USE PATTERN OF ELECTRONIC INFORMATION RESOURCES IN THE COLLEGE LIBRARIES IN KERALA: AN ANALYTICAL STUDY

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DECLARATION

I hereby declare that the work presented in this dissertation entitled **"USE PATTERN OF ELECTRONIC INFORMATION RESOURCES IN THE COLLEGE LIBRARIES IN KERALA: AN ANALYTICAL STUDY"** is original and carried out by me on Calicut University Campus and has not been submitted earlier in part or in full, or any degree or diploma of any University.

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CERTIFICATE

This is to certify that the dissertation entitled **"USE PATTERN OF ELECTRONIC INFORMATION RESOURCES IN THE COLLEGE LIBRARIES IN KERALA: AN ANALYTICAL STUDY"** embodies the results of a bonafide work carried out by **Mr. A. VIJAYAKUMAR** during 2004-2008 for the partial fulfilment of **Doctor of Philosophy in Library and Information Science** (as part of M.Phil/Ph.D. Integrated Programme)**,** under my supervision and guidance. This dissertation has not previously formed the basis for the award of any degree, diploma or other similar title or recognition.

Dr. JALAJA V.
(Supervising Teacher)

Countersigned

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

- Electronic Information resources- Background Informations
- Need and Significance of the study
- Statement of the Problem
- Definition of the Key Concepts
- Objectives
- Hypothesis
- Scope and limitations of the study
- Organisation of the thesis

CHAPTER II

REVIEW OF RELATED LITERATURE

CHAPTER III

METHODOLOGY

- Sample used for the study
- Categorised distribution of sample
- Sample population
- Source of data
- Research instruments
- Data collection procedure
- Statistical method used for the study
- Variable used for the study

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

- General Characteristics of the population
- Information about the College Library
- Information About Electronic Informations
- Service Provided by the College Library
- Use Pattern of Electronic Information Resources
- Use of Electronic Journals
- Availability of Infonet

CHAPTER V

SUMMARY, FINDINGS AND SUGGESTIONS

- Introduction
- Summery of findings
- Tenability of hypothesis
- Suggestion for improving the Use of electronic information resources
- Suggestion for further research
- Conclusion

BIBLIOGRAPHY

APPENDICES

LIST OF ABBRIVATIONS

CAS	-	Current Awareness Services
CD-ROM	-	Compact Disc Read Only Memory
CIJE	-	Current Index to Journal in Education
CSIR	-	Council of Scientific and Industrial Research
DBMS	-	Data Base Management System
DTH	-	Direct to Home
DTP	-	Desk Top Publishing
DVD-ROM	-	Digital Video Disc Read Only Memory
E-Book	-	Electronic Book
E-Commerce	-	Electronic Commerce
EDDS	-	Electronic Document Delivery Services
EDI	-	Electronic Data Interchange
EIR	-	Electronic Information Resources
E-mail	-	Electronic Mail
EP	-	Electronic Publishing
ERNET	-	Education and Research Network
FCM	-	Faculty of Creative Multimedia
FTP	-	File Transfer Protocol
FORSA	-	Forum for Resource Sharing in Astronomy and Astrophysics
GSDLS	-	Greenstone Digital Library Software
HTTP	-	Hyper Text Transfer Protocol
ICT	-	Information Communication Technology
IISC	-	Indian Institute of Science
IIT	-	Indian Institute of Technology
ILL	-	Inter Library Loan
INFLIBNET	-	Information and Library Networking
INFONET	-	Information Network

INDEST	-	Indian National Digital Library in Science and Technology
IP	-	Internet Protocol
ISI	-	Institute for Scientific Information
ISRO	-	Indian Space Research Organization
IT	-	Information Technology
IUC	-	Inter University Center
LAN	-	Local Area Network
LISA	-	Library and Information Science Abstract
M.phil	-	Master of Philosophy
MAPA	-	Medical and Aromatic Plants Abstracts
MoU	-	Memorandum of Understanding
NAAC	-	National Assessment and Accreditation Council
NCERT	-	National Council of Education and Research
NHS	-	National Health Service
NII	-	National Information Infrastructure
NIT	-	National Institute of Technology
NOVA	-	Non-Visual Access to the Digital Library Project
OCLC	-	Online line Computer Library Center
OAI	-	Open Archive Initiative
OPAC	-	Online Public Access Catalogue
PGs	-	Postgraduate Students
PhD	-	Doctor of Philosophy
R&D	-	Research and Development School
SDI	-	Selective Dissemination of Information
SMTP	-	Simple Mail Transfer Protocol
SPARC	-	Association of Research Libraries Scholarly Publishing and Coalition
SIT	-	Satellite Interactive Terminology

SOUL	-	Software on University Libraries
SPMU	-	Sri Padmavti Mahila University
SPSS	-	Statistical Package for Social Scientists
Telenet	-	Networking Over the Telephone
UGC	-	University Grants Commission
UGs	-	Undergraduate Students
PGs	-	Postgraduate Students
VICTERS	-	Virtual Class Room Technology on Edusat for Rural
VSAT	-	Very Small Aperture Terminal
WAN	-	Wide Area Network
WWW	-	World Wide Web

CHAPTER -I

ELECTRONIC INFORMATION RESOURCES

1.1 Introduction

Electronic information otherwise called as digital information, in the new era is changing the duties and services in all fields from traditional to digital form. The information is a dynamic and unending resource that affects all disciplines and all walks of life. It supports education, research and development.

Electronic Sources are the clutch of technologies, which cover electronic information delivery includes CD ROM, On-line database, Video text/teletext, DVD Rom database, E-Mail, video recording (Read-to-reel tape, Cartridges, Shots, Cassettes and discs) motion pictures (loops, kinescope, stock, shots, trailers, etc) Microforms (Microfilms, Microfiches, Micro-opaque and aperture cards). Transparencies, locally loaded tapes, Internet, E-publishing (E-Journal, E-books) Radio, Television etc.

The rate of growth of information and knowledge is faster than before and still accelerating. The world famous futurist, Alvin Toffler calls 21st century as space age, computer age, and information era or electronic era. These developments are the impact of phenomenon known as “Information Explosion”. It is said that scientific knowledge doubles itself every ten year.

Information is data that has been processed into a meaningful form. The essence of it is that a meaning has been attached to the raw facts. The conceptual distinction between information and knowledge is therefore rather

unclear, although the two terms tend to be used in somewhat different contexts. Increasingly information is applying in the broad professional and technical context represented in such phrases as “information technology” or “information retrieval” or “information management”. It is thus used in a general sense to encompass all the different ways of representing facts, events and concepts in both digital and analogue systems and in all media and formats.

The term “information” has been derived from two Latin words “Formato” and “forma”. Both the terms convey the same meaning of giving shape to something and forming a pattern.

It is the age of information. It have been also recognized the power, wealth and value added phenomenon to an individual, ones, society and nation. Therefore, information, in the electronic form have been admitted an important resource for updating to an individual with what happens in the field of individuals interest in intellectual world.

According to ‘The New Lexicon Webster’s Dictionary the term ‘Source’ stands for ‘the spring’ or starting point’ of a stream of river, the place or a thing from which or a person because of whom, some thing begins or arises, the sources of troubles; a person, book, document consulted for information or providing initial inspiration’

When the term ‘re’, its word meaning ‘again’ is prefixed with the term ‘source’ this dictionary explains the word ‘Resource’ as a ‘source of supply’ or ‘support’ quick wittedness in mastering a difficult situation’, something to which one resorts for comfort or help at an emergency or exigency’.

On the basis of explanations of terms ‘source’ and resource by the above-mentioned dictionary resource may be observed as below:

A material or thing or person or entity becomes resource if it is resorted or reserved to neutralize or solve a problems or a number of problems of an individual one, one's society or a nation on an exigency or emergency in future stimulating the potentiality of basic sources infighting with or applying electronic technology for the purpose.

1.2 Electronic Information Resources-Background Informations

1.2.1 Information Technology

Information is a dynamic and unending resource that affects all disciplines and all walks of life. It supports education, research and developments. Technology in it broad sense is the main factor determining the development of information. Information technologies facilitate transfer of electronic data or information from one place to another, one person to another and from one library to another library. Information technology is the electronic mean of capturing, processing, storing and communication information. It covers any product that will store, retrieve, manipulate, transmit or receive information electronically in digital form. Information technology infrastructure is considered as the most dominant paradigm of development in the recent years. Information technologies have become dramatically and strategically important in modern civilization. These technologies are inexorably integrated, creating new intellectual capabilities by assisting the human brain and this changing most aspect of daily life. During the past decade, more several developing countries and regions of the world have been adopting and applying components of IT, in always that facilitate information access and exchange to assist R&D decision making, problem solving management, and so on, in the public and private sectors in such in science and technology education, industry, trade, social and cultural development etc.

Information technology has immense possibilities in library services, operations and resources. The main functions of a library are to acquire information from various sources and arrange process, disseminate them at the right time. The libraries have found it very difficult to acquire, arrange process and disseminate information on traditional ways, so librarians are compelled to plan, organize and communicate the huge information according to the needs of users with the help of information technologies. The application of IT facilitates innovation, free flow of information, creative expression and effective management. The use of IT in libraries has tremendously increased because it provides enhance user satisfaction, cost effectiveness, faster and simpler programmes, rapid response and easier operational procedures.

Following are the impact of IT in Library and Information services

- Computerization of library services
- Fax, e-mail, Internet service
- Use of multimedia VCD, ACDS for higher study and research.
- Creation of databases of books, serials, PhD theses and regional local databases etc.
- Networking of library through computer network Via Fax, e-mail, Inter library loan (ILL). Document delivery services, Bulletin board services etc.
- Bibliographic information services
- Automation of acquisition, cataloguing, circulation, serial control, Administration of library etc.
- Online access to union database developed at INFLIBNET websites.

New technological developments have already profoundly affected libraries. Almost every function carried out in a library has been altered to some extend by advances in electronics, computerization and telecommunications. The technological revolution in libraries has been called a “quite revolution” the fast pace of IT has brought the global information at user finger tips use of modern technology has great relevance in the context of fourth law of library science “save the time of reader/staff.”

1.2.2 College Libraries

Every college must have a good library and it occupies a prominent position in college campus. It is the pulsing heart of the college. Therefore the functions of the college library are important.

These are

- Serve the college community
- Serve the alumni
- Influence the society for the expansion of knowledge and help men and women to quench their quest for truth.

In India, the UGC has provided generous funds to purchase reference books and textbooks as well as construction of library building. As a result of it, the classroom teaching is now supplemented by library usage. Books on latest teaching methods provide exhaustive knowledge of the subjective to the students.

1.2.3 Objective of College Library

The following are the objectives of the college library

1. To promote the records of human knowledge and keep them upto date in accordance with the growing needs and requirements of today and tomorrow.

2. To remind faculty members of the various opportunities for using library resources in teaching.

3. To facilitate an individual and a group of readers in the use of library resources with practical demonstration on how to seek the information.

4. To provide necessary resources for staffs and students.

5. To assist teaching staff in organizing the synthetic methods of teachings.

6. To bring the documents to the notice of students and the academic together under environments which stimulate reading for pleasure, self realization, personal growth and development, and the cultivation of intellectual excellence for entertainment.

1.2.4 IT and Academic Libraries

Libraries are the light house for information in the field of education and research. The information is increasing in volume everyday at various levels and the various subjects. Hence IT is very much needed in academic libraries especially for the following reasons.

- To provide efficient and accurate services
- To control the rapid growth of information
- To facilitate co-operation
- To mange increased work load

Information technology has provided new media, new modes of storing and communication of information. The applications of IT for operations and services in academic libraries have been increasing steadily. Information technology now used in academic libraries for house keeping operations, collection development, information processing, storage and retrieval of information, creation of data base, developing search patterns to retrieve information etc. Information technology brought in many services to libraries to speed up their activities. These include telecommunication technology, CD-ROM technology, online retrieval services, library networks and Internet etc (Veeranjaneyulu 2004).

1.2.5 Use of IT in College Libraries

In Kerala, libraries are shifting towards automation and IT application. This is more prominent in the case of college libraries. Generally college libraries are positive towards automation and the application of IT in library operation and services. Application of IT helps to provide more advanced effective and efficient services in college libraries. College libraries are using advanced information technology for accessing and retrieving information.

College libraries are getting bibliographic and full text databases through on line. The introduction of CD-ROM technology has made immense possibility in the storage, retrieval and dissemination of information in college libraries. The introductions of barcode technology, Digital library services, etc are help to improve the college library services. The explosive growth of Internet and wide spread acceptance of networking has made possible to access any type of information anywhere in the world. There are different tools/services/ utilities in Internet to get information. E-mail, www, FTP, Telnet, News groups etc are some of them. The introduction of online journals and Library and information networks had revolutionized information handling capabilities of college libraries.

In this way the resources of college libraries will be used in an effective way. It will also be helpful in resource sharing and network project like INFLIBNET. In this manner, college libraries may be in apposition information support to colleges in future (QUreshi, Hasnain 2000)

1.2.6 Skill and Expertise of Library professionals in the electronic environment

Information technology has virtually unlimited potential for variety of applications in libraries. Library professionals have undergone a drastic change, which had not been seen ever before. The challenge posed by IT in the storing and transferring of information has profoundly altered the roles and services of library and library professionals. Libraries ushered into an era in which professionals of all levels from top to bottom shared the common responsibility of providing access to information “Just in time”. The use of IT in libraries has changes the services into an attractive and user friendly and at the same making a feeling of status to the information professionals. The library professional responsible for the implementation of IT in libraries should combine IT and library or information science qualifications, skills, competencies and experience. During this period of library automation and IT application it was widely felt that library personal lack requisite level of working knowledge and skills of IT. Such working knowledge and skills were essentials to prepare library staff both mentally and technically for modernization of library services in the new electronic environment.

There are different levels of skills required by new library professionals in the electronic environment. Firstly library professionals should have skills required for handling IT products, particularly, operating system, software, physical handling of budgets, telecommunication products, DBMS, data and file management, DTP, word processing, generating of reports etc. The next level of skills includes skills required to apply IT for service management in

general and information processing, search and retrieval in particular. This involves collection and organization of data in electronic form, indexing techniques, selection and evaluation of sources, searching techniques, updation technique etc, information retrieval skills include online searching as well as searching CD-ROM databases. This level should incorporate skills required for query formulations as well query interpretation.

The library professionals should also have Internet and skills required for accessing networked resources as well as marketing of electronic information. A lot more can be said about skills expected for electronic publishing, electronic commerce and electronic marketing. Yet another are in which skills are likely to be expected is document management and management of data archives. Preservation and archiving of data in electronic medium not only require administrative skills but also knowledge of data fields, which a system analyst knows better. The other advanced skill that are less likely to be needed by library professionals unless they become part of IT are programming skills, system administration, hardware maintenance and own trouble shooting networking system migration etc.(Bavakutty 2006)

1.2.7 Information Communication Technology

The information is a dynamic and unending resource that affects all disciplines and all walks of life. It supports education, research and development. Technology in its broad sense is the main factor determining the development of information. Information and Communication Technology (ICT) is the biggest achievement in the evolution of mankind. ICT is any system design to gather, process or distribute information or it is the science and skill of transferring of electronic data or information from one place to another and one person to another (Bhartia 2001).

In whatever situation we find ourselves, the elemental process is communication. An informative communication alters the state of knowledge of the recipient. In this information age, we find ourselves under the information gamut and everything looks to be important. Earlier we always had the conception that, we did not have access to government information, grey literature, trade reports and technical reports. But now, the technology has given us a marvelous tool to have access to all information sources published, unpublished, yet to be published and which is not suppose to be published that is the electronic journals (Padma K.C)**.** This tool also enables us to communicate between anyone, anywhere in the world without any discrimination of status.

1.2.8 The Internet

Internet in simple words is a network of networks. Encyclopedia of Library and Information Science (1997) defines the term Internet as "a system of linked computer networks, world wide in scope, that facilitate data communication services such as remote login, file transfer, electronic mail and newsgroups". Internet is a way of connecting existing computer networks that greatly extends the research of each participate system.

Thousands of private, commercial, governmental and educational organizations are connected to Internet but there is no one owner or organistion that is responsible for the Internet. People use Internet to communicate with each other to exchange information for education, research, business and entertainment purposes. It is popularly known as information super high way, which has millions of information articles (Kamala Vijayan1998).

1.2.9 Historical Perspective

The concept of electronic publishing (EP) is just about 20 years old. The first electronic book was published in Germany in 1985. Since then, there has been a steady growth in the number of electronic publications. Slowly, serials were published by the electronic networks called as electronic journals. The third edition of Michael Stranglane directory of electronic serial' list was published later on (Amudavally, 1997).

Electronic publishing of typeset quality of documents contains texts, graphic, pictures, tables and equations etc. in general; it is used to maximize the capacity to contain more information reducing the source in electronic form. E.P associates with electronic technology, computer technology, computer technology, communication technology and publishing.

Similarly, in case of information sources which nowadays have been recognized as electronic information resources using and infighting with electronic technology in their products. Because the use of this technology stimulates the potentiality of information communication along with their accessing, manipulating, retrieving, storing and transmitting among users. Introduction of computer and networking programmes have sprung the radii of information globe at its centre.

Likewise the use of electronics in the field of information technology (IT) has evolved a number of tools. They have expanded and reduced their intension and size. The information restored in these tools or host documents decoded by the use of this technology, now may be acquired and communicated within the few moments abolishing the term of remote distance from the dictionary of library and information science, Finally the use of computer linking with satellite facilities a number of users in accessing the same information at different place at the same time.

1.2.10 Electronic Libraries

The invention of computers digital telecommunication technology, CD-ROMs, Multimedia, Computer Networks, Internet, have paved the way to the development of Electronic publishing and have changed the traditional libraries to Electronic/Digital libraries. Electronic libraries are global networked virtual Libraries in which all of its holdings are in machine-readable form. To provide instant information service by retrieving the required information from the mist of fast emerging and ever-growing information explosion, it is very essential to digitize the libraries.

Electronic libraries, which is often called 'Digital Library' denotes a library in which all or virtually all of its holdings are in machine readable form. Electronic library is a global virtual library of thousand of networked electronic libraries. They are the dynamic store houses of digitized information.

1.2.11 Need for Electronic Libraries

One version of using electronic library technology is to manage large amount of digital content such as thousand of images or hundreds of audio clips. Another need is to perform quick searchers that are difficult manually. The vast amount of information being created and stored each day makes it more difficult to find specific information later.

Documents and other materials housed in collections are deteriorating at rapid rate. While much work is done to conserve and preserve collections in their original form, digitizing their contents enables it to preserve in an additional way. This is difficult with traditional printed materials in many cases due to physical limitations of library facilities and the fragility of the materials in the collection.

Availability of precise and timely information is important for the benefit and progress of an individual or organization. But information is growing at an exponential rate and the amount of new information is bewildering the users. Obviously the challenge was to make this vast and latest information available to the researchers, academic communities and other kind of users. To achieve this it is essential to digitize the libraries.

The components of an electronic library are

- Local library systems with adequate PCs having LAN facility
- Local databases in machine readable form, CD-ROMs, Multimedia facilities
- E-mail service
- Access to services and remote databases
- Networks including Internet facility
- Well trained manpower
- Variety of system functions to co-ordinate and mange the entry and retrieve data

1.2.12 Functions of Electronic library

The key functions of electronic library are

- To manage large amount of digital/Electronic contents such as thousands of images or hundreds of audio clips
- To enable one to perform searches that are not practical manually
- To manage contents from multiple locations
- To preserve unique collections through digitization

- To enable greater access to information
- To provide means to enrich the teaching and learning environment
- To protect content owners to information
- Reduces distribution and storage overhead
- Increases user effectiveness and productivity and
- Standards are necessary for the exchange/interchange of information.

1.2.13 Characteristics of electronic libraries

Electronic library has the following characteristics:-

- Networked accessibility
- User friendly interface
- Advanced search and retrieval
- Supporting multimedia content
- Accessibility from anywhere, home, school, libraries, during travel etc
- Providing access to more information
- Supporting both formal and informal learning
- Providing access to very large collections of primary and secondary information.
- Greater opportunity for publishing
- Availability for long time
- User interface for information retrieval systems
- Entering a new civilization in digital libraries and its social impact.

1.2.14 Various Digital Information Services Provided Through Electronic Libraries

Following are some of the electronic/Digital information services, which can be provided by Electronic libraries:

1. On-line public Access catalogue (OPAC)
2. CD-ROM Network Service
3. On-line Circulation Transaction
4. E-mail Service
5. Bulletin-Board Service
6. CAS (Current Awareness Service)
7. SDI (Selective Dissemination of Information)
8. Indexing and abstracting service
9. Content page service
10. Intranet and Internet service
11. Other bibliographical service and demand

1.2.15 Users of Electronic/Digital library

As a matter of fact, users of electronic information in India can be broadly divided into following four groups.

