOI Assigned


C. Conference Proceedings


D. Non-periodical Web Document, Web Page or Report


E. Wikis

1.13 Chapterization

The present research problem is analyzed and interpreted in an organized way based on different approaches including findings, suggestions and conclusion in the following five chapters:

Chapter 1: Introduction

The first chapter of the research work deals with the concept, meaning of e-resources, significance of the present research problem undertaken, objectives, scope and research methods adopted to clarify the research work.

Chapter 2: Electronic Resources and its importance to Teaching and Research

The second chapter presents the type of e-resources, advantages and disadvantages, the educational e-resources provided by selected academic institutions in India along with the evaluation of e-resources.

Chapter 3: Use of Electronic Resources for Teaching and Research by the Faculty Members of Mizoram University

This chapter gave the overview of Mizoram University, Schools and Departments, Central Library with its activities and services, trends and development of e-resources in Central Library and the use of electronic resources by the faculty members of the university

Chapter 4: Data Analysis and Findings

The fourth chapter illustrates the profile of research work with the help of tables, graphs and figures with interpretations and also highlights the findings from the analysis of the data.

Chapter 5: Suggestions and Conclusion

The fifth chapter consists of suggestions, scope for further research and conclusion

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1.14 Conclusion

An increasingly important function of academic libraries today is the provision of information in electronic formats. Today libraries are providing electronic access to a wide variety of resources, including indexes, full-text articles, complete journals and Internet/web resources. In fact, libraries have been moving towards an electronic environment, in which sufficient computers are necessary for patrons to access information. The array of e-resources available in libraries today is an outgrowth of the changes in information delivery made possible through advances in computer technologies. These advances make the ongoing efforts to replace other traditional services and processes with electronic versions attractive and economically feasible for many libraries. Libraries are sometimes faced with choosing one format or another. Electronic versions are certainly more accessible to a wider audience. Because of the explosion of electronic resources and its complexity, there is now more than ever before a pressing need for guidance in developing such resources. Having understood the objectives, scope and significance, methodology, hypotheses, review of the literature on the research problem under study, the next chapter shall discuss on the “E-resources and its importance to teaching and research.”
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