- Those who have started using the latest technology and digitized information.
- Those who have been using these technologies and electronic information

- Those who have the fear of using new technologies for information retrieval
- Those who are intermixed between the above three groups, but have no training to use the technology of accessing global information

1.2.16 Advantage of Electronic Libraries

1. Electronic libraries have tremendous capacity to store huge data
2. Save a lot of space in the library
3. Can be updated every minute
4. Bibliographic data is fed only once
5. Afford very large and multi approach searching capabilities
6. Use of Boolean Operators is possible
7. Can easily be integrated with document acquisition and circulation systems
8. Information is always available and not limited by physical location
9. Electronic document can be shared by many at a time
10. Quick, accurate and easy to locate information
11. Provide access to current information
12. Electronic clipping and reference services can be provided
13. Very easy to copying and printing materials in library

1.2.17 Issues and challenges in developing electronic libraries

In the context of digital image, libraries face grater challenges in capturing, storing, formatting, retrieval and reproduction of non-textual information. Because it is a new area of developing source of information and experiences are few. As the arrival of electronic libraries are imminent,

libraries are forced to re-educate themselves to meet the new challenge. The principal categories of information sources are text, video and voice. The visual representation of objects, colors and shapes has always been an integral part of human culture. Hence the representation of visual phenomena through photography; motion film and video have become part of our daily lives, for information to be communicated broadly, it needs to be stored outside the human memory.

Most Relevant Function of Electronic Information Resource Flow Chart

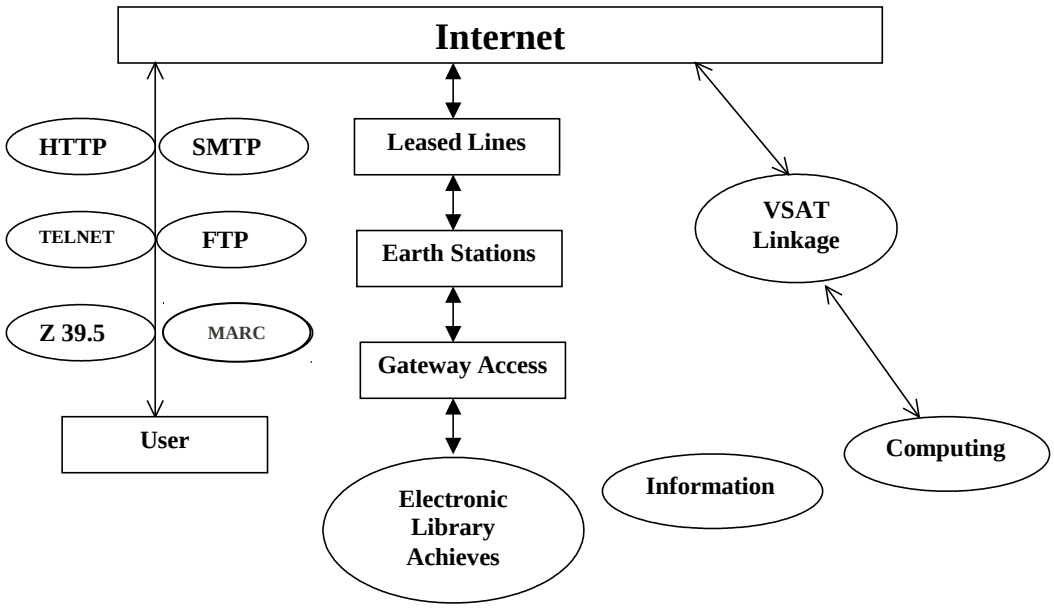


Figure No: 1

Digital Libraries appears to have thrown open an exiting new area for interaction between information technologists and library ‘demise of book’ libraries without walls and knowledge centers are being floated to describe the concept of the library of the feature. Digital or electronic libraries are organized collection of digital or electronic information. They combine the structure and gathering of information. The fig no:1 describes that the information resources and the electronic library

archives are preserved in a digital forms and all these are loaded or transferred through leased line whether it is through an earth station or gateway access to the internet. The users use data capturing for the electronic conversion and cataloguing through HTTP (Hypertext Transfer Protocol, Telnet (Networking over telephone), Z.39.5 Software, SMTP (Simple Mail Transfer Protocol), FTP (File Transfer Protocol) and MARC. All these are loaded to computer is transferred through VSAT (Very Small Aperture Terminal) to the internet. Conversion of paper into digital or electronic forms is expensive and time consuming. Some type of objects, such as photographs, bibliographic sounds and videos are readily digital but books, Journals and maps are not. The fact that special hardware and software are essential to view digit objects compounds the problems. This is especially true in developing countries, where by the time the necessary hardware and software are acquired and installed a new version is released in the market.

1.2.18 Type of Electronic Information Resources

At the time of classifying the resources of Electronic information can be categorized as under.

18.1 Primary Resources

Primary resources are letters, manuscripts, diaries, journals, newspaper, speeches, interviews, memories, documents produced by government agencies, photographs, auto recording, moving pictures or video recordings, research data and objects in electronic forms.

18.2 Secondary Resources

The secondary resources are the documents which say about the primary resources of information, Bibliography, reviews, treatise are the example of this kind (Ref: Ibid).

In addition to these it may includes abstracts like Chemical Abstracts, Psychological Abstract, Dissertation Abstracts, Medical and Aromatic Plants Abstracts (MAPA), Library and Information Science Abstracts (LISA), Sociological Abstracts and Bibliographical Abstracts. Second sub-division of secondary resources includes indexes, like British Humanities Index, Biological and Agriculture Index plus, Indian Science Index, Applied Science and Technology index, Bibliographic Index, Business Periodical Index, Current Index to Journals in Education (CIJE), the Education Index, Humanities Index, The New York Times Index and Social Science Index. Third sub-category of secondary resources of information covers, Dictionaries, Encyclopedias, Biographical sources, Geographical sources, Bibliographies, Year books, Almanacs and statistical sources.

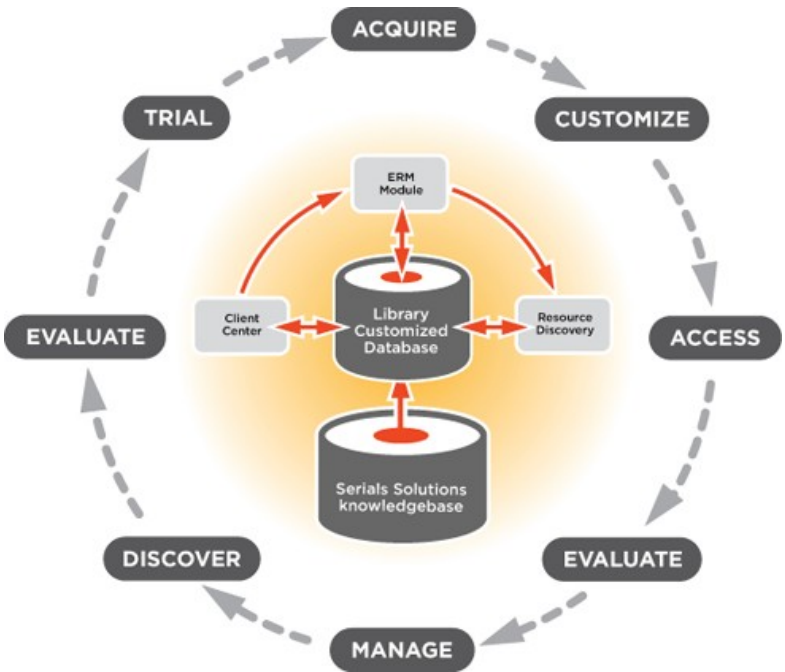
18.3 Tertiary Electronic Information Resources

This category of information resources accommodates distillation and collection of primary and secondary resources in electronic form. Encyclopedia, indexes, text books and other reference resources which present summaries or introductions to the current state of research on a topic summarize or condense information from primary and secondary sources or provide a list of primary and secondary sources of more extensive information. George S. Bonn-Text book, directors, literature guide and Denis Grogan's, year book, bibliographies of bibliographies, guide to literature, list of research in progress, guide to organizations, guide to libraries are the important resources which are available in digital form on computer.

1.2.19 E-Resources Flow Chart or Flow Cycle

A complete management system is needed for one to gain control over the selection, acquisition and usage of the existing electronic resources of an institute or firm. For this a resource manger is needed. Resource manger has become the knowledgebase for their electronic resources; the place where all information needed to keep things up and running is stored (Rosmary Arneson). As and when the libraries budget increasing their electronic holdings, the management of e-resources becomes complex and a resource manger offers a full set of features to control complex subscription management issues, from tracking license terms of use to managing renewal dates. A resource manger facilitates improved communication with staff and vendors using contract management, customizable alerts and resource notes. Resource manger is completely integrated with serial solutions knowledgebase and library's specific knowledgebase to enable accurate analysis and better decision making. Resource manger should store key data about subscriptions, licenses and holdings to simplify and streamline the management of e-resources. He should facilitates improved communication with staff and vendors using contact management, customizable alert and resource notes. E-resource workflow often require collaboration on a complex series of task, both before and after acquisition. E-resource work flow notifying appropriate personal for trial and renewal dates. The electronic resource manager (ERM) finding the electronic resources than evaluating through trial then acquire and customizing it then allows it for the access to total collection

Figure No. 2: E-Resources Flow Circle



1.2.20 Users Preference of online books

We are in a traditional period where more and more people are learning about, using and demanding access to online books. As we are large academic research library, print books are still vital to our collection and community of users. However, many students are now telling, they prefer books in an electronic format for certain activities such as searching within the text and quick reference information. Above all, students like e-books due to the convenience of being able to use the books where and when needed. Libraries need to embrace e-books to keep up with changing needs of our users. With many high-use materials such as books in a reserve collection, we see that print and electronic books are being well used by our students and that sometimes both print and electronic versions of a book are needed.

Libraries need to embrace e-books to keep up with changing needs of our users, but academic libraries also needed to develops flexible collection management strategies meeting their users needs. In general, researchers are very happy with online books, considering the fact that online books overcome problems peculiar to print collections. Moreover, searching in online books can be far more comprehensive and extends to full text, unlike searching in an OPAC where only book titles are searchable.

Advantages

Information being the power, wealth and potentiality adding source for socioeconomic, cultural and intellectual development of an individual, society and nation it becomes necessary to communicate it at local, regional, national and international levels. In order to rapid growth of information in the fields of social science, pure sciences and humanities emerging a number of subjects day to day makes out dated the existing tradition of information accessing, manipulating, retrieving, storing and disseminating the right information to the right user at right time at the remote distance. In this regard electronic information resources are playing an importance role in-

1. Accessing, manipulating, storing and distributing the information what when and where they required.
2. Providing need based and retrospective service to the users.
3. Networking facilities at local, regional, national and international levels keeping connectivity to the users all the times.
4. Enabling to get information through its means in electronic form or which form an individual requires.
5. Resources sharing at desired level to library or information center.
6. Coping with open mouth problem of space in libraries and information centers.
7. Automating system of library functioning enables one to locate required item easily and quickly.
8. Enabling to introduce friendly users' services at any time.
9. Huge collection of information may be stored in a small place.

10. Reproduction of engraved information in documentary forms and their longevity are secured.

11. Information access can be made without wasting any time.

12. Desired information can be acquired within few moments at learning desk. Sharma (2005).

Disadvantages

With a number of advantages to adopt electronic information resource system in a library there are also a number of issues and problems in semantic and technical, Collection development, Users handling, Library economics, Staff and Skills.

1.2.21 Development in Telecommunication Technology

The transmission of data from one point and reception at a remote point, using wire, fiber optics, radio waves, microwaves or another medium of transmission. In association with computing, it forms the defining technology of the information age. Although traditionally associated with the transmission of voice data, telecommunication systems are now universally used for transmitting digitized data of all kinds.

1.2.22 Electronic Data Interchange (EDI)

EDI is the method for conducting business transactions across networks, with the exchange of invoices, orders and other documentation carried out in a standardized manner between the computers of trading companies. A major objective is, by standardizing and simplifying, to shorten the time between ordering and delivery. There are thousands of companies using EDI throughout the world. The European Union supported its expansion in the mid 1990s through a number of cross border pilot projects, designed to

show that it can benefit both small and large business. EDI is a critical tool for E-COMMERCE, not least in the book trade and hence in the process of library supply.

1.2.23 FAX (Facsimile Transmission)

Fax stands for “facsimile” which means “a copy” more especially it stands for “facsimile” transmission. It was invented Alexander Baln in the year 1842. A fax machine scans an image and sends a copy of it in the form of electronic signals over transmission lines to a receiving fax machine. The receiving machine re-creates the image on paper.

A facsimile machine is a telephone copy machine. When we insert the original document into the machine the copy comes out another facsimile machines elsewhere in the world at the cost of a phone call.

The two types of machines are 1) Dedicated fax 2) Fax modems.

1.2.24 Video Text

It is the generic name for the group of electronic communication system, which makes use of television screens to display computer-based information. It transmits text or graphics stored in computer database via the telephone network for display on a television screen. They make the database stored on powerful computer system assessable through the television set and a telephone.

In order to function, videotext system needs a telephone line, to which a television is connected via electronic interface.

Information is displayed as frames and each frame is identified by a unique code. Frames can be traced via their unique code or by searching, using menus or key words, depending on the system.

1.2.25 Tele text

Tele text is a text based information system in which the information is transmitted by the television authorities using spare lines in the television signal. The broadcast signal is received and decoded by a suitable adapted television set. The information in Tele text system is structured as a series of pages on the broadcasting organization computer. These pages are broadcast on the spare lines in the TV signal as a continuous loop of pages. The signals can be received by anyone with a television set which has been fitted with the appropriate Tele text adapter.

1.2.26 Video Conferencing

Video conferencing is the use of television as, video and sound technology as well as computer technology to enable people in different locations to see, hear and talk with one another. Video conferencing can still consist of people meeting in separate conference rooms (or) booths with specially equipped television cameras. However, modern vide conferencing equipment, such as Intel's pro share hardware and software, can be set upon people's desks, with a camera and microphone to capture the person speaking and a monitor and speakers for the person being spoken to it. It requires modems, sound and video capture cards.

A relatively new development is an initiative to deliver video mail, video message that are sent, stored and retrieved like e-mail. One version would use the pro share windows based video conferencing product and oracle's media server, a computer storage system developed for movies on demand technologies.

1.2.27 Hypertext

A text document that contains linked to other documents and thus can be read in a non-linear fashion. Ted Neloon coined the term HYPERTEXT in 1965. A traditional text in the form of a book is typically defined as sequential or liner because there is an order in which the text must be read page two follows page one and so on. There are many advantages to this method of presenting information. It provides a logical sense of order. It can however, be an in efficient way to access large bodies of information.

A variety of mechanism can speak a user's search for information within documents. For example, a book such as this one uses an index, table of contents and section headings to speed access to various bits of information. The index provides a mapping from an idea to a particular page in the document containing these related pieces of information. Non-sequential ways to access information such as footnotes, references and indexes are useful way to deal with navigating and organizing large bodies of related information. With the amount of information available for consumption, exploring an alternative to sequential access seems appropriate. This is where the idea of hypertext comes in. A hypertext document is an electronic document that contains link to related pieces of information. It could be characterized as providing generalized footnotes. It is a non-liner way to have an access to information.

1.2.28 Hypermedia

A generic term now widely used for multimedia applications of the HYPERTEXT principle. This permits the user to follow associative links between units of information by clinking on a HOT SPOT with a mouse. Web-delivered documents are the most familiar form of hypermedia.

1.2.29 Network

A network is a system of interconnected computers, telephones or other communication devices that can communicate with each other and share application and data. It provides tremendous benefits.

- Simultaneous access to critical programs & data.
- Sharing of peripheral devices, such as a printer & scanner.
- Streamlined personal communications.
- Easier backup of data.

Computer linked by a TELECOMMUNICATIONS system Networks offers two resources. First, they offer access to the people who use computer on the network, by means of ELECTRONIC MAIL, conferencing or chat facilities. Second, networks permit the use of files (text, graphics, sound and video) software, databases and peripherals (like printer or fax machines) stored on, or attached to, computers on the network.

1.2.30 Electronic Information Environment

An electronic environment allows changes and updating of original information, provides different views/reading of the same document, integrates multimedia sources of information, permits interchange of data and offers software support online. All these facilities while being useful for some types of publication are not appropriate for every kind of book; different kinds of reading requirement make electronic translation more or less useful for the reader.

Features

Provide access to very large information collections including access to primary and complete information, not merely surrogates or indexes.

⇒ Support multimedia content

⇒ Network accessibility

⇒ User friendly interfaces

⇒ Unique referencing of digital objects

⇒ Multi use refer various area in same time

⇒ Current information science

⇒ Advanced search and retrieval

⇒ Supporting both formal and informal learning

⇒ Remote access

⇒ Online discussion& commands

⇒ Accessibility from anyone, anywhere, anytime, during travel, hotel etc. are supporting, opportunity to publishing, annotation and integration of new information.

1.2.31 Electronic Information Resources

Any information resource that is accessible through computers or network can be termed as electronic resources. It is also available through the Internet or through online databases. Electronic Information Resources (EIRs) originally published information in electronic form or in print form made available electronically.

Electronic media has proved its advantages over the print media. Any information resource that is accessible through computer or network can be termed as electronic resources like e-journals, e-books and e-data bases have increased considerably. Computer storage devices such as optical disk, CD ROM/DVD-ROM Databases accessible through Internet and other networks can be used or stored for further use.

Growth

Electronic information resources (EIR) have their origin in experimental computer Systems developed for the storage and retrieval of bibliographic data during the 1969. By the end of that decade some of the major bibliographic databases such as Chemical Abstracts and Index Medicus were available in magnetic tape versions that were searchable in offline batch mode. During the 1970s and 1980s, the increasing availability of this machine-readable data together with the emergence of both real-time interactive computing and computer networks enabled the online information industry to emerge. Initially the major scientific bibliography databases became available in machine-readable form.

During the 1980s, Academic libraries began to transfer from card catalogues to online public-access catalogues (OPAC) OPACs became widely available; the CD-ROM emerged as an information delivery vehicle. The emergence of the World Wide Web has enabled a revolution in electronic information resources. This environment differs from the earlier situation is that:

- The available information is not restricted to text but includes large numbers of images, audio and multimedia items so that it is more appropriate to think of them as information objects rather those documents.

- The information available is an amorphous mass to which anyone can add if they have even a limited knowledge of Hyper Text Markup Language and thus the available information is no longer subject to quality-control mechanisms prior to publication.

- The information is not structured to facilitate retrieval, but through the hypertext links it is structured to facilitate browsing and easy moving between information objects.
- The web browser environment has continued the trend towards user-friendly interfaces that was initiated by the development of CD-Rom and windows.

Alongside considerable change in the type and scale of available EIR, there has been an even more remarkable change in the users of these resources. Use of EIR has moved from being an esoteric activity undertaken by information professionals, and a slowly increasing band of other professional people, to an action-undertaken everyday by countless millions around the world.

The INTERNET sense simply as an access mechanism to the quality-controlled information products made available by information aggregations such as Dialog, or publishers such as ISI and the major (academic publishing such as Elsevier)

A range of tools has been developed to enable retrieval of material from the web. These include a large number of search Engines, directories, gateways and portals.

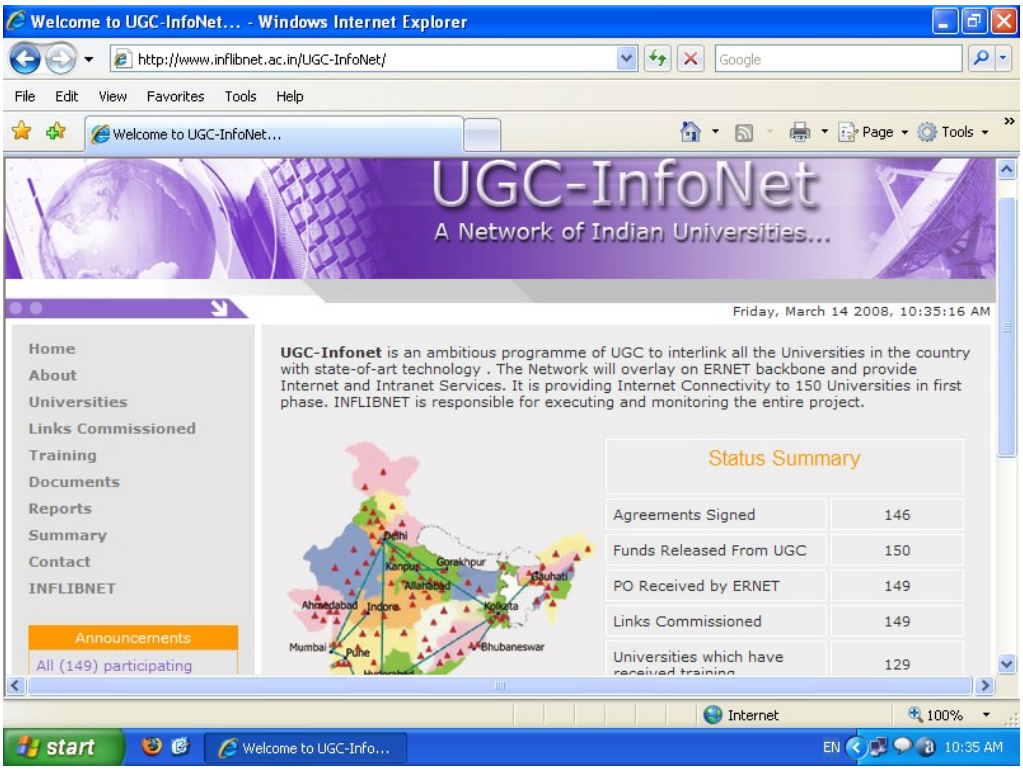
The search engines automatically create huge databases of items on the web. The indexing and updating of these databases is done automatically by software. It is often forgotten that even the largest of these search engines, such as Google and Alta Vista, provide access to but a small proportion of the resources available on the web.

The electronic surveillance and digitization of information and its flow on broad band electronic highways facilitate the connection of home, offices, including libraries and information centers to the National Information

Infrastructure (NII) for transaction of information. The need for speedy processing and retrieval of information resulted in a variety of storage media such as microfiche, floppy diskette, compact disc etc,

Information is stored in various ways in electronic form such as CD-ROM, Microfilm, microfiche, floppy, Diskette and other electronic structure, Today electronic information highways that link global business, institutions, and individuals can not even perceive it by the naked eye, but are operated by the so-called tele-informatique specialists and sophisticated business knowledge people through wired networks and computers.

1.2.32 UGC Infonet



The University Grants Commission (UGC) has initiated a programme to provide electronic access over the Internet to scholarly literature in all areas of learning to the university sector in India. The programme is wholly funded by the UGC. All universities, which come under UGC's purview, are the members of the programme. Director, Information and Library Network (INFLIBNET) centre, Ahamedabad, are executing the programme, which is an autonomous institution under the UGC. Access to various e-journals has started from January1, 2004. The consortium covers all the universities in India, which come under the purview of the UGC, and will gradually be extended to the college as well.

1.2.33 UGC E-Journal consortiums

The E-Journal programme is a cornerstone the UGC Infonet effort, which aims at addressing the teaching, learning, research, connectivity and

governance requirements of the universities. The E-journals programme demonstrates how communication networks and computers can be used to stretch and leverage available funds in furthering these aims. The programme has been made possible due to the close and understanding cooperation between the University Grants Commission, Education and Research Network (ERNET), the Inter-University Centers IUCAA, INFLIBNET and CEC, and the national and international publishers. A bouquet of E-journals was presented to the national by His Excellency the President of India on 28th December 2003 during the concluding day of University Grants Commission's Golden Jubilee celebrations.

33.1 Main features of UGC Infonet

Main features of UGC Infonet include:

1. Scalable architecture to growth from universities to affiliated colleges.
2. Nation-wide terrestrial backbone using fiber optic links.
3. Integrated satellite WAN supporting broadband and SCPC VSAT technology.
4. Comprehensive Network Management Systems for overall monitoring of the network, down to each and every device.
5. Linkage with other academic and research networks all over the world.
6. Data security and virus protection using firewalls and intrusion detection systems.
7. Dedicated data centre for web hosting, e-journals and mailboxes.
8. Mirror sites spread all over the country for content hosting.
9. Broadband multimedia and video channels for distance learning.

33.2 UGC Infonet in higher education

Under UGC Infonet programme it is proposed to use Information and Communication Technology (ICT) and Internet to transform learning environments from a mono-dimensional one to a multi-dimensional one. UGC Infonet is a boon to the higher education systems in several ways.

- It acts as vehicle for distance learning to facilitate spread of quality education all over the country
- It is a tool to distribute education material and journals to the remotest of areas.
- It is a resource for researchers and scholars for tapping the most up-to-date information.
- It is a medium for collaboration among teachers and students not only within the country but also all over the world.
- It acts as an Internet for university automation.
- It encompasses entire university systems for most efficient utilization of precious network resources.
- It establishes a channel for globalization of education and facilities the universities in marketing their services and developments.

33.3 UGC Infonet and the Indian University System

Under the UGC Infonet E-journals program 50 universities gets electronic access to resources and many other universities will join subsequently. The resources are accessed based on the Internet Protocol (IP) ranges supplied to the publishers. University also signs Memorandum of Understanding (MoU) with University Grant Commission and INFLIBNET to use the resources for academic cause. The members of this consortium get

access not only to current year but also 7-8 years back access in many cases. There are few publication viz. The American chemical society, Institute of Physics etc. the access is available from volume no.1 and issue no.1. This facility enables the subject experts and academicians to browse, downloads and prints the relevant articles for their research and academic development. The databases and journals licensed to a consortium are available to all simultaneously at the same time, which is not possible in case of print access. INFLIBNET centre, Ahmedabad also maintains one print copy of the journals subscribed in many cases as a national archive, which can be referred by the research and academic community across the country. This initiative helps the universities to supplement their existing collections with these journals and databases. The consortium encourages the university to maintain their print subscriptions as University Grant Commission funds the entire programme. Under this initiative there is no need to pay for subscription to electronic journals.

1.2.34 A New Horizon in the Field of Education and Research Colleges to be given Infonet Access

The University Grants Commission (UGC) will soon extend to select colleges its e-resources access, which, so far, has remained a privilege of the country's top universities. It will not be long for the colleges to become part of the UGC's digital library networks. The UGC has decided to extend its Infonet (information network) services to 200 colleges, initially as part of improving higher education by reaching out to remote areas with quality material.

Infonet is a programme under the UGC Inflibnet (Information Library Network), which makes available to networked libraries more than 4,500 core and peer-reviewed journals and bibliographic databases from two-dozen publishers and aggregators in various disciplines.

Science its launch in 2004, 120 of the 171 universities that come under the preview of the UGC have been provide differential access to subscribed e-resources covering almost all disciplines, including those in arts, humanities, social sciences, physical sciences, chemical sciences and life sciences and computer sciences, mathematics and statistics.

The UGC will initially link the 100 colleges currently enjoying the CPE (College with Potential for Excellence) status with Infonet. Thus, the eight CPE colleges in Kerala State will get Infonet access in the coming months. Inflibnet authorities say various factors such as the location, student strength, age of the institution, awareness levels and accreditation by the National Assessment and Accreditation Council (NAAC) will be considered for giving access. In the first phase, only colleges funded by the UGC will be considered. In the second phase, says Mr. Hosamani, the UGC will consider giving associate membership to deemed and private universities and other institutions or research. At present, there are 330 universities, including the private and deemed ones, in the country.

The UGC set up its Infonet Digital Library Consortium at a time when the universities began to stop subscription to scholarly journals because of their prohibitive costs. In UGC terminology, the crisis that spring out of the cost of journals rising much faster than the rate of Inflation, increase in the number of journals and the paucity of funds available to the libraries was known as a “serials crisis”.

The Infonet programme, being implemented in a phased manner, provides access to current issues of the journals as well as their archives. Inflibnet is an autonomous inter-university center of the UGC that creates infrastructure for sharing of library and Information resources among academic and research institutions. It works collaboratively with Indian university libraries to shape the future of the academic libraries in the

evolving information environment. So far, 142 universities have been funded by the UGC under this programme for automation and networking.

Only four of the seven universities in Kerala- the University of Calicut, the University of Kerala, the Cochin University of Science and Technology, and Mahatma Gandhi University-currently have Infonet access. Sanskrit and Kannur universities will be connected in about two months, says K. Ravindra Asari, co ordiantor of SOUL (Software for University Libraries) for Tamil Nadu and Kerala.

1.2.35 Electronic resources subscribed under UGC Infonet

UGC Infonet e-journal consortium subscribes electronic resources of the following databases and publishers.

- American Chemical Society
- American Institute of Physics
- American Physical Society
- Cambridge University Press
- Project Muse
- Encyclopedia Britannica
- Nature
- Kluwer online
- Ingenta
- Springer
- Emerald Full text
- Science Direct

- Elsevier
- J Gate
- JSTOR
- STN
- Portland press
- Royal Society of Chemistry
- Taylor and Francis

1.2.36 Information and Library Network (INFLIBNET)

Information and Library Network (INFLIBNET) was started as a project under the Inter University Centre for Astronomy and Astrophysics (IUCAA) in 1991 with its head quarters at Ahmedabad. It became an

independent Inter University Centre (IUC) of UGC in 1996. INFLIBNET was designed to be a major player in promoting scholarly communication between academic and researchers in India.

During the past ten years, INFLIBNET has played a significant role in the automation of university libraries in India. To bring the information technology culture in the universities and automate the university libraries funds were provided for five years depending on the size of the universities to establish computer system facility in the university libraries with a non-recruiting grant for establishing computer and network infrastructure and recurring grants for five years for maintenance. This helped the libraries substantially to procure the hardware and software for library automation activities.

The INFLIBNET conducted intensive training courses workshops for the professionals, developed a library management software(SOUL), built up union databases of materials of universities and provided access through its website http://www.inflibnet.ac.in. INFLIBNET has been instrumental in creating an Information Technological conscious environment in the university libraries in India.

1.2.37 Edusat

Edusat is the first exclusive satellite for serving the educational sector. It is especially configured to meet the growing demand for an interactive satellite-based distance education system for the country through audio visual medium, employing Direct to Home (DTH) quality broadcast (http://www.isro.org).

Edusat was launched by Indian Space Research Organization (ISRO) on 20th September 2004. The successful launch of Edusat weighing 1960 kilogrames into a geostationary orbit, from Satish Dhawan Space Centre, Sriharikota, marks an important mile stone in ISRO's effort to use space technology for providing high quality education across the country. Edusat can establish the connectivity between urban educational institutions with adequate infrastructure imparting quality education and the large number of rural and semi-urban educational institutions that lack the necessary infrastructure.

Aims of Edusat

1. To popularize the qualitative education.
2. To link all educational institutions together.
3. To bring out new educational methods and researches to the common people.
4. To provide guidance in the education field.
5. To provide interaction facilities with the experts of presented topics.
6. To give more importance to technology-based curriculum.

1.2.38 Edusat and Kerala

On July 28th 2005 His Excellency Dr.APJ Abdul Kalam, President of India inaugurated Edusat service in Kerala. To disseminate Edusat service, Kerala adopted VICTERS (Virtual Class Room Technology on Edusat for Rural Schools) and 16 Satellite Interactive Terminals (SIT) were formed in each of the district of Kerala. Being a vast location and high range at the Idukki district got two SIT centers. The main studio situates at Gorkhi

Bhavan, Trivandrum. The classes are conducted at Trivandrum studio, and all the centers are receiving the classes through Edusat at the same time. It is an Internet facility. Each centre is getting the chance to interact with the experts.

1.2.39 Electronic Journals and Scholarly Communication: Key Players in the following Fields

39.1 Scholars

With the relative ease of distributing documents on the Internet scholars can, if they wish, completely bypass the publisher [Hayes]. Every scholar can archive his or her own work publicly on the web, first as preprints and later on as published referred papers. Scholarly communication would then shift onto the web, enabling libraries to cancel subscriptions, and so bringing down the 'paper card house' [Harnd]. A prime example of this is the Los Alamos National Laboratory Preprints Archive <http://arxiv.org/>. Begun in 1991 by Paul Ginsparg, the archive makes available the papers of scientists in different specialized areas of physics.

39.2 Universities and Libraries

As suggested by Bernet, the university press can play an important role in reengineering scholarly communication [Bernet.]. As the fundamental aim of university presses is to disseminate scholarly information, they could help scholars regain control over their research by publishing their specialized works. This way the universities could reduce the amounts of money spent buying back their scholarship. The library could be given the responsibility for managing the scholarly research written by the members of its parent institution. This would place the library in the role of the publisher and archivist of scholarly research [Quinn.].

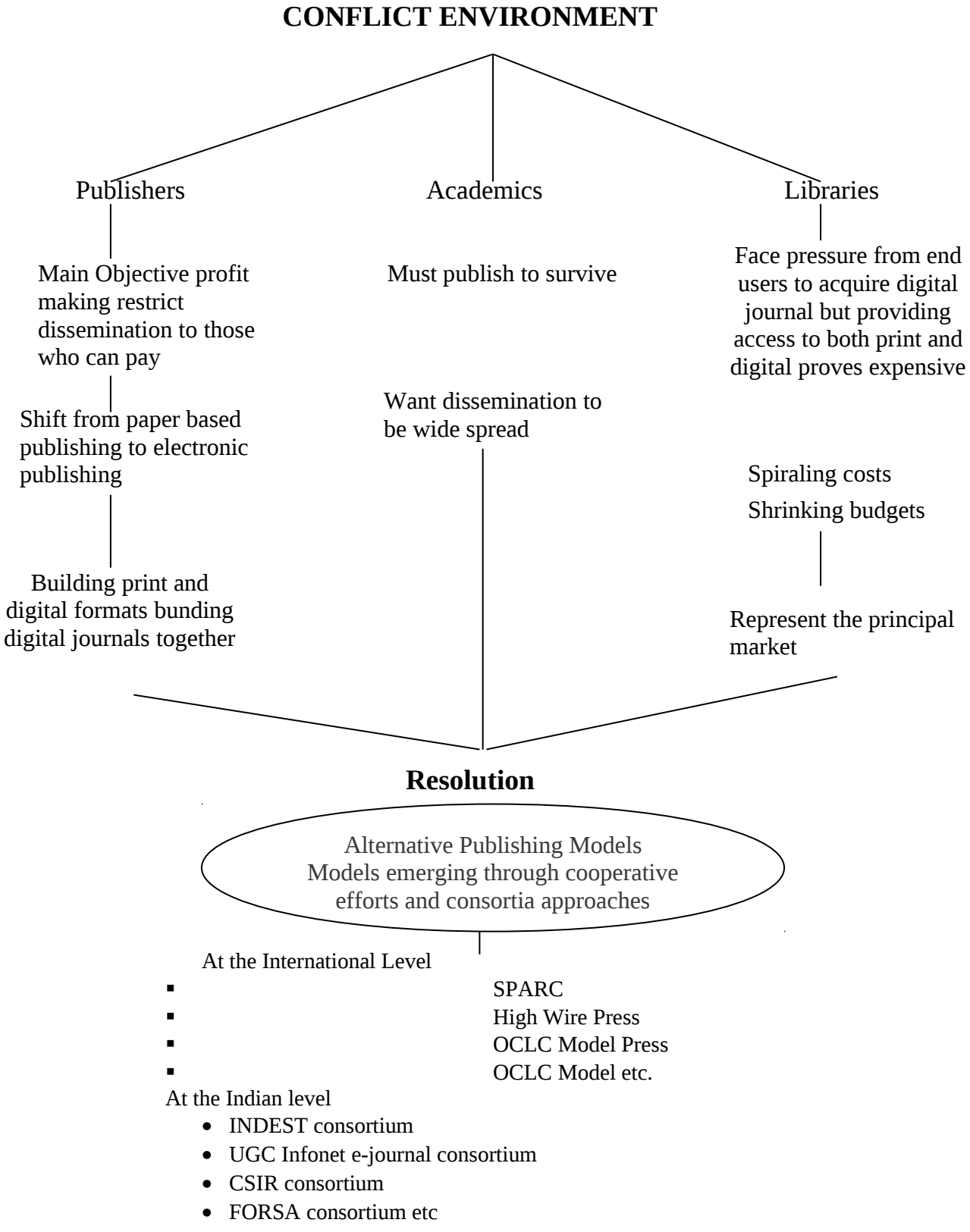
Some of the universities have started publishing the work of their academia on the pretext that they already pay them high salaries and if their work is given away to the commercial publishers, the universities have to purchase it back for their own libraries at exorbitant costs. University libraries too have joined this venture. Four notable initiatives with key participation by university libraries that have attempted to support small publishing efforts are:

- High Wire Press (Stanford University) http://highwire.stanford.edu/
- Project Muse (John Hopkins University) http://musejhu.edu/
- J1S (Journal of Insect Science) (University of Arizona) http:// insectscience.org/about
- SPARC (Association of Research Libraries) http://www.arl.org/sparc

39.3 Commercial Publishers

The Internet, no doubt, provides scholars/institutions the potential for becoming the primary publishers in scholarly communication. It does not mean the end of commercial publishing. Commercial publishers will continue to play a role in scholarly communication through functions such as filtering of authors and works, compiling and correcting texts, adding features to facilitate use, incorporating complementary materials, adhering to timetables, distributing the finished product through established channels. However, they will have to be innovative in adapting to a new medium, the electronic environment provides publishers with the chance to improve the functionality of the journals by adding new multimedia features and harness Internet as a distribution vehicle. With hypertext, the journals could regain their communication role while continuing to legitimize and filter scholarly communication. Consequently in future, the electronic journal may play a more important role in scholarly communication.

Fig no 3


CONFLICT ENVIRONMENT
Publishers
Academics
Libraries
Main Objective profit making restrict dissemination to those who can pay
Must publish to survive
Face pressure from end users to acquire digital journal but providing access to both print and digital proves expensive
Shift from paper based publishing to electronic publishing
Want dissemination to be wide spread
Spiraling costs
Shrinking budgets
Building print and digital formats bunding digital journals together
Represent the principal market
Resolution
Alternative Publishing Models
Models emerging through cooperative efforts and consortia approaches
At the International Level
SPARC
High Wire Press
OCLC Model Press
OCLC Model etc.
At the Indian level
INDEST consortium
UGC Infonet e-journal consortium
CSIR consortium
FORSA consortium etc

From the above situation two points emerge;

1. Scholars will continue to need the means for disseminating their ideas to their colleagues; and

2. There will be increasing reliance on digital means to make this possible,

Digital publication provides the promise of cheap publication. It is considered to be significantly cheaper than print publication [Odlyzko.]. Print journal is seen as an "antiquated legitimizing tool" confined to an expensive medium and controlled too much by the commercial sector. This dichotomy between the digital publication and print publication creates a conflict environment among the stakeholders is explained in the fig no3

The main objective of the commercial publishers is profit making. They possess the commercial and business expertise and the entrepreneurship to undertake the publication of new journals. They are ready to exploit any situation that promises to yield profit. Whichever price model the publishers offer i.e. whether it is publisher's price plus model or less than the publisher's price, it is so maneuvered that it results in the overall profit to the publishers. The publishers hang on to the pricing mechanism of the printed model. To avoid any fluctuation in the price level, they have resorted to 'bundling print and digital formats; the price of the bundle being related to the print price' [Anon.]. They also commonly bundle digital journals together and offer libraries access to an entire list as a single product.

The academics must publish to survive. To gain recognition and to progress in their careers, they are motivated to publish in journals with a high impact factor [Garifield.] and having international circulation.

Their conflict with publishers becomes deep rooted. The publishers restrict their publications to those who can pay while the authors would like the dissemination of knowledge to be a universal phenomenon. Also, they would like it to be low priced. Out of this conflict emerges the urge on the part of the academics to seek alternative publishing models.

Libraries which represent the principal market for both the print and the digital publications face the pressure from the end users to acquire digital journals. Providing both kinds of journals proves too expensive for them. So like the academics, they too look for new publishing models,

1.2.40 Background Information

Kerala is located on the southwestern coast of Republic of India, between north latitude 8 degree 18’ and 12 degree 48’ and east longitudes 74 degree 52’ and 72 degree 22’. It is bounded on the north and northeast by Karnataka state, on the east and south by Tamilnadu and on the west by the Arabian Sea. The state covers an area of 39,863 square kilometers, which makes it the seventeenth in area among the states of India.

The present political entity, know as Kerala was formed in 1956 by the State Reorganization Act of 1956. Kerala has 31,838,619 people according to the 2001 census, which is nearly 3.44 per cent of the country’s population. The sex-ratio recorded in this census is 1058 females per 1000 males. The nature of the terrain and its physical features, divides an east west cross section of the state into three district regions- hill and valleys, midlands plains and costal region. The majority of the population lives in coastal region.

The state has a unique place in the literacy map of India, with a literacy rate of 90.92 percent. Keralites have migrated in large numbers in search of employment to several foreign countries like United States, Malaysia and Singapore in South East Asia as well as to several countries of Africa and

West Asia. The professionals of Kerala are among the most wanted experts in the fields of Medicine and Information Technology (www.govt.of kerala.org.in).

The education system in Kerala is based on 10+2+3+2 structure, which provides ten years of primary and secondary education followed by two years of higher secondary education, three years of graduate education and two years postgraduate education. M.Phil., a preparatory programme for doctoral level studies is normally of one year duration. PhD programmes require research study for minimum two years.

Primary education is the first level of formal education school education in Kerala. There are 6712 lower primary schools in Kerala in government, private aided and unaided sectors. Primary education starts at five years of age. Secondary education constitute a consolidation and transition between primary and higher secondary education. There are 2951 upper primary and 2608 high schools in Kerala. At the end of secondary education, the students sit for examination for the Secondary School Leaving Certificate of Board of Examinations, Kerala. In higher secondary level, there are 2608 higher secondary schools in Kerala. Besides this, there are 375 Vocational Higher Secondary Schools in the state.

University education is the apex of Kerala's formal education and training. Apart from undertaking research and development, the universities are preparing high-level manpower for national development. Other than universities, education and training are also provided by institutions such as Polytechnics, Teacher training colleges, Food craft institutes and specialized institutions run by government and ministries. There are 121 polytechnics, which offer diplomas and certificates in various fields of technical trades.

The State of Kerala has at present seven universities namely;

1. University of Kerala
2. University of Calicut
3. Cochin University of Science and Technology
4. Mahatma Gandhi University
5. Kannur University
6. Kerala Agriculture University
7. Sri Sankaracharaya University of Sanskrit

There are 356 Arts and Science Colleges affiliated to four Universities namely, Kerala, Calicut, Mahatma Gandhi and Kannur. Out of these, 39 are government colleges, 150 are private aided colleges and 167 are private unaided colleges.

There are several government departments providing non-formal education for adults through extension services and literacy programme aimed at enhancing the participation of the whole communities irrespective of age, sex, religion for socio economic improvement and overall development of the state.

1.3 Need and Significance of the Study

The investigator wish to conduct a study about the use pattern of Electronic Information Resources in the College Libraries in Kerala, because the present study focuses on the seamless usability of the electronic information resources and its growth, development and maximum use of these most modern electronic information are taken for a clear cut study and assessment. Today's students may be more sophisticated than their predecessors in using some of the basic functions of many systems, however many are clearly unaware of the limitations and use of many electronic sources of information. Student entering higher education appear to have

raised expectations about the capabilities of electronic resources. So this type of study is significant and important in the new IT Era.

'Use' is the key purpose and 'user' is the key and dynamic component of any institutions especially the colleges. The ultimate aim of any user study is to help, design, alter, evaluate and improve efficiency and effectiveness of the library and information system and their products and services in meeting their pre-determined goals.

1.4 Statement of the Problem

The study is entitled as "*Use pattern of electronic information resources in the college libraries in Kerala: an analytical study*".

1.5 Definition of the Key Concepts

Use Pattern: The Champers dictionary[1] defines use as "The state of fact of being used, an advantageous purpose for which a thing can be used".

Webster's encyclopedia[2] unabridged dictionary of the English language (1994) defines use as "a way of being employed or used, a purpose for which something is used".

The dictionary definitions hold good in the present study.

Pattern: According to Oxford Dictionary & Thesaurus[3] the pattern is a model, design or instructions from which things is to be made.

Electronic Information Resources: According to Reitz (2005) **"**Information resources that are accessible through computers or network are termed as electronic information resources"

College Libraries in Kerala: According to Reitz (2005) [4] a "College library" is a type of academic library maintained by an independent four-year college,

or by one of several colleges with a large university, for the use of students and faculty.

Kerala: The state of Kerala was formed on 1st November 1956 with the integration of the Travancore-Cochin state and Malabar. Its area is 38,863 sqkm and has 31 million populations. Neighboring state are Tamilnadu, Karnataka, Mahe, Lakshadeep Islands.

Analytical: According Champers dictionary analytical refers to "having ability to analyze or division into elements or principle'

Study: means acquire knowledge by memorization or research or an experiment.

1.6 Objectives of the Study

The major objectives assumed for the present study are as follows:

(1) To assess the current use of electronic information resources in the arts and science college libraries in Kerala.

(2) To measure the use of electronic information resources for the academic activities of the colleges students

(3) To find out the most favorable electronic information resources in the college libraries.

(4) To suggest measures for improvement of existing electronic information resources and services.

(5) To highlight the impact of electronic information resources on college libraries and its results.

(6) To explain the concept, need of various type of electronic information resources available in college libraries.

(7) To identify the impediments and challenges, in general, faced by the users of college library in regard to e-resources.

1.7 Hypotheses

The study is based upon the following assumptions:

1. Users are not fully satisfied with the electronic information resources available in college libraries in Kerala.

2. There is a significant difference between male and female students regarding the use of electronic information resources in college libraries in Kerala

3. There exists a significant difference between UG and PG students in the use of electronic information resources.

4. The use of electronic information resources is very high for the academic activities of the college students.

5. The UGC NAAC accreditation improves the present quality and environment of the colleges.

6. Electronic journals are the most favored electronic information resources available in the colleges.

7. Most of the users are not properly using the electronic information resources available in the college library.

1.8 Scope and Limitations of the Study

The studies were proposed to assesses and establish the various use pattern of electronic information resources in the college libraries in Kerala. The purpose and motive for retrieving information from electronic resources, the most used electronic sources, the regularly used electronic sources, the

regularly used search engine, the extent of user-friendliness, opinion about the accessibility of electronic resources, extent of support of the library and information centers in academic activity etc.

Since the study would conduct as a part of the fulfillment of course, and the investigator wishes to complete it within the limited time span the study is confines to the arts and science college libraries in Kerala. The investigator decided to take a stratified sampling of the population for this study.

1.9 Organization of the thesis

The report is presented in five chapters. The First Chapter comprises introduction, problem of the study, definition of key terms, objectives and hypotheses, need and significance of the study, scope and limitations of the study and organization of the report.

The Second Chapter reviews related literature of the problem under the study.

The Third chapter describes the methodology of the study. It consists of the variable of the study, sample used for the study, sources of data, tools used for the study, data collection procedure and data analysis techniques.

The Chapter Four confined to analysis and interpretation of data.

The Chapter Five is devoted to summery of findings and suggestions. This chapter covers summary of findings of analysis, tenability of hypothesis, suggestions for the improvement and further research.

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CHAPTER – II

REVIEW OF RELATED LITERATURE

This chapter presents review of related studies conducted in India and abroad. Literature review can help the researcher to formulate research design and appropriate tools for the successful completion of the study. The review includes paper presented in seminars, conferences, articles published in seminars, conferences, article published in scholarly journals, research abstracts, books and library websites which deals with the current developments in usage of EIR. These studies under review have offered insights on issues related to the use pattern of electronic information resources in the college libraries in Kerala. It also helps to avoid duplication of research and helps to go deep into the problems at one hand and to study the different side of the problem on the other. The literature reviews are arranged chronologically.

The review of literature is not mere reading for reading sake, it is also not a casual reading of the story or novel. It focuses and directed towards specific purposes. It is also selective. A researcher has to select the kinds of literature to be reviewed and determined the purpose for which he has to study them. The literature review starts with the selection through the various stages for the research process and ends with report writing.

Braid (1994)[1] stated that electronic document delivery has assumed much greater importance recently. At the same time there is a great deal of confusion over what the phrase means. The author described this paper gives one definition and examines some of the reasons for the sudden upsurge of interest. There was a brief history of electronic document delivery development at the British library document supply centre and details of current activities and future plans. There are details of the development of a

standard for electronic document delivery and practical application of that standard. This paper includes with some the barriers to progress.

Prabhakaran (1996)[2] studied the need of electronic publishing. The numbers of publishers providing online access to many of their journals are increased. The study was based on the electronic access and their problem in Tata Institute of Fundamental Research. Here the steps involved in the process of building up their structure for online journals are described. Tata Institute of Fundamental Research library is presently having online access to several journals in electronic format. While making this electronic journal available to its users, library has numerous experiences so that other libraries may benefit by them.

Anuradha (1999)[3] in a paper presented the growing user needs and the change of user character for access to information. The paper described the concept of digital libraries and their nature, functions and environment. It explained the digital library products and systems. The paper also overviewed the electronic information sources and explained the importance of CD-ROM in digital libraries. It highlighted the impact of digital libraries on information transfer and also identifies its limitations.

Deverajan (1999)[4] discussed the role of digital libraries in the present day information environment and new challenges and promises for library services especially in the Third World Countries like India. The paper pointed out a number of problems as hurdles for the development of digital libraries in developing countries. Lack of indigenous efficient and effective library software packages, lack of information policy and information culture, inadequate fiscal allocations in libraries, problems relating to the conversion of the existing manual databases in to computer readable databases were some of the problems faced in materializing the concept of digital libraries.

Rekha (2000)[5] provided information about e-journals in terms of their development, advantages and disadvantages. Some of the advantages the author observed were multimedia capabilities, accessibility, speed of production and distribution. Disadvantages posed by e-journals include technological barriers and economic barriers. The paper reviewed the current trends concerning e-journal, which libraries need to be aware of some practical implication that are unique to academic libraries were also discussed.

Meshram (2000)[6] explained the characteristics, perspectives, and issues problems of the electronic journals. On the basis of distribution methods, identified four types of e-journals and estimates of a number of currently published electronic journals identified in the paper were format and intellectual quality, high subscription rates, legitimacy, archival and cataloguing etc. The article concluded that the evolving information technologies are imposing unpredicted challenges in the fields of library management but these technologies are taking closer to the sacred mission of libraries, which is by providing right information to right person at right time.

Saji *et al.*, (2001)[7] made an attempt to discuss the state-of -the art in the field of electronic books. With some possible definitions, genesis and comparison with printed books, the various hardware and software available for reading e-books were illustrated. After describing the possible offline and online delivery modes, it discussed at length the online web delivery of electronic books with a few illustrative examples. The major impacts of e-books in libraries like accessibility, services, ownership etc were elaborated.

Singh (2001) [8] an attempt has been made to describe the problems in subscription of periodicals in NCERT library. The study highlighted importance of periodicals and the problem related to the subscription of foreign periodicals through agents. It also offered some evaluate comments on different measures adopted to avoid difficulties, concluded with practical

difficulties experienced in NCERT library in acquisition of periodicals through agents.

Frnkline *et al.,* (2001) [9] defined e-publishing as the publication process where the manuscripts are submitted in electronic format, edited, printed and even distributed to readers by employing computers and telecommunication system. The full capabilities of the electronic media include motion sound and interactive features are exploited in the creation of completely new publication forms. The study revealed that the number of journals available on-line are increasing day by day. The journals of knowledge synthesis in nursing have no point equitant.

Huta (2001) [10] studied about the journal selection. He observed that it is very crucial point in the net environment and limited budget in any library and information centre. The study emphasized on the limited budget and tries to find solution of the problem in journal selection by using the theory of marginal utility. Also discussed how Bradfor's law is effective for cost analysis and journal selection. This alternative approach tries to find out the solution for best selection and optimum utility of the budget.

Saroja (2001) [11] assumed that in the present day society Internet and the World Wide Web (www) have become important source of information. She pointed out that many research studies sites and the resources available on the web. The study examined the source of cyber information and discussed the need of quantitative studies regarding the information available in the cyberspace. In particular, she examined the problem associated with citing e-resources and attempted to answer some of the question on account in citing e-resources. The study suggested for evolving studies in citing e-resources.

Siddiqui Rana (2001)[12] discussed the emergence of new tools for library and information processing and retrieval of the information. They

examined the various information storage tools and their application. The paper described the online information retrieval techniques, through Internet. The study concluded that the modern libraries equipped with modern form of technology make the resources of information globally available and consequently the role of libraries is more dynamic and ever changing.

Demilew (2001)[13] investigated the potential of electronic document delivery services for academic libraries in Ethiopea. The objective of the study was to investigate the existing manual-based document delivery system of academic libraries in Ethiopiea with a view to proposing enhanced resource sharing among the academic libraries through the application of EDDS. To carry out the survey the investigator employed questionnaires, interviews, onsite observation techniques and reviews of existing documentation. The survey reveal that among the 17 libraries, majority of library staff have computer skill. The survey also reveals that most of the institutions have used the postal system to deliver locally published materials. The computers were heavily used for word processing, and some libraries used them for searching databases from CD-ROM. Very few libraries have started to use them for in-house databases development or information retrieval services. The major financial resources of libraries were their parent institutions. All academic institutions received aid donor-supported project assistance for the major part of their acquisition and some specific activities from overseas. The survey revealed the many challenges and opportunities end user face in obtaining research materials not available locally. From the discussion it was observed that all libraries have an interest in a strong information resource-sharing consortium using EDDS.

Devraj and Singh (2002)[14] discussed digital libraries and its gaining importance with the aid of Internet for library operations by down loading information from remote databases. In India more that 180 universities and

over 6 thousand colleges use the library services for their academic and research activities and depend on resources available in their libraries. Currently the technical, scientific and management institute libraries are functioning in isolation and there is no mechanism for the dissemination of valuable information available in these institutes. The authors have discuss search engines and digital libraries on web site via internet and all these aspects from the Indian point of view and the digital library network now in operation in India. Internet based resources and services are very valuable particularly for the developing countries since the printed sources of information are not easily available in time from the developing countries.

Murthy (2002)[15] the author described the tools required for information professionals in handling the Internet in order to satisfy the users. Gateways are the Internet search tools to help users to find resources on the Internet. Gateway information is electronic journals, data sets, e-books; educational institutions, institutional home pages. Gateways are needed to improve the effectiveness of Internet searching. The establishing of the gateways as a process of identification, filtering, description, classification and indexing before they added to a database which is freely available via the world wide web. The aim of the digital library gateway website is to serve as a library guide to the resources and services. Indian statistical institute library has applied few digital information techniques and is providing the information services to its users. The Internet is only the latest of the important technological advancements that libraries have enthusiastically adopted in their quest to deliver improved information service to library users.

Mohan (2002) [16] discussed the collection, development and resource sharing of scientific libraries for the Oceanography and Fisheries Research. A study was conducted and subsequently substantial duplication was identified relating to subscription to the periodicals in some special libraries of the

Cochin city. The study highlighted the duplication of acquisition and the amount spent for the acquisition of these journals. To solve these problems a network environment is essential for collection development. The study reported with the facilities and database available for the development of such a networking system within the city.

Swarna *et al.,* (2002) [17] discussed the characteristics of e-journals. The main objective of the study is to describe the physical organization and layout of the electronic journal and comprehend the subject coverage. The study found that the electronic journal facilitates dissemination of research result in less time, low cost and offers universal acceptability, flexibility and interactivity, the list of journals on the internet which are accessible absolutely. Conclude that the library should select such journals, evaluate them and make them available to the user community through their local website.

Ali (2003) [18] conducted a study about the use of the electronic information services by the users of IIT library Delhi. The questionnaire supplemented with interview method has been used to solicit the opening of the different level of users group. The study also examines the utilization and satisfaction level of users about Internet, CD-ROM databases and other services provided by the library. Finally it highlights the suggestions made by the users for further development of electronic information services at IIT library Delhi.

Natarajan (2003)[19] described the definition of databases and the functions of Internet, which helps the library and information science professionals in many ways for providing better services to their users. The paper, described the different types of electronic resources available. The factors determined for quality of e-resources like, authority, content, currency and timeliness and special attributes were discussed in detail. The

considerations for evaluating the e-resources were discussed under the heading like content, access, technical support, cost, legal and support tools. The selection of different types of e-resources and the evaluation of the same were discussed. The article conclude that library and information science professionals should be well aware of the e-resources available and evaluate them before acquiring/accessing them for their users.

Equbal and Soomaraza (2003) [20] stated that over the years there has been a rapid rise of a number of e-journals. In most of the cases these journals are available free to print subscribers. The management of e-journal raises a new set of issues regarding urgent attention. The issues surrounding can be resolved through collective efforts and co-operation of libraries, publishers and vendors of e-journals. It is also describes the types of journals, CD-ROM journal, selection and acquisition of journal and explains about managing the e-journals in the digital environment.

Murthy (2003) [21] conducted a study on Digital Library using Green Stone. The Study remarked that the digitization had been becoming a major consideration for all library and information services. This study discusses the practical issues and key stages involved in digitizing ISIBC in-house documents, based on work undertaken as part of the digitization of in-house volume, aims to develop a working model of the hybride library with a teaching context. Greenstone digital library software is developed from Newsealand Digital library project. Developing Digital Library collections and often means creating new kinds of tools and services. To create a digital library, an application planner selects the modules from the screen. GSDL has a variety of Formats; other programs give application planners greater control over display and printing layout for search results.

Caravan and Jeny (2003) [22] in their study discussed the research undertaken by the centre for research in Library and Information

Management, Department of Information and Communications, Manchester Metropolitan University, has sought to enhance understanding of information seeking behavior of blind and visually impaired people when using digital resources. The Non-Visual Access to the Digital Library Project (NOVA) aimed to develop further undertaking of user behaviors with world wide web based resources, with particular reference to the retrieval of information by blind and visually impaired people. Using a sample of 20 sighted and 20 visually impaired people, undertook a number of information seeking tasks using four different electronic resources. Each steps of the information seeking process was logged (at keystroke or equivalent level) and pre-task and post-task questions were asked in order to gather qualitative data. Results revealed that visually impaired users spend more time searching or browsing the web with times searching or browsing the web with times varying considerably depending on the design of site. Overly, visually impaired users have to spend more time navigating around each page; especially of for example, the page contains a lot of information or has many links. Observations revealed that people with more experience with the assistive technology they were using more successful with the task. Whereas designer may assume that everyone has access to the new versions of assistive technology, this is not always the case. Designers, therefore, will have to take such realities into account.

Little (2003) [23] outlines the resource sharing arrangements between the Med Hist gateway and the Humbul hub, using the OAI protocol for Metadata Harvesting, and some of the issues it has raised. This Med Hist gateway was launched in August 2002, providing access to a searchable and browsable catalogue of high quality, evaluated history of medicine Internet resources. Med Hist was developed principally to fill the gaps left in the coverage of the history of medicine by existing resource discovery service within and outside the RDN.

Talaja and Maula (2003) [24] made a study with an aim to contribute to the development of a domain analytical approach for explaining the use and non-use of e-journals and databases. The authors identify and define factors to account for disciplinary differences in e-journal use, outline hypotheses to be tested more rigorously in future research, and test them initially on a limited data set. The empirical data was gathered as a part of a wider qualitative study exploring scholars' use of networked resources in four different disciplines; nursing science, literature/cultural studies, history and ecological environmental science. The findings suggest that e-journals and databases are likely to be used most heavily in these fields.

Smith (2003)[25] in a study explored the role electronic journals currently play in faculty's weekly scholarly reading habits. Questionnaire method was used to collect information about the scholarly reading habits of University of Georgia faculty members. A sample of 365 was selected randomly from the total of 800 Science faculty members and the whole of 161 from Social Science faculty. Questionnaire was sent through email.

The finding of the study indicated that 77% Science and 69% Social Science faculty members reported reading electronic sources. The most noticeable disciplinary difference was in personal electronic subscriptions 35% of science faculty reported reading at least one article from a personal electronic subscription per week, as opposed to only 15% of social science faculty. In addition, slightly more science faculty members reported weekly reading from both library print subscriptions and library electronic subscriptions than did their colleagues in the social sciences. The percentage of faculty who reported weekly reading from personal print subscriptions was the same for both group (91%). In terms of rank, more assistant professors reported weekly readings from electronic sources (88%) than did associated professors or professors (69% of both). The most noticeable difference in

usage was in library electronic subscriptions, with 84% of assistant professors reporting weekly usage, but only 64% of associate professors and 63% of professors reporting usage. In addition, 94% of assistant professors reported this activity. This indicates that 6% of assistant professors at University of Georgia do not read any articles from print sources in a typical week. Disciplinary differences were also evident within rank. More professors in the science (71%) indicated reading at least one electronic article a week than did professors in the social science (64%). The biggest difference in usage was once again in personal electronic subscriptions: only 8% of social science, while 50% of the science assistant professors reported usage.

Oduwole and Akapati (2003) [26] in a paper presented the accessibility and retrieval of electronic information in the Nigirian University of Agriculture Library. A three-part questionnaire was given to 1,000 out of an estimated 5.030 users of electronic information in the university library using a simple random sampling technique from which 789 response were returned and found usable. This constituted a 78.9 percent response. The study revealed that non-final year undergraduates use mainly the automated library catalogue (OPAC), while final year and postgraduate students as well as academic staff regularly use bibliographic databases tools. A majority of users were satisfied with the information obtained and reported that they find these automated services to a greater or lesser extent easy to use. The major constraints to information accessibility and retrieval of automated library services were infrastructural: the limited number of terminals available for users and power supply outages.

Maharana *et al.,* (2004)[27] conducted a study on collection Development of electronic Development of electronic information resources in the R&D libraries of Kolkata. The study focused on the policies and practices of development and management of e-resources in R&D libraries. It

also examined various criteria for selection and evaluation of e-resources. It also made an attempt to reveal the present status of collection of e-resources, to find out collection development policies of e-resources, to explore the current practices of selection and evaluation of e-resources and to recommend practicable guidelines for improved collection development programme. Questionnaires were used to elicit information on the various aspects of subject understudy, which included the present status of e-collection, policies and practices followed, preservation strategies used etc. from the ten R&D libraries.

Jalaja and Deneshan (2004) [28] pointed out their study "The problem of digital divide among the academic community" that information is a fundamental resource indispensable for any academic activity. The role of information in study, teaching and research is well organized by the academic community. The revolution in the information and communication technology(ICTS) has made the transfer of information so easy that any body in any place can share information without geographical barrier. The new ICTS have enabled the academic community to overcome the barrier of time in assessing information as well.

Susheela (2004) [29] described the electronic publishing facilitated the research for quick and precise search for scientific information. The paper discusses the ways and means of exploring and accessing the relevant information through the most complex Internet or web, explaining the various electronic networks, its locations highlighting the Indian scenario. The paper gives stress on the various developments that have taken place to provide facilities to the researchers. The author says that the growth and developments of electronic journal is envisaged with electronic publishing, computer and web technology. Serial publications especially publishers of primary and

secondary journals have been transforming their trends to the tune of current needs and priorities of scientific community, utilizing the latest technologies.

Gulati (2004) [30] conducted a study on the status of information and communication technologies usage in Indian libraries with special reference to special libraries and the efforts made by various institutions to propagate e-information products and services. This paper highlights the consortia efforts in India like JCCC consortium, CSIR E-Journal consortia and UG C infonet. The study concludes with challenges for library and information science professionals and an overview of initiatives taken by government of India.

Ramesh *et al.,* (2004)[31] made an evaluative study in terms of user requirements and satisfaction with regard to IT based services in the universities of Karnataka state. Objectives of the study were: to assess current levels of infra structure facilities available to offer various IT services to different categories of user; to examine the state-of-the art of library automation and networking with special reference to the possibility of participation of libraries for resource sharing with other national and international systems and networks; to diagnose particular problems in providing IT based services on the basis of user requirements and satisfaction; to assess the nature of all types of users, their changing needs of information sources and types of IT based services required to satisfy them, to evaluate and measure the users opinion on IT based services keeping in view user requirements and satisfaction in the networked environment; to highlight the significance of campus networking for enabling the optimum utilization of Internet and other electronic sources and services; to workout the strategy to increase the user awareness or orientation programme with respect to IT based services; to suggest the ways and means of using available facilities to get the adequate financial assistance from different funding agencies. Questionnaire method was used to survey all the 7 university libraries making personal visit

to all the libraries. Findings of the study indicates that out of 7 sanctioned posts of University Libraries only 3 have full time librarian and the absence of University Librarian has affected the overall management and administration of the Library; Both traditional and modern infrastructure is available at all university libraries to a large extent and IT and network facilities are satisfactory; most of the libraries have extensively computerized their operations and this has been developed progressively during last 5 years and 71.42% have rated the facilities as 'good'; the infrastructure includes adequate number of computers with facilities for CD-ROMs, printers, scanner and other peripheral devices; almost all the university libraries are participating in one or other network system for resource sharing; 95% of the users have rated from Manglore University, are not satisfied with the overall IT based information services and notably no user has indicated that he/she is extremely satisfied and 14% are not at all satisfied with the IT based services. The suggestions put forwarded by the authors include filling up of necessary staff position; conduct of user awareness programmes in libraries; up gradation of IT infrastructure and in-house training programmes for library staff in IT applications.

Mercedes *et al.,* (2005) [32] made study on online journal and their impact on document delivery. The purpose of the study was to examine some of the ways in which e-resources have made an impact on traditional practices and how some user practices have begun to change. The study uses both qualitative and quantitative data. The study finds the e full-text is as yet unable to fully meet the needs of the researches. Until full text can approximate what is available in print both in journals and in monographs the need for document delivery service will remain.

Rajeswari (2005)[33] conducted an analytical study on the use of electronic resources and services by faculty, research scholars and students of

Sri Padmavati Mahila University(SPMU), Trupati. Questionnaire was distributed to stratified random samples. The samples group consisted three groups namely teaching staff, research scholars and postgraduate students. The response rate was 82 percent. The study revealed that majority of the teaching staffs used Internet, E-mail and OPAC facilities. Most (36.2%) of the research scholars had the opinion that INFLIBNET services met their information needs.

Madavan Nair (2005)[34] argued that launching of Edusat reflected India's commitment to use space technology for national development, especially for educating the population in remote and rural locations. According to him it was especially configured for audio-visual medium, employing digital interactive classroom and multimedia multi-centric system. At the end of the article he hoped that Edusat would herald a new era for a countrywide distance education.

Mai (2005) [35] conducted a study on web-enhanced learning. The main objective of the study was to explain a web-based constructivist-learning environment, which was developed, based on course given to students in Faculty of Creative Multimedia(FCM) on student learning. The methodology used was an online survey. The result obtained was satisfactory. In this learning process, students were able to understand the problem, work collaboratively, construct their own solutions and determine their own learning outcomes.

Renn and Zelgmn (2005) [36] conducted their study to know the outcomes of online learning. Data for the study were gathered through questionnaire. Data consisted of pre-midsemester and post-surveys of students' attitude and skills in relating to technology and student affairs, transcript of asynchronous online discussion, and student assignment. Data analysis included descriptive statistics. Findings about experiences related to

outcomes were derived from the immersion and to the quality of learning environment. The online immersion seemed to have the intended effect of simulating for the student's experience of being online distance learners.

Swaroop Rani *et al.,* (2005)[37] conducted a study on users attitude towards e-journals. From their study e-journal appeared during 1970s but became popularized in 1996. Electronic journals are periodicals literatures that are made available as individual titles via electronic medium typically the World Wide Web. Electronic journals for all practical purposes may be available on CD-ROM; a few may be available only on online. Some may available both e and print media. Today most of the e-journals appear as parallel versions of their print counter part. E-journal could be accessed through gopher flp, telent, e-mail or discussion lists but are mainly through web. Because of the multidimensional features of the e-journal compared with print version journal have become the format of choice for academic library patrons in a relatively short time. A consortium based subscription to e-resources for the technical education systems for the benefit of IIT, IISc, NIT and other reputed institutions.

Xiaoyin Zhang (2005)[38] made a study on movement towards a predominantly e-journal collection. From this he studied that since 1999 the composition of the libraries journal collection has been dramatically changed. The percent of print only subscription decreased from 59% in 1990 to 20% in 2004. While e-journal jumped from 35-75%. The percentage of library material acquisitions budget spent on e-resources raised by at least 10% each other. The proliferation budget spent on e- resources raised by at least 10% each other. The proliferation e-resources had a major impact on the acquisition/serial activities from handling physical objects to initiating and ensuring on going to e resources. It has resulted in a workflow that required ongoing review and change to accommodate the constant technological

development that has impacted the management of information delivered electronically.

Webster and Williams (2005) [39] made an evaluative study on the NHS Direct online health information e-mail enquiry service. In this study, the main attempt was to judge the quality of the health information provided to Internet users of the NHS Direct online e-mail service. The study also examined the quality of health websites, information retrieved from the NHS and to measures readability statistics of the web pages. The check list developed from this process provided a method of judging a specific website's quality level. Readability levels of websites were measured using with modern instrument of measuring scale. Two case studies were conducted to examine questionnaires were distributed. Results from the checklist indicated that the majority of health information sent on to users of the service was of adequate or excellent quality. The case studies revealed that the criteria used by the NHS in composing responses to enquiries was not always consistent and needed streamlining.

Vilar and Zumer (2005) [40] made an attempt to present a comparison and evaluation of four user interfaces of web-based e-journals (Science Direct, Pro Quest Direct, EBSCO Host and Emerald). This study comprised the first part of a large evaluation of these interfaces through a user study focusing on user's perceptions of user friendliness and functionality. This expert study was intended to examine the user interfaces of e-journals, in order to discover the characteristics and differences between the e-journals. The second aim of this study was to discover potential difficulties for users of these e-journals and to investigate as a preparation for the follow-up user study. The study disclosed some significant differences. The biggest difference was found in the characteristics and complexity of the levels of query formulation. The study

also revealed that in the case of some e-journals, the advanced level searching was used for command searching.

Echeverria and Barredo (2005)[41] found out the impact of online journals on document delivery. They attempted to examine some of the ways in which the electronic resources had made an impact on traditional inter lending practices. This study examined, how full-text articles were reducing the traditional level of requests made at a university library. This study was conducted using both quantitative and qualitative data. The qualitative data were gathered through a questionnaire about the impact of electronic resources and the use of Inter Library Loan. The survey showed that the usage of document delivery in the university libraries decreased since the introduction of a critical mass of online journals from 2000 onwards. This study also revealed electronic full-text was unable to fully meet the needs to researchers.

Gunter (2005) [42] conducted a survey to assess the use of electronic books in UK. Data were collected from an online panel established by a leading commercial Internet research company. Respondents completed an online questionnaire posted on the company's website. Questions explored awareness, traveling, purchase and borrowing of e-books, examining the frequency of such behavior and types of publications accessed and obtained. Among the respondents, around half made trial use of them, nearly four in ten bought at least one e-book, and one in seven borrowed an e-book from a library. The survey also found out widespread awareness of e-books among the Internet population.

Berilacqua (2005) [43] investigated the organization of e-journals from the point of view of Humanities at the University of Parma. Research was carried out with the purpose to investigate the organization of e-journal titles from a user viewpoint. In order to find out what influence the approach

adopted by the library had on the use of e-journals and what characteristics the organization of e-journals should have to enable an easy access to resources. The study was conducted on the students, faculty members and library staff in classic and medieval studies. Research methodology comprised a mixed qualitative and quantitative approach, a focus group, observations, interviews and a questionnaire. The group of users appeared still reluctant to use e-journals. The main barriers to use were lack of awareness and limited number of relevant resources. Users were favorable to being provided with multiple points of access to e-journals. The organization of e-journals adopted at Parma had the potential to meet the user's expectations, but its implementation seemed to require more effective promotion and user centered design.

Sreelatha (2005) [44] conducted a study on the perception and use of e-journals among the Doctoral students of Calicut University. The major objectives of the study were: To access the awareness of doctoral students about e-journals, to assess the degree of utilization of e-journals; to assess the level of satisfaction, to find out whether Doctoral students were making use of INFONET and to find out the factors hindered the use of e-journals. The questionnaire contained a set of questions logically selected to the problem understudy. The study revealed that advanced searching method was followed by the majority of the students. Encyclopedia Britannica was the most frequently accessed aggregator. The study brought to light that the respondents were quite aware of the importance of e-journals and INFONET in research.

Sajila (2005) [45] conducted a study on the use of electronic information resources in the library and information center at the Indian Institute of Management, Kozhikode. The major objectives of the study were to access the current use of electronic information resources, to examine the frequency of use, to find out the most favored electronic information resources and to

assess to what extent users were satisfied in electronic information resources. The study used questionnaire for eliciting responses from the users. For analyzing the collected data, percentage method was used. From the major findings of the study it was evident that most of the students used digital library resources for project work, and research assistants and teachers used them for research purpose. All the categories of the users were fully satisfied with the systems and services. The majority of the users were of the opinion that electronic resources are easy to access.

Panda and Arunima (2006)[46] made a study on a critical evaluation of e-journal in LIS: a case study of three websites. In this study they provide an insight in to the concept of e-journal and their growth. Vividly explains the taxonomy of e-journal along with the methodology employed in the study. Analyses and interprets data, pertaining to a total sample of 110 of available in 3 websites using only 3 popular search engines (Google, AltaVista, Yahoo) in regard to their subject coverage, country of publication, language of publication, year of publication, frequency of cost. The study reveals that, 48.18% of the total e-journal in library information covers information technology as their trust area; 63.37% of them are published from USA; 97.21% e-journal are published in English. 44.95% are published quarterly and 67.42% of them are free-based journals. Interestingly, the publication since witnessed an unexpected decline in the 3 websites from 11 in 1995 to only 1 in 2003, the study asserts.

Jankowska (2006)[47] conducted a survey to determine user satisfaction and expectations concerning library service quality. The results of the 22 items constituted a rich source of information for the university of Idaho library's strategic planning process. Focusing on graduate students, this study used three methodologies to analyse survey results. The first method, internal benchmarking, compared graduate students to faculty, staff and undergraduate

student's results against their peers from other non-ARL libraries participating in the LibQUAL survey. Lastly, categorizing and carefully considering survey comments enriched the qualitative data by adding context to the numbers.

Mc Clellend and Hawkins (2006)[48] conducted a study on perception on the use and developments of a broad range of e-books in higher education and their use in supporting virtual learning environments. The purpose of this study was to examine the problems, tensions, contrasts and complementary surrounding the use of e-books in developing learning environments for students in UK higher education. The methodologies selected by the authors were four case studies and a questionnaire to highlight developments. The study found that users wanted some features of paper books to be preserved in the electronic medium, while also preferring electronic text to be written in a scan able style.

Holm *et al.,* (2006)[49] conducted a study to provide an insight into the work carried out by a consortium of organizations that had an interest in space activities and to provide a focus on the knowledge architecture that was needed to viable short and long term plans for implementing a successful knowledge management programme. The data for the study were collected by analyzing documents, interviews, group discussions, reviewing technical specification and by participating in online group discussion via a dedicated knowledge management portal created for the group. The study revealed that generating and maintaining organizational knowledge and identifying lessons learned from space project management activities are important for planning future projects. One of the most important elements in transferring knowledge was creating knowledge management system that supported the organizational processes and based on sound technical foundation.

Ramlogan and Tedd (2006)[50] conducted a study on the use and non-use of electronic information resources of the undergraduates at the University

of the West Indies. The purpose of the research was to gather some empirical baseline information on the use/non-use of selected, subscribed electronic information services among full time third year graduates. The other broad objectives of the study were to present the survey findings, evaluate the survey's findings and proposed necessary recommendations. The research design involved a mixed quantitative and qualitative approach: a user survey using semi-structured questionnaires and face-to-face semi-structured interviews. The major finding of the study was that over half of the total respondents had not accessed any of the Electronic Information services. Lack of awareness of the service availability was revealed as the over riding factor for non-use. It was concluded that undergraduates made infrequent or no use at all of certain electronic information services largely from lack of awareness.

Lin *et al.*, (2006)[51] analyzed why the e-mail forwarded and other not. This study was an attempt to explain why e-mail trigger emotional response states in receivers and to explore the influence of e-mails. To meet the study's aim, participants were asked to fill out the questionnaire based on any forwarded e-mail that they had recently received. The study revealed that people would have a stronger intention to forward e-mails that made feel positive emotions, displayed richer information, which were greater in length, or included audio and visual information.

Nagi and Ali (2006)[52]conducted a study on IT based service in Indira Gandhi Memorial Library. This study pointed out to computerized all its in house operations and provides information technology based service over the network to the students and faculty. This paper attempts to evaluate the service provided by the library in the IT environment and also find out the user satisfaction based on the questionnaire survey. Averages of 250 questionnaires were distributed to students and research scholars in the university out of which 181 response were received. The findings of the study

indicate that students and research scholars are satisfied with the library services in the information technology environment. The study once again reiterates the benefits of IT in libraries to meet the user requirement and have satisfied clientele.

Shuling (2007)[53] investigated and analyzed current use of electronic resources in the library of Shannxi University of Science and Technology. The major aim of the study is to find out the readers present conditions, difficulties faced while using e-resources. The investigation target involves teachers, scientific staff, graduate students, under graduate students and some training students from 15 institutes in the whole university. It centered on seven subjects. In order to collect data questionnaire were designed and sent to the target groups. The investigative results shown that, nearly half of the readers investigated are satisfied with e-resources of the University. At present, the main way that reader's obtained literature is from traditional library storage. This illustrated that the printing literature obtained important functions. The e-book does not substitute the traditional printed book. The construction of library storage should advocate the printed one. Readers selecting the printed and e-book occupied the greatest majority.

Tublin (2007)[54] conducted a study on when ICT meets schools: differentiation, complexity and adaptability. The objective of this study is to explore the interaction between Information Communication Technology (ICT) and the schools organizational structure and propose an analytical model based both on Luhman's system theory and empirical findings. The approach of building a theory from a case study research along with an instrumental multicase study method were applied to analyze nine Israeli schools that successfully implemented ICT based innovation within school's structure: segmentation, stratification and functional differentiation. The type of differentiation correlates with the schools communications and set of contingencies which includes ICT usage types, leadership style, time and space arrangement source of expertise, and the champions-those who bear the

burden. All the differentiation types were found to increase internal complexity and enhance school's adaptability and in a recursive process after school's communication and its sensitivity towards further ICT integration.

Khaiser and Pramodini (2007) [55] Surveyed the use of e-journals and databases by the academic community of University of Mysore. The paper described the use of e-journals and databases subscribed by UGC-Infonet Consortium in University of Mysore. The objectives of the study were to determine the extent of use of electronic resources, and to identify the alternative sources used and the extent of awareness of UGC-Infonet Consortium resources among the users. The study used structured questionnaire and interview schedule for data collection. The result of the survey revealed that the use was marginal and the scientists in the Mysore University campus need constant guidance and training to maximize the use of the electronic resources. The paper also examined the utilization and satisfaction levels of users with respect to the electronic resources. The paper also discussed about the role of Information Communication Division (ICD) of the university of Mysore in informing the users about the availability of the electronic resources.

Conclusion

The investigator revived various studies and article discussed in similar topics. The perspective of the present study can be understood from 55 related literatures reviewed in this chapter. Most of the studies employed questionnaire method for data collection and statistical method for analysis. The findings of the study would be useful authorities for improving the IT facilities in to the college libraries. The careful observation of these related studies has helped to identify the gaps in the concerned areas to construct the questionnaire, analyze the fact in an objective manner and to derive positive conclusions.

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CHAPTER – III

METHODOLOGY

The present study is focused on to identify the Use Pattern of Electronic Information Resources in the College Libraries in Kerala. The study is focused on the general information of the college library and their use of electronic information resources among the students of that college.

The methodology adapted for the study is described under the following subheadings; sample used for the study, sources of data; research instruments; data collection procedure and statistical methods used.

3.1 Sample Used for the Study

There are seven universities in Kerala established by the Acts of legislative assembly. Out of the seven universities, three-Kerala Agriculture University and Cochin University of Science and Technology and Sreesankaracharya University are special and technical Universities and these Universities has no affiliated colleges under these universities. Hence, it was decided to concentrate on the remaining four universities, which have affiliated arts and science, unaided, and Government colleges. It was hoped that from the data collected it would be possible for analyzing the use pattern of electronic information resources in the college libraries in Kerala.

Therefore, this study was based on the data collected from the colleges in Kerala that are working under the jurisdictions of the four universities that are

1) University of Kerala (UK)

2) University of Calicut (CU)

3) Mahatama Gandhi University (MGU)

4) Kannur University (KU)

The data was collected during the period of 2004-2006. For the purpose of getting required information final year UG and PG students are selected because they are acquired more skills for using electronic information than that of the first and second year students. The details of final year UG and PG students are collected from the Directorate of Collegiate Education, Vikas Bhavan, Thiruvananthapuram and their statistical Department given the following details of the students' enrolled during the period 2004-2006

2005-2006 Final Year	BA	68622
"	Bsc	65905
"	Bcom	24209
		158736- UG

2005-2006 Final Year PG Students

MA	6128
MSc	8212
Mcom	2663
	17003- PG

The number of arts and Science colleges in Kerala are:

150- Private Aided Colleges
167- Private Un Aided Colleges
39 - Government Colleges
356

So: - 158736

17003

175739

So the population size is 175739

According to the Survey system (www.surveysystem.com/sscate.html)

Or Kumar Renjit. (2003). "Research Methodology", Sage Publication, New Delhi, 45(1), 164-169.

Random sample size number 650 is selected

ie., UG = $\frac{158736 \times 650}{175739} = 587.1$

PG = $\frac{17003 \times 650}{175739} = 62.8$

} 650

$$\therefore \sqrt{n} = \frac{1.96 \times \sigma}{0.5}$$

σ = Standard deviation
n = Sample size
$\sqrt{}$ = Square root

$$\therefore \sqrt{n} = \frac{1.96 \times 6.5}{0.5}$$

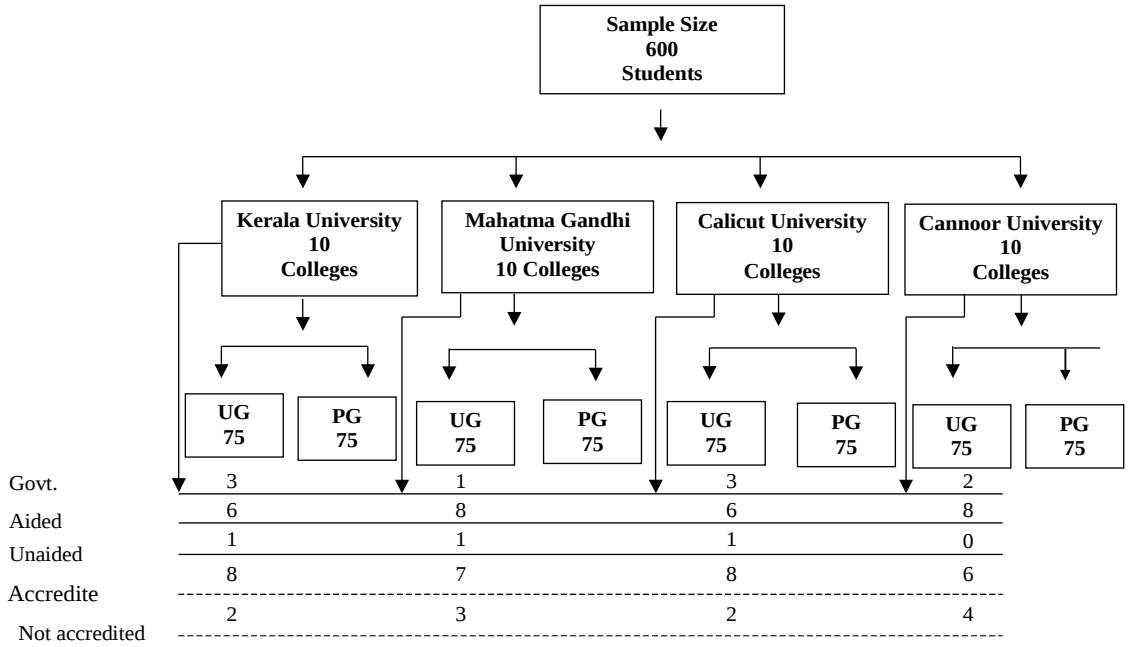
$$n = \left[\frac{1.96 \times 6.5}{0.5}\right]^2$$

$$n = \left[\frac{12.74}{0.5}\right]^2$$

$n = [25.48]^2 = 650$ (Completely filled 600 questions selected for analysis)

3.2 Categorized distribution of Sample Size

Fig:4



3.3 Sample Population

Table 1

Sample Population

Category	Respondent	Questionnaire Distributed	Questionnaire Returned	Response rate
Students	600	800	678	84.75

Table 1 shows that out of 800 questionnaires distributed and 678 questionnaires were returned but 78 were found to be invalid; they were incomplete and thus rejected from the ultimate sample. A completely filled 600 questionnaires were formed the sample for the study.

3.4 Source of Data

Both primary and secondary data were collected for the presented study. Primary data were collected through questionnaire administered to students of the colleges under the four universities and structured interview with the college librarians of the concerned colleges. Besides this, for personal observation, the investigator visited college libraries and discussion were made with the librarian, students and teachers of the colleges under the four universities.

The Secondary data's were collected from the college brochures, college calendars, college websites, and periodicals, published and unpublished research reports.

3.5 Research Instruments

Two research instruments were used in this study

1) Interview schedule

2) Questionnaire

An interview schedule is a written list of questions, open-ended or closed-ended, prepared for use by an interviewer in a person-to-person interaction (Kumar 2005). The interview schedule used in this study can be found Appendix-II

A questionnaire is a written list of questions, the answers to which are recorded by respondents (Kumar 2005), Questionnaire are extremely flexible and can be used to gather information on almost any topic from large or small number of people (Moore 15) The questionnaire used in this study can be found in Appendix-I.

3.6 Data Collection Procedure

For the purpose of the interview, a prior permission was sought from the college librarians. All librarians' agreed and later personal contact was made to arrange the appropriate data and time, when the interview could take place. The researcher made notes during the interview that were later complied.

For final data collection, the questionnaires were hand delivered to 800 respondents selected for the study. Necessary discussions were made with them and some of them asked more time to fill the questionnaires and self-addressed stamped envelopes were given for them. Some respondents sent back the questionnaires in time. The investigator could collect only 84.75 percent of the distributed questionnaires.

3.7 Statistical Methods used for the Study

For each and every type of research the investigator will have certain methods and instruments to gather necessary information. The selection of suitable techniques and tools is of a vital importance for successful research. For the present study, the investigator with the guidance and advice from the supervising teacher developed the questionnaire on the "use pattern of electronic information resources in college libraries in Kerala". Experts in research methodology and experienced persons in the field of electronic information resources were also consulted. Similar questionnaire and literature were consulted.

The data collected using the tools selected for the study was analyzed using SPSS (Statistical Package for Social Science). Tables and diagrams with frequencies and percentages and Chi-square test were employed as and when required for analysis and interpretations of data.

3.8 Variable used for the study

A concept which can take on different quantitive values is called a variable. The variables used in the study can be grouped into two that is classificatory variables and study variables.

1. Classificatory Variables

    a. Final Year UG and PG students

2. Study Variables

a. Type of management, location, financial nature of the college and accreditation.
b. Time spent for using of electronic information resources
c. Availability of electronic information resources
d. Most used search engines
e. Rating of internet informations
f. Satisfaction of use and preferred source of information
g. Service provided by the college library
h. Use pattern of electronic information resources
i. Most used electronic information resources

3.9 Chi-Square Test

The chi square test (χ^2) test is one of the simplest and most widely used non-parametric test in statistical analysis. Chi-square is a measure of actual divergence of the observed and expected frequencies (or values). If there is no difference between actual and observed frequencies, the value of the chi-square is zero. The greater the discrepancy between observed and expected frequencies, the greater is the value of χ^2. If the calculated value of chi-square is less than the table value, it indicates that the difference between actual

observed frequencies may have arisen due to chance of fluctuation and can be ignored. The quantity χ^2 is defined as

$$\chi^2 = \Sigma (O-E)^2/E$$

where O referees to the observed frequencies and E referrers to the expected frequencies. Steps to determine the value of χ^2 are

I. Calculate the expected frequencies

II. Take the difference between observed and expected frequencies and obtain the square of these difference ie, obtain the value of $(O-E)^2$.

III. Divide the quantity $(O-E)^2$ obtained in step (ii) by the expected frequency and obtain the sum over all cells $\Sigma(O-E)^2/E$.

This gives the value of χ^2 and is compared with the table value of χ^2 for given degree of freedom at certain specified level of significance. If the calculated value χ^2 is more than table value of χ^2 the difference between the theory and observation is considered to be significant; ie, it could not have arisen due to fluctuations of simple sampling. If, on the other hand, the calculated value of χ^2 is less than the table value, the difference between theory and observation is not considered as significant ie, it is regard as due to fluctuations of simple sampling and hence ignored. For the present study Chi square test was employed to test the association between two categories whenever necessary. For this, two way tables to observed frequencies for the two categories were obtained first and then chi square value corresponding to each cell of the two way table were computed and some of these chi square values were calculated. If the computed value is greater than table value it indicates that there is an association (dependence) between two categories. Otherwise the two categories were independent.

3.10 Analysis of Variance (ANOVA)

Analysis of variance (Abbreviated as ANOVA) is an extremely useful technique concerning researches in the field of Economics, Biology, Education, Psychology, Sociology, and Business/Industry and in research in several other disciplines. This technique is used when multiple sample cases are involved. Professor R.A. Fisher was the first man to use the term 'variance' and, in fact, it was he who developed a very elaborate theory concerning ANOVA, explaining its usefulness in practical field. The basic principle of ANOVA is test for differences among the means of the populations by examining the amount of variation within each of these samples, relative to the amount of variation between the samples. In short there is two estimates of population variance viz, one based on between samples variance and the other based on within samples variance. Then the said two estimates of population variance are compared within F-test, where in work out.

$$F = \frac{\text{Estimate of population variance based on between samples variance}}{\text{Estimate of population variance based on within samples variance}}$$

3.11 SPSS (Statistical Package for Social Science)

SPSS is designed especially for the analysis of Social Sciences data. SPSS is a package of programmes covering a wide range of analysis. These programmes include frequency distribution, univariate and multivariate analysis, regression analysis, correlation analysis, factor analysis, cluster analysis, reliability analysis, long linear models etc. The sub commands direct precisely what analysis had to be performed. The Groups sub-command specifies which groups are to be discriminated between and the VARIABLES. Sub command specifies which variables are to be in operation.

The mainframe, PC and windows versions of SPSS are available internet, Discussion Group of SPSS Users has been formed to share and interact with each other's experiences. The special characteristics of SPSS package in data analysis are:

- SPSS package has the provision to generate the summary of statistics including mean, median, mode, standard error, standard deviation, variance, range, skewness, kurtosis, minimum and maximum;

- SPSS package allows univariate distributions as well as bivariate distributions. The association between two variables can be done by bivariate analysis. The three major functions of multivariate analysis i.e. regression and subprograms. The bivariate tables and statistics for nominal and ordinal measures can be done with CROSSTABS procedure. The CORRELATIONS subprogram's provides interval measures;

- From the data analysis any type of graphic representation can be derived from the graphic portion of the package. The Windows version provides a wide range of choice in graphic modules. The information on the sub programmes and their uses are provided by SPSS Users Guide. SPSS Windows Ver.6 is a well integrated Windows program that adheres to many typical windows conversions and commands. The typical windows commands File, Edit, Help, New, Open, Save, Exit, etc are used in the package.

CHAPTER – IV

ANALYSIS AND INTERPRETATIONS OF DATA

The purpose of the study was to identify the use pattern of electronic information resources in the college libraries in Kerala; an analytical study. The investigator attempted to discover whether the undergraduate and postgraduate students of the arts and science colleges using the modern Information Technology which is the electronic information resources.

The investigator designed a questionnaire to obtain data necessary to examine the use of electronic information resources in the college library in Kerala. Analysis of data involves a number of closely related operations which are performed with the purpose of summarizing and organizing the collected data to find out answer to the computation of certain measure along with searching for pattern of relationship that exists among groups.

The investigator designed a questionnaire to obtain a data necessary to examine the research problem. The instrument was administered directly by the investigator to 800 students of the various colleges under the four universities in Kerala. The investigator given preference to the NAAC accredited arts and science colleges because those colleges have more facilities than that of the non accredited colleges. This data has been analyzed, summarized and presented in tables using totals and percentages. SPSS was used for producing descriptive statistics.

This chapter presents the analysis of data providing a descriptive examination of general characteristics of respondents, their use pattern of electronic information available in their college library and the detailed

analysis of their responses on electronic information resources, services tools, techniques and their facilities.

4.1 General characteristics of the population

The general characteristics of respondents include Gender, Under graduate or Post graduate, Name and address of the college, Type of Management (Government or Private), Location, Financial Nature (Government, Aided, Unaided) NAAC accreditation are selected.

4.1.1 Gender

The gender wise distribution of respondents selected for the study is given in the table 1.1. For getting suitable results the final year UG and PG students are taken because the first years does not have sufficient skills for using the electronic information resources.

Table 1.1

Gender wise distribution of students

Gender	Number	Percent
Male	306	51.0
Female	294	49.0
Total	600	100.0

The result shows that the sample of 306(51%) male and 294(49%) female students responded about the questionnaire issued to them. Since the majority of the students were male, slight male dominancy can be seen in the sample.

4.1.2 Course

The course means which course the students undergoing whether it is graduate or post graduate class. The table 1.2 describes the result of the analysis based upon the course of study.

Table 1.2

Course wise distribution of the students

Course	Number	Percent
Undergraduate	354	59.0
Postgraduate	246	41.0
Total	600	100.0

The table 1.2 shows that an average of 354 (59 Percent) undergraduate and 246(41 Percent) postgraduate responded about the questionnaires that distributed. Among the respondents undergraduates are more than the PG students.

4.2 Information about the College Library

4.2.1 Type of Management

Type of Management whether it is managed by private or government is taken into account. Most of the private colleges are under the control of single management and some are corporate management. So some of the private management invests more income for ensuring good academic facilities compared to the government colleges. For considering use of electronic information resources, it is important whether it is Government or Private. Type of Management and location is another important point because the colleges situated in urban areas have Internet facilities than that of the rural areas. Most of the colleges in the rural areas have no Internet facility.

Table 1.3

Type of Management

Management	Number	Percent
Government	276	46.0
Private	324	54.0
Total	600	100.0

The table 1.3 shows that 276(46 Percent) students answered about the questions are from Government College where as 324(54 Percent) students are from private colleges. So the majority of the students are come from private colleges

Table 1.4

Type of Management of the college (Based upon Location)

Type of management of the college		Location of the college		Total
		Rural	Urban	
Government	Count	204	72	276
	% within Type	34	12	46
Private	Count	222	102	324
	% within Type	37	17	54
Total	Count	426	174	600
	% within Type	71	29	100

From the table 1.4 shows that a grand total of 276(46 Percent) students come from the government colleges that is 204(34 Percent) from rural areas and 72(12 Percent) from urban areas and the private college students that is the 222(37 Percent) from rural areas and 102(17 Percent) are from urban areas that is the grand total of 324(54 Percent) students come from the private

colleges. Large number (71 Percent) respondents come from the colleges that are situated in rural areas. So the sample shows that 426 (71 Percent) students come from the college situated in rural areas.

Table 1.5

Type of Management of the college (Course wise)

Course being undertaken		Type of management		Total
		Government	Private	
Undergraduate	Count	120	234	354
	% within Course	20	39	59
Postgraduate	Count	156	90	246
	% within Course	26	15	41
Total	Count	276	324	600
	% within Course	46	54	100

The table 1.5 shows that 120(20 Percent) under graduate students participated this survey are from government college and 234(39 Percent) undergraduate students are from private colleges. Where as 156(26 Percent) Post graduate students come from government colleges and 90(15 Percent) PG students are from private colleges. The table shows majority of the students participated this survey is from private college that is 324(54 Percent).

4.2.2 Location of the Colleges

For considering the average use of electronic information resources whether the usage is more in urban or rural areas is taken account

Table 1.6

Location of the college

Location	Number	Percent
Rural	426	71.0
Urban	174	29.0
Total	600	100.0

The table 1.6 shows that an average of 426(71 Percent) respondents comes from the colleges situated in of rural areas whereas 174(29 Percent) respondents come from urban areas.

4.2.3 Location of the college (Course wise)

This table 1.7 shows the students which are studying graduate and postgraduates level, those who are come from which location

Table 1.7

Location of the college (Course wise)

Course		Location of the college		Total
		Rural	Urban	
Undergraduate	Count	264	90	354
	% within Course	44	15	59
Postgraduate	Count	162	84	246
	% within Course	27	14	41
Total	Count	426	174	600
	% within Course	71	29	100

The table 1.7 shows that 264(44 Percent) undergraduates are from rural areas and 90(15 Percent) UG students are from Urban Areas. Whereas 162 (27

Percent) PG students, participated from the colleges situated under rural area and 84(14 Percent) Post graduate students from urban area. That is the grand totals of 426(71 Percent) students are from rural areas and 174(29 Percent) from urban areas. This shows that most of the students participated in the survey are from the college situated under rural areas.

4.2.4 Financial Nature of the College

For ensuring the modern IT facility, it is very much needed the finance. So the financial nature of a college is important. Whether the government or private or unaided college have more facility for ensuring modern facility is important. The table 1.8 shows this data.

Table 1.8

Financial Nature of the College

Financial Nature of the college	Number	Percent
Government	150	25.0
Aided	312	52.0
Unaided	138	23.0
Total	600	100.0

The table 1.8 shows that the respondent that is 150(25 Percent) UG&PG students come from government colleges, 312 (52 Percent) from aided college and 138 (23 Percent) students are from unaided colleges. This shows that the major parts of the students are come from aided colleges under the four different universities of Kerala.

Table 1.9

Financial Nature of the College (Course wise)

Course being undertaken		Financial Nature of the college			Total
		Government	Aided	Unaided	
Undergraduate	Count	114	180	60	354
	% within Course	19	30	10	59
Postgraduate	Count	36	132	78	246
	% within Course	6	22	13	41
Total	Count	150	312	138	600
	% within Course	25	52	23	100

Based upon the financial nature of the college the table 1.9 shows that the 114 (19 Percent) undergraduate students 36 (6 Percent) post graduates come from the government colleges where as 180 (30 Percent) undergraduates and 132 (22 Percent) postgraduates come from aided colleges and 60(10 Percent) undergraduates and 78(13 Percent) post graduates from unaided college. Majority 312 (52 Percent) students are come from the aided colleges.

4.2.5 Students from NAAC Accredited Colleges

The period 2003 onwards the UGC decided for improving the quality of the colleges with the help of National Assessment and Accreditation Council (NAAC). So for getting the NAAC accreditation, the colleges' compete each other for developing the existing academic environment such as developing the curriculum, library, lab and other facilities. So for considering the number of students come from the NAAC accredited colleges is important

Table 1.10

Students from NAAC Accredited Colleges

Colleges	Number	Percent
Accredited	432	72.0
Not accredited	168	28.0
Total	600	100.0

From the table 1.10 shows 432(72 Percent) students are from NAAC Accredited and 168(28 Percent) students are from not accredited colleges. So most of the respondents come from the NAAC accredited colleges and have more facilities than that of the non accredited colleges.

Table 1.11

Students from NAAC Accredited Colleges (Type of Management)

Type of management of the College		Whether accredited by NAAC		Total
		Accredited	Not accredited	
Students from Government College	Count	216	60	276
	% within Type	36	10	46
Students from Private College	Count	216	108	324
	% within Type	36	18	54
Total	Count	432	168	600
	% within Type	72	28	100

Table 1.11 Shows that 216 (36 Percent) students come from government colleges which is accredited where as 60 (10 Percent) students come from government college are not accredited. But 216 (36 Percent) students come from private colleges are accredited but 108(18 Percent)

students which are come from the not accredited private colleges. That is the grand total of 432(72 Percent) students come from whether it is private or government are accredited and 168 (28 Percent) students come form not accredited colleges. So most of the respondents participated in the study are come from the NAAC accredited private colleges

4.2.6 Frequency of visit to the library (Gender wise)

Table 1.12 shows the frequency or average time spent by the students in the college library, with which we can measure the reading habit as well as the use of electronic information resources of the students to a great extent

Table 1.12

Frequency of visit to the library (Gender wise)

Gender		Frequency of visit to the library				Total
		Daily	Alternative days	Once in three days	Once in a week	
Male	Count	174	84	12	36	306
	% within Gender	29	14	2	6	51
Female	Count	144	120	30	0	294
	% within Gender	24	20	5	--	49
Total	Count	318	204	42	36	600
	% within Gender	53	34	7	6	100

Table 1.12 shows that 174 (29 Percent) male students and 144(24 Percent) female students visit the library daily and 84(14 Percent) male students and 120(20 Percent) females visit alternative days where as 12(2 Percent) male students and females 30 (5 Percent) visit once in three days. Grand total of 36 (6 Percent) male students visit the library once in a week. This table shows that 318(53 Percent) students visit the library daily and 204(34 Percent) students visit the library alternative days and 42(7 Percent) students once in a week and 36(6 Percent) students once in a week. This analysis shows that both mail and female students visit the library daily.

Table 1.13

Frequency of visit to the library X Gender (ANOVA Test results)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.315	1	1.315	1.814	0.179
Within Groups	433.325	598	0.725		
Total	434.640	599			

ANOVA test has been conducted for the variables gender and frequency of visit to the library. The significant association is taken at .05 levels and the significance value obtained was 0.179 and the result shows that the variable gender has no significant association with the variable frequency of visit to the library.

4.2.7 Frequency of visit to the library (Course wise)

This table 1.14 shows the frequency of visit of the college library by the students based upon course. The course wise measurement is needed because whether it is graduates or postgraduates spent more time in the college library with in a week.

Table 1.14

Frequency of visit to the library (Course wise)

Course being Undertaken		Frequency of visit to the library				Total
		Daily	Alternative days	Once in three days	Once in a week	
Undergraduate	Count	186	102	30	36	354
	% within Course	31	17	5	6	59
Postgraduate	Count	132	102	12	0	246
	% within Course	22	17	2	0	41
Total	Count	318	204	42	36	600
	% within Course	53	34	7	6	100

The table 1.14 shows that 186(31 Percent) undergraduates visit the library daily and 102 (17 Percent) alternative days, 30(5 Percent) once in three days, 36(6 Percent) once in a week. Based upon the table 132(22 Percent) post graduates students visit the library daily and 102 (17 Percent) students visit alternative days and 12(2 Percent) once in three days. An overall 318(53 Percent) students visit the library daily.

Table 1.15

Frequency of visit to the library X Course (ANOVA test results)

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	9.109	1	9.109	12.801	0.000
Within Groups	425.531	598	0.712		
Total	434.640	599			

ANOVA test has been conducted for the variables frequency of visit to the library based on course. The significant value (P) obtained was Zero. So there is a significant association between the two variables.

4.2.8. Average Time Spent in the College Library (Course Wise)

For evaluating the use of electronic information resources, it is very much needed to find out the average time spent by the students in the college library.

Table 1.16

Average time spent in the college library (Course Wise)

Course		Average time spent in the library			Total
		Half an hour	Between Half an hour to 2 hours	Between 2 to 5 hours	
Undergraduate	Count	168	180	6	354
	% within Course	28	30	1	59
Postgraduate	Count	186	54	6	246
	% within Course	31	9	1	41
Total	Count	354	234	12	600
	% within Course	59	39	2	100

The table 1.16 shows that the undergraduate students 168 (28 Percent) spent half an hour, whereas 180(30 Percent) student spent below 2 hours, 6(1 Percent) students spent between 2 to 5 hours. The time spent by the post graduate students is 186(31 Percent) spent half an hours 54(9 Percent) students below 2 hours, and 6(1 Percent) between 2 to 5 hours. A grand total of 354(59 Percent) students spent at least half an hours of a day for the using of the college library. It shows that majority of the students depending the college library for getting more information by reading books, text books, newspaper, periodicals, internet etc.

Table 1.17

Average time spent in the library X Course

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.903	1	10.903	40.710	0.000
Within Groups	160.157	598	0.268		
Total	171.060	599			

ANOVA test has been conducted for the variables the course and the average time spent in the library. The ‘p’ value obtained is zero shows that there is significant association between the two variables.

Table 1.18

Average Time Spent in the Library (Gender Wise)

Gender		Half an hour	Between Half an hour to 2 hours	Between 2 to 5 hours	Total
Male	Count	216	84	6	306
	% within Gender	36	14	1	51
Female	Count	138	150	6	294
	% within Gender	23	25	1	49
Total	Count	354	234	12	600
	% within Gender	59%	39%	2%	100

The table 1.18 shows that the male students 216 (36 Percent) spent half an hours, 84(14 Percent) below 2 hours and 6(1 Percent) spent between 2 to 5 hours. Among female students, 138 (23 Percent) spent half an hours and 150(25 Percent) spent below two hours, and 6(1Percent) female students spent the time between 2 to 5 hours. The above analysis shows that both male and female students (59 Percent) spent only half hours in the college library.

Table1.19

Average time spent in the library X Gender (ANOVA Test results)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.443	1	8.443	31.048	0.000
Within Groups	162.617	598	0.272		
Total	171.060	599			

ANOVA test shows that there has a significant association between the variables that is the average time spent in the library by the students and the gender. The ‘p’ value obtained was zero. So this shows there is a significant association between the two variables.

4.3 Availability of Electronic Information Resources

4.3.1 Availability of Internet facility in the college library (Gender Wise)

Internet through the world wide web technology entertains the user communities to retrieve hyper media information and leaves a wide scope of information from a large universe of documents. An internet connection is need for the college library for getting new knowledge to the students in the modern IT era.

Table 1.20

Availability of Internet facility in the college library (Gender Wise)

Availability of Internet facility in the library	Gender		Total
	Male	Female	
Available	120	84	204
	20%	14%	34%
Not available	186	210	396
	31%	35%	66%
Total	306	294	600
	51.00%	49.00%	100.00%

As per the table 1.20 shows that 120(20 Percent) male and 84(14 Percent) females opine that they have internet facility in their college library. Where as 186(31 Percent) male and 210(35 Percent) females’ students opine that they have no internet facility. This shows that most of the colleges have no internet facilities.

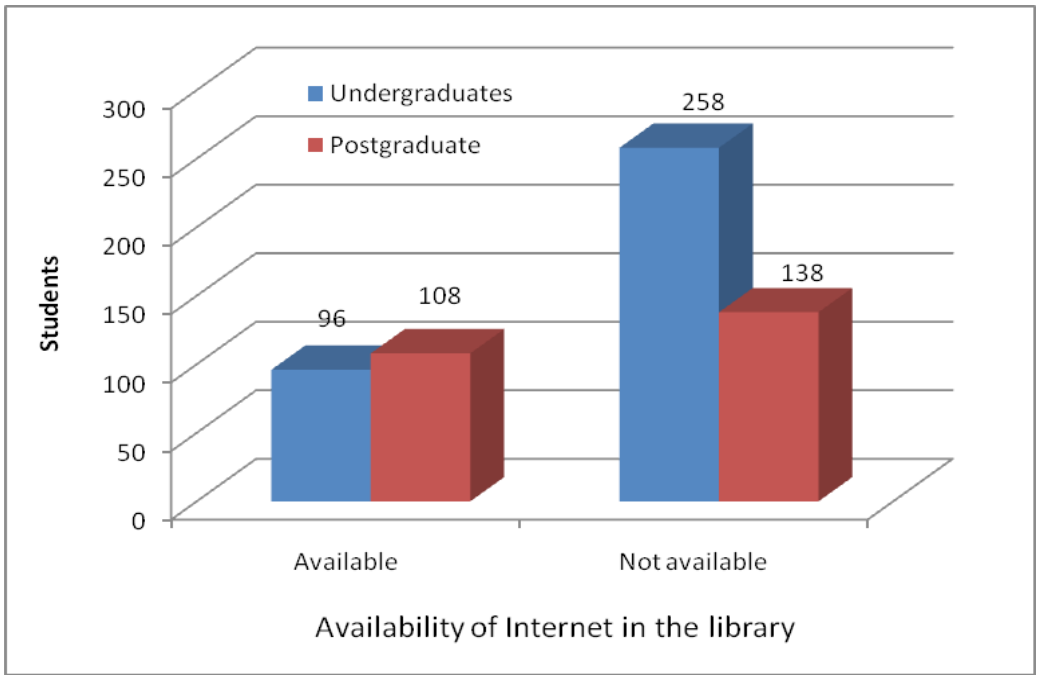
Table 1.21

Availability of Internet facility in the college library (Course Wise)

Availability of Internet facility in the library	Course		Total
	Undergraduate	Postgraduate	
Available	96	108	204
	16%	18%	34%
Not available	258	138	396
	43%	23%	66%
Total	354	246	600
	59.00%	41.00%	100.00%

As per the table 1.21 that is the 96(16 Percent) undergraduate students commend that their college have internet facility and 108(18 Percent) PG students have the same opinion. Whereas 258(43 Percent) undergraduates and 138(23 Percent) postgraduates opines that they have no internet facility.

Figure 5



4.3.2 Visiting of the Internet café in the absence of Internet facility in the college

The 396 students said that their college has no internet facility, so whether they are visiting the internet café for browsing the internet. To this opinion is analyzed in this table 1.22

Table 1.22

Visit of Internet cafes in the absence of Internet facility in the college library

Opinion	Gender		Total
	Male	Female	
Yes	202	176	378
	51.5%	44%	95.5%
No	12	6	18
	3%	1.5%	4.5%
Total	214	182	396
	54.5%	45.5%	100%

Table 1.22 shows that 202 (51.5 Percent) male students and 176(44 Percent) females that is the grand total of 378 (95.5 Percent) students are visiting the internet café, were as 12(3 Percent) male students and 6(1.5 Percent) females grand total of 18 (4.5 Percent) students are not visiting the internet café. As per the table no: 1.21 204(34 Percent) students using internet and their college have internet facility and as per this table 378 (95.5 Percent) are visiting internet café, that is the grand total of 204+378=582(97 Percent) students are using the internet. Only 18 (3 Percent) students are not visiting the internet because the absence of experience and chance. Majority of the students are using internet for acquiring knowledge in the changing environment.

4.3.4 Purpose of Using Internet

For measuring the use of electronic information the respondent are asked to mark the priority of the use of Internet, Whether it is for Academic purpose, searching jobs, chatting, accessing online journals. The table below shows the details.

Table 1.23

Purpose of using Internet

Purpose	Number	Percent
Academic Purpose	366	61.0
Searching Job	198	33.0
Chatting	18	3.0
Accessing online-journals	18	3.0
Total	600	100.0

As per the table no 1.23 an average 366(61%) students given first priority for using the internet for academic purpose and 198 (33%) for searching jobs, 18(3%) students for chatting and 18(3%) for accessing online journals. Most of them given the first priority for using the internet for academic purpose because they can acquire current knowledge, information about seminars, examinations, articles can be get or easily accessible from the internet.

Table 1.24

Purpose of using the Internet (gender-wise)

Purpose	Gender		Total
	Male	Female	
Academic Purpose	168	198	366
	28%	33%	61.00%
Searching Job	138	60	198
	23%	10%	33.00%
Chatting	0	18	18
	0	3%	3%
Accessing online-journals	0	18	18
	0	3%	3.00%
Total	306	294	600
	51%	49%	100.00

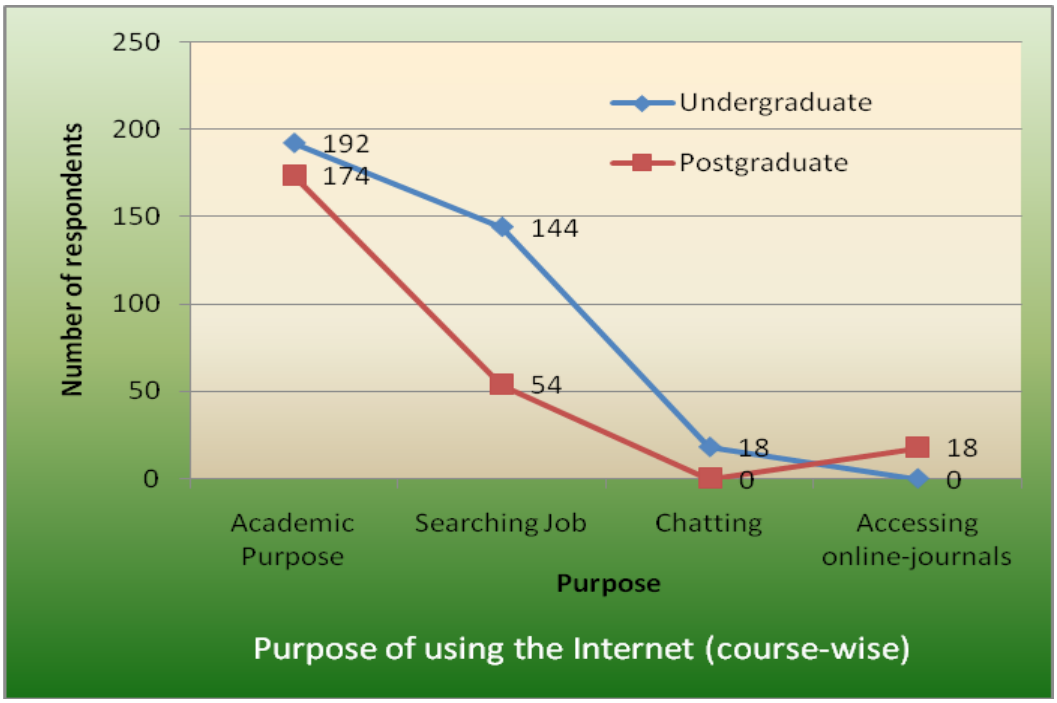
The table 1.24 shows that 168(28 Percent) male students given first priority for Academic purpose, 138 (23 Percent) searching jobs, as the same time 198(33 Percent) females gives importance to academic purpose and 60(10 Percent) gives priority searching jobs, 18(3 Percent) for chatting and 18(3 Percent) gives importance for accessing the online journals. For both male and females students are using the internet more for the academic purpose and searching the job and only female students using internet for chatting as well as accessing the online-journals.

Table 1.25

Purpose of using the Internet (course-wise)

Purpose	Course		Total
	Undergraduate	Postgraduate	
Academic Purpose	192	174	366
	32%	29%	61%
Searching Job	144	54	198
	24%	9%	33.00%
Chatting	18	0	18
	3%	0.00	0.03%
Accessing online-journals	0	18	18
	0	3	3.00
Total	354	246	600
	59%	41%	100.00%

Figure 6



The Table 1.25 and the figure 6 shows 192(32 Percent) undergraduates gives importance of using internet for academic purpose, 144(24 Percent) for searching jobs, 18(3 Percent) for chatting whereas 174(29 Percent) post graduates used internet for academic purpose 54(9 Percent) for searching jobs 18(3 Percent) for accessing online journals.

4.3.5. Rating of the Information retrieved from the Internet

Internet is the prime source for accessing the electronic information scatter through out the world. There is a question asked to the respondent whether the information accessed through the internet is accessible, accurate, authoritative and ease of use. The table 1.26 shows this

Table 1.26

Accessibility of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	34	242	78	354
	5.6%	40.3%	13%	59%
Postgraduates	55	164	27	246
	9%	27.3%	4.5%	41%
Total	89	406	105	600
	14.83%	67.67%	17.50%	100%

The table 1.26 describe 34(5.6 Percent) undergraduate students said the information accessed through internet is excellent, and 242(40.3) said it is good and 78 (13 Percent) commends it is poor. According to the post graduates 55(9 Percent) said it is excellent and 164(27.3 Percent) said it is good and 27(4.5 Percent) said it is poor. Majority of the student opinion that the information accessed through internet is good for their academic purpose that is 406(67.67 Percent).

Table 1.27

Accuracy of Internet Information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	12	252	90	354
	2%	42%	15%	59%
Postgraduates	0	216	30	246
	0.00	36%	5%	41%
Total	12	468	120	600
	2.00%	78.00%	20.00%	100

The question asked to the respondent whether information accessed through internet is accurate. A sum total of 12(2 Percent) undergraduates said that the information accessed is excellent whereas 252(42 Percent) student said it is good and 90(15 Percent) said it is poor. For evaluating the same case about the post graduates a sum total of 216 (36 Percent) said it is good. Most of them opine that the information accessed through internet is good and they are getting the required informations from the internet.

Table 1.28

Authoritative nature of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	12	282	60	354
	2%	47%	10%	59%
Postgraduates	30	126	90	246
	5%	21%	15%	41%
Total	42	408	150	600
	7.00%	68.00%	25.00%	100

As per the table 1.28 shows undergraduates 12(2 Percent) said the information accessed through internet is excellent and 282(47 Percent) said it is good and 60(10 Percent) said it is poor. Considering the same opinion 30(5 Percent) PG students said the information accessed through internet is excellent and 126(21 Percent) said it is good and 90 (15 Percent) said it is poor. A majority 68 Percent students said that the information accessed through internet is authoritative and reliable in nature and it is helpful for their academic and research work.

Table 1.29

Consistency of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	18	288	48	354
	3%	48%	8%	59%
Postgraduates	6	198	42	246
	1%	33%	7%	41%
Total	24	486	90	600
	4.00%	81.00%	15.00%	100

Table 1.29 describes that are 18 (3 Percent) under graduates said they are getting consistent information from the internet and it is excellent in performance and 288(48 Percent) students said it is good and 48(8 Percent) said it is poor. Most of the students 486(81 Percent) opine that the information accessed is good. Only a negligible 90 (15.00 Percent) students said it is poor.

Table 1.30

Ease of use of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	54	168	132	354
	9%	28%	22%	59%
Postgraduates	6	192	48	246
	1%	32%	8%	41%
Total	60	360	180	600
	9.16%	60%	30%	100%

The table 1.30 shows 54 (9 Percent) undergraduate said that they have no problem while accessing the internet, they commends that their use of internet is excellent, whereas 168(28 Percent) said that their use of internet is

good, but 132 (22 Percent) said it is poor. For considering the opinion of postgraduates, they commends 192 (32 Percent) said that their use of internet and its out come result is good, but 48 (8 Percent) said that the internet information accessed is poor. Majority opines, the information accessed through internet is easily accessible and useful and its search with search engines is easy for finding or locating the required knowledge that is not getting elsewhere.

4.3.6 Difficulty faced while accessing the Internet

The respondents are asked whether they have any difficulties faced while accessing the internet that is for obtaining connection, opening WebPages, browsing, downloading, outdated or backup information etc.

Table 1.31

Difficulty faced while accessing the Internet (Course wise)

Course	Difficulty in obtaining Internet connection			Total
	No	A Little	High	
Undergraduates	72	270	12	354
	12%	45%	2%	59%
Postgraduate	60	168	18	246
	10%	28%	3%	41%
Total	132	438	30	600
	22%	73%	5%	100

As per the table 1.31 states that the 72(12 Percent) undergraduates said that they have no difficulty in obtaining internet connection but 270(45 Percent) said some difficulties faced 12(2 Percent) said that they have serious difficulties faced while accessing the internet connection. For considering the case of the post graduates 60(10 Percent) have no difficulties obtained while accessing the internet here as 168(28 Percent) have some difficulties and 18(3 Percent) have faced high difficulties while facing the internet. A majority 73

percent students said that they are facing some difficulties while accessing the internet.

Table 1.32

Difficulties in opening the web pages (Course wise)

Course	Difficulty in opening WebPages			Total
	No	A Little	High	
Undergraduates	144	156	54	354
	24%	26%	9%	59%
Postgraduate	114	126	6	246
	19%	21%	1%	41%
Total	258	282	60	600
	43%	47%	10%	100

The table 1.32 states that the144 (24 Percent) undergraduates students have no difficulties faced while opening the WebPages, while 156(26 Percent) have some difficulties and 54(9 Percent) have high difficulties faced. Where as 114(19 Percent) postgraduates have no difficulties while opening the web pages, and 126(21 Percent) have some difficulties and 6(1 Percent) have facing high difficulties while opening the web pages. Most of the students 47 Percent faced difficulties while opening the WebPages.

Table 1.33

Difficulties faced while browsing (Course wise)

Course	Difficulty in browsing			Total
	No	A Little	High	
Undergraduates	234	120	0	354
	39%	20%	0.00	59%
Postgraduate	144	102	0	246
	24%	17%	0.00	41%
Total	378	222	0	600
	63%	37%	0	100

There is a question asked to the respondents whether they have any difficulties faced while browsing the internet, to that question 234(39 Percent) undergraduates said that they have no difficulties while 120(20 Percent) have some difficulties faced while accessing the net but 144(24 Percent) postgraduates faces no difficulties while browsing the net and 102(17 Percent) PGs have some difficulties while browsing the internet. Most of them an average 378(63 Percent) students face no difficulties while browsing the internet.

Table 1.34

Difficulties faced while downloading (Course wise)

Course	Difficulty in downloading			Total
	No	A Little	High	
Undergraduates	120	180	54	354
	20%	30%	9%	59%
Postgraduate	102	144	0	246
	17%	24%	0	41%
Total	222	324	54	600
	37%	54%	9%	100

For measuring the use of electronic information recourses it is important for considering the use of internet and its problem. For this the respondents are asked whether they have any problem faced while downloading information from the internet. This opinion of the students is analyzed in the table 1.34 states that 120(20 Percent) UG Students said that they have no problem faced while downloading information from the internet, but 180(30 Percent) students have some difficulties and 54(9 Percent) have serious difficulties obtained while downloading the information from the internet. For considering the case of postgraduates 102(17 Percent) have no difficulties obtained while downloading information from the internet and 144

(24 Percent) have some difficulties obtained. Most of them 324 (54 Percent) have obtained difficulties while downloading information from the internet.

Table 1.35

Outdated or backup information (Course wise)

Course	Outdated backup devices			Total
	No	A Little	High	
Undergraduates	132	186	36	354
	22%	31%	6%	59%
Postgraduate	87	159	0	246
	14.5%	26.5%	0	41%
Total	219	345	36	600
	36.50%	57.50%	6%	100

The respondents are asked whether they have faced slow accessibility or getting outdated information from the internet. To this 132(22 Percent) undergraduates said that they haven't getting the outdated information where as 186(31 Percent) have a little and 36(6 Percent) have getting outdated information to a greater extent. For the case of postgraduates 87 (14.5 Percent) PG students have not getting the outdated information, and 159(26.5 Percent) have getting some outdated information. The majority 57 Percent UG and PG students have the opinion that they have getting outdated information.

4.3.7 Favorite Search engines (Gender wise)

For measuring the use of electronic information resources the students were asked to specify which search engines are they used regularly. Search engines play a key role in searching information from the internet. There are number of search engines, which make the search easy and quick. The table

1.36 shows course wise and gender wise distribution of the widely using search engines.

Table 1.36

Favorite search engine (gender-wise)

Gender	Yahoo	Google	Infoseek	Altavista	Others	Total
Male	126	120	30	0	30	306
	21%	20%	5%	0%	5%	51%
female	60	120	0	78	36	294
	10%	20%	0	13%	6%	49%
Total	186	240	30	78	66	600
	31%	40%	5%	13%	11%	100

Figure 7

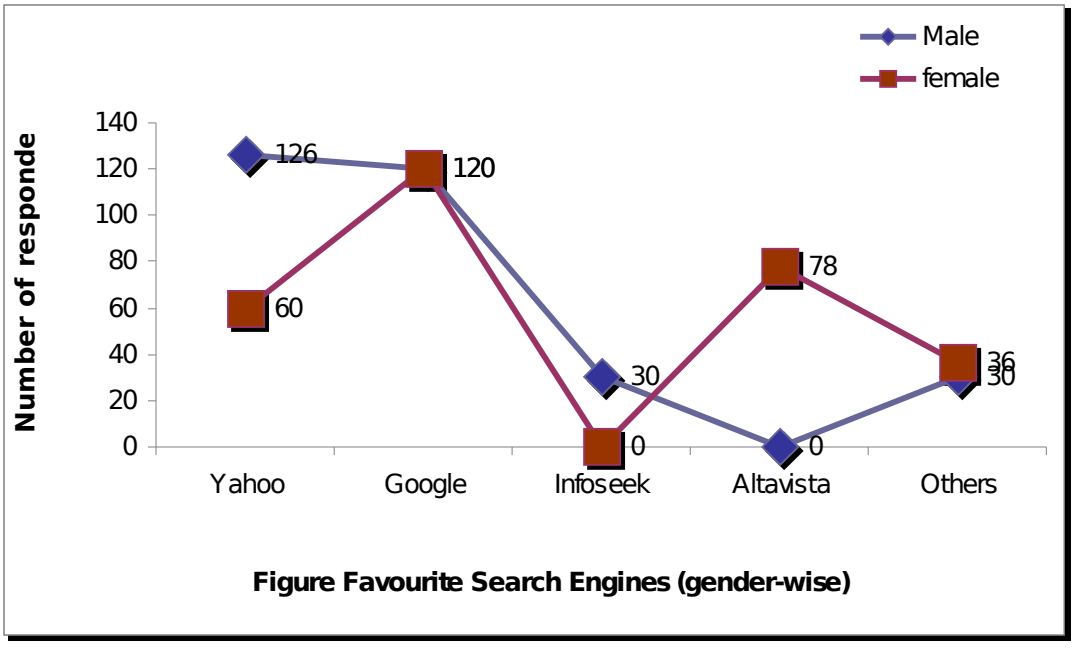


Figure Favourite Search Engines (gender-wise)

The table 1.36 and the above graphical representation shows the most favorable search engines used by the students that is 126 (21 percent) male students and 60(10 percent) females using Yahoo, where as 120(20 percent)

male and 120(20 percent) females using Google. An average 30(5 percent) male given their preference to Infoseek and 78(13 Percent) females given interest to Altavista and 30(5 Percent) male and 36(6 Percent) females using other type of search engines respectively. Most of the students that are 240(40%) out of 600 opine that they have mostly using Google for searching the in formations from the internet.

Table 1.37

Favorite search engine (course-wise)

Course	Yahoo	Google	Infoseek	Altavista	Others	Total
Undergraduate	90	120	30	78	36	354
	15%	20%	5%	13%	6%	59%
Postgraduate	96	120	0	0	30	246
	16%	20%	0	0	5%	41%
Total	186	240	30	78	66	600
	31%	40%	5%	13%	11%	100

For considering the most using search engines, 90(15 Percent) undergraduate students and 96(16 Percent) postgraduates using Yahoo and 120(20 Percent) undergraduates and 120(20 Percent) postgraduates using Google. But the undergraduate 30(5 Percent) and zero percent post graduate students using the Infooseek search engine. As per the course wise analysis most of the respondents are using the Google that is the 240(40 Percent) students. The second space adorn by the Yahoo186 (31 Percent).

4.3.8 Purpose or Motive of retrieving information from electronic resources

Graduate and Postgraduate students are using internet for their academic activities like for project work, preparation of study materials,

writing article, seminar papers, updating knowledge etc. The respondents are asked to give their priority given to them.

For Project work: Most of the universities in Kerala have implemented credit and semester system for UG and PG level. As per their syllabus at the end of the course they have to prepare one project work. The table 1.30 states the ranking given by the students for project work.

Table 1.38

Ranking for project work as a purpose of using Internet (course-wise)

Course	Ranking				Total
	1	2	3	4	
Undergraduate	222	102	30	0	354
	37%	17%	5%	0	59%
Postgraduate	156	54	36	0	246
	26%	9%	6%	0	41%
Total	378	156	66	0	600
	63%	26%	11%	0	100

The table 1.38 shows 222(37 Percent) undergraduates and 156(26 Percent) postgraduate students given first priority that they use internet for the preparation of their project work. Where as 102(17 Percent) UG students 54(9 Percent) PG's given second priority and 30(5 Percent) UG's and 36(6 Percent) PG students gave the third priority for using internet for their project work.

Preparation of study material: The students are asked to whether they use internet for the preparation of study materials, the preparation of notes, essays, discussions, consulting dictionary, for understanding the technical words, finding the full forms, chatting with national and international lecturers, finding the date of national and international seminars, symposiums etc. The table 1.39 describes the students ranking for the preparation of study material.

Table 1.39

Ranking for preparation of study materials as a purpose of using Internet (course-wise)

Course	Ranking					Total
	1	2	3	4	5	
Undergraduate	98	78	65	37	76	354
	16.3%	13%	10.8%	6%	12.6%	59%
Postgraduate	119	98	5	12	12	246
	19.8%	16%	0.8%	2%	2%	41%
Total	217	176	70	49	88	600
	36%	29%	12%	8%	15%	100%

This opinion is analyzed in the table 1.39. To this 98(16 Percent) undergraduates and 119(19.8 Percent) postgraduates said that they give first priority for using the internet for the preparation of study materials. But 78(13 Percent) undergraduates and 98(16 Percent) post graduates given second preference and the third preference is given by 65(10.8 Percent) UG students 5(0.8 Percent) post graduates using internet for the preparation of study materials and 37(6 Percent) undergraduates and 12 (2 Percent) post graduate giving the 4^{th} preference for the using the internet for the preparation of their study materials.

Preparation of writing article: - The teachers insist the students for writing of article for improving the quality of their study and research. Through the questionnaire the investigator asked to explain, which priority is given for the use of Internet for writing article.

Table 1.40

Ranking for preparation of writing article as a purpose of using Internet (course-wise)

Course	Ranking					Total
	1	2	3	4	5	
Undergraduate	108	156	24	12	54	354
	18%	26%	4%	2%	9%	59%
Postgraduate	42	72	36	96	0	246
	7%	12%	6%	16%	0.00	41%
Total	150	228	60	108	54	600
	25%	38%	10%	18%	9%	100

The table 1.40 describes that 108 (18 Percent) undergraduates and 42 (7 Percent) postgraduates given first priority and 156(26 Percent)UG and 72(12 Percent) post graduates given second priority and the 24 (4 Percent) UG students and 36(6 Percent) postgraduates had given third priority for the using of internet for writing article and 12 (2 Percent) UG's and 96 (16 Percent) PG's and 54 (9 Percent) under graduates gave only the 4^{th} and 5^{th} Preference for writing the article.

Preparation of seminar paper: - For presentation and attending seminars is important at the UG and PG level, when the credit and semester system implemented to the students. So the students heavily use library and searching the www in the internet for suitable information for the preparation of seminar papers. So the students are asked to explain, which priority or ranking is given for the using of the internet for the preparation of seminar papers. The table 1.41 describes students ranking for the preparation of seminar paper.

Table 1.41

Ranking for preparation of seminar paper as a purpose of using Internet (course-wise)

Course	Ranking					Total
	1	2	3	4	5	
Undergraduate	66	54	0	192	42	354
	11%	9%	0.00	32%	7%	59%
Postgraduate	48	36	90	48	24	246
	8%	6%	15%	8%	4%	41%
Total	114	90	90	240	66	600
	19%	15%	15%	40%	11%	100

The table 1.41 describes that 66(11 Percent) undergraduate students and 48(8 Percent) post graduates had given first priority for the preparation of seminar paper as a purpose of using internet. But only 54(9 Percent) UG and 36(6 Percent) post graduates given second preference and 90 (15 Percent) postgraduates given third preference for using internet for the preparation of seminar papers and 192 (32 Percent) undergraduate and 48(8 Percent) post graduates given 4th preference and 42 (7 Percent) undergraduates and 24(4 Percent) post graduates for giving the 5th preference for using internet for the preparation of seminar paper. Majority that is the 32 Percent UG students had given 4th preference and 15 Percent PG students had given 3rd preference for the preparation of seminar paper.

Updating of knowledge: - In the changing environment knowledge is changing. For attending the competitive examinations, quiz programmes, answering the term-end examinations etc for updating the knowledge students visit the library and reading the news papers and using the internet as usual. The table 1.42 describes students ranking of internet for the updating of knowledge.

Table 1.42

Ranking for updating of knowledge as a purpose of using Internet (course-wise)

Course	Ranking					Total
	1	2	3	4	5	
Undergraduate	112	74	57	65	46	354
	18.6%	12.3%	9.5%	10.8%	7.6%	59%
Postgraduate	78	78	23	25	42	246
	13%	13%	3.8%	4.1%	7%	41%
Total	190	152	80	90	88	600
	32%	25%	13%	15%	15%	100%

The table 1.42 describe that 112(18.6 Percent) undergraduates and 78 (13 Percent) post graduates given first priority for using internet for the updating of knowledge were as 74(12.3 Percent) UG and 78(13 Percent) PG students given second and 57(9.5 Percent) UG and 23(3.8 Percent) postgraduate students given third preference and 65(10.8 Percent) UGs and 25(4.1 Percent) postgraduate students had given fourth preference for using the internet for the updating of knowledge. Majority of the UG and PG students give first preference for using internet for the updating of knowledge that is 18 and 13 percents respectively.

4.3.9 Most used library and Information sources on the web

Internet has made simple and speedy purchase of information sources/documents like books, journals, electronic publication etc. The internet can be successfully utilized for providing reference service because various primary and secondary sources of information are available online from many sites. Internet can be useful in finding certain type of information such as computers and the people who are scientific and technical information, popular culture and entertainment, historical and humanities

information. Students can use internet to communicate with publishers, booksellers and venders. The investigator asked to the students which is the most used library and information service on the web

Table 1.43

Most used library and information services on the web (Course wise)

Web services	Course		Total
	Undergraduates	Postgraduate	
Online e-journals	174	120	294
	29%	20%	49%
E-books	102	78	180
	17%	13%	30%
Online databases	48	36	84
	8%	6%	14%
OPAC	30	12	42
	5%	2%	7%
Total	354	246	600
	59%	41%	100%

The table 1.43 shows 174(29 Percent) undergraduates and 120 (20 Percent) postgraduates giving first priority to the online e-journals and 102(17 Percent) undergraduates and 78(13 Percent) postgraduates given priority for e-books and 48(8 Percent) undergraduates and 36(6 Percent) postgraduates given priority for online databases, but 30(5 Percent) undergraduates and 12(2 Percent) postgraduates given their preference to the online public access Catalogue (OPAC). This analysis clearly shows that the students at UG and PG level widely using the library and information services on the web.

4.3.10 Availed help from the library

For using the electronic information resources the students needed some help. Today libraries are making use of modern communication media like e-mail, electronic journals, e-books, fax, telex, satellite communication, telecommunication, online network, etc, the level of knowledge of the library users is also on the higher side, and knowledge of computers becomes an essential part as far as the college students are concerned. The students are asked to explain whether they get any help or training from the library for using the electronic information resources.

Table 1.44

Availed help from the library (gender-wise)

Gender	Yes	No	Total
Male	133	173	306
	22.16%	28%	51%
Female	92	202	294
	15%	33.6%	49%
Total	225	375	600
	37.5%	62.5%	100%

The table 1.44 shows that 133(22.16 Percent) males students and 92(15 Percent) females said that they are getting help from the library for using of electronic information resources were as 173(28 Percent) male students and 202(33.6 Percent) females said that they are getting no help from the library. A majority 375(62.5 Percent) students opines that they are not getting any help from the library for the using of electronic information sources. It shows that there is an urgent training is essential for giving training for the college students for the using of electronic information resources very soon.

4.3.11 Visit of College website by the students (Course wise)

Most of the colleges in Kerala have their own websites. Apart from the college website, some colleges developing their own library web site. College website gives some important information about the admission, examination, closing and opening, results, course and syllabus etc. A model arts and science college (D.B.College, Sasthamcotta) website is given below.

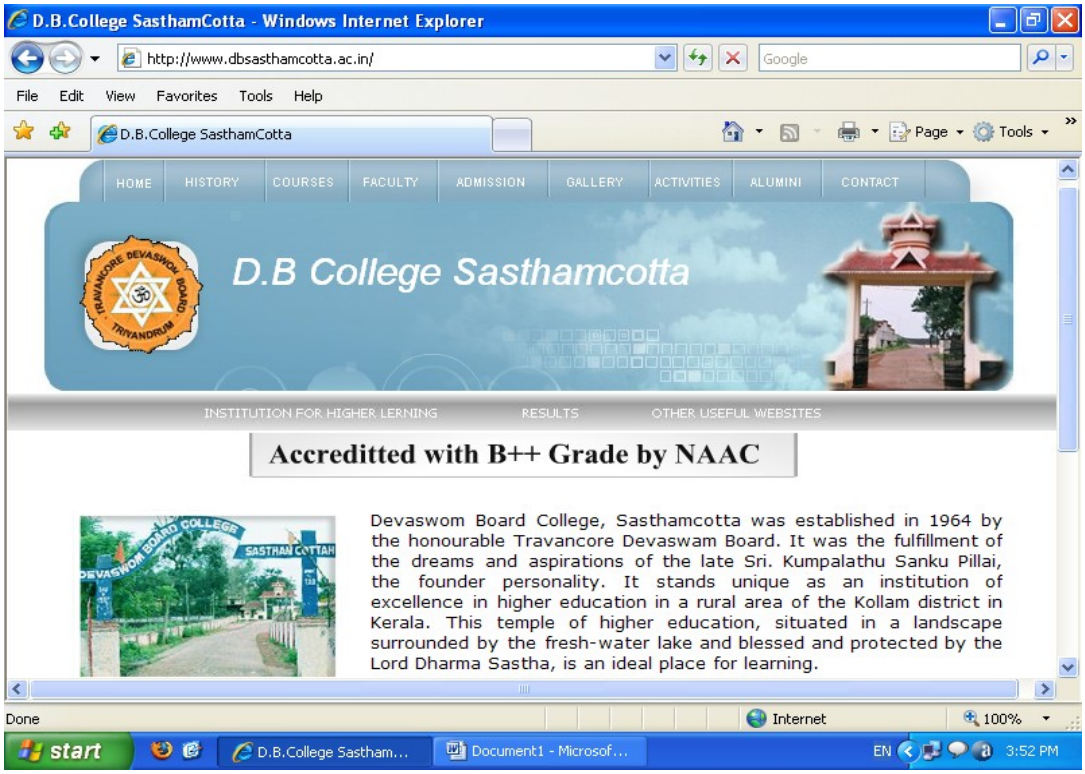


Table 1.45

Visit of college website by the students (course-wise)

Course	Visiting	Not Visiting	Total
Undergraduates	54	300	354
	9%	50%	59%
Postgraduate	36	210	246
	6%	35%	41%
Total	90	510	600
	15%	85%	100%

The information collected from the students whether they have a college website. To this 54(9 Percent) undergraduates said that they have a college website but 300(50 Percent) students said that they haven't a website. For the case of postgraduate students 36(6 Percent) commends that they have a website but 210(35 Percent) said they haven't a college website. Majority of the student 85 Percent opines they don't have a college website, so they are not able to visit the college website or portals. The advent of IT every college must create their own website duly update in time.

4.3.12 Availability of Independent College library website

Independent library website is important for giving information to the web. Internet, especially world wide web becomes so popular, which allows anyone connected to internet to retrieve information on his/her desktop. Considering the widespread use of the internet it is useful to create library website for browsing information to the students for any were at any time. Most of the IIT and Engineering colleges have their own independent library websites but no independent college library web site is available in the arts and science college libraries in Kerala. Some have taken steps for creating the website of their college library. A model library web site of the IIT Bombay is given below with highlighting their e-resources.

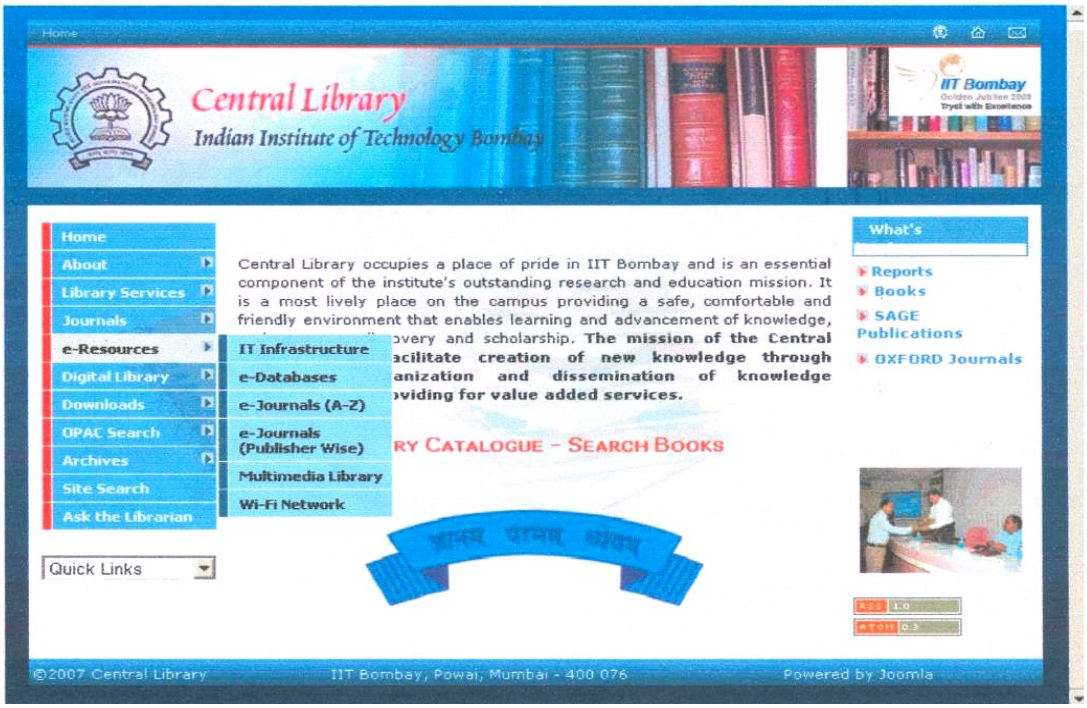


Table 1.46

Availability of independent college library website (course-wise)

Course	Available	Not Available	Total
Undergraduates	10	344	354
	1.6%	57.3%	59%
Postgraduate	8	238	246
	1.33%	39.6%	41%
Total	18	582	600
	3%	97%	100%

A question is asked whether they have an independent library website. To these 10 (1.6 Percent) undergraduates and 8(1.33 Percent) postgraduates that is the sum total of 18 (3 Percent) students said that they have an independent library website. But 344(57.3 Percent) undergraduates and 238(39.6 Percent) postgraduates said that they do not have an independent library website. The 3 Percent students said that they have an independent college library website is intended for the college website that has a link to the general library also and the majority 97 Percent students opines that their

college have no independent college library website. It shows the urgent creation of independent college library website to the arts and science college in Kerala.

4.3.13 Opinion about the college library website

In today's world, it has become accepted that an organization association, business, other institution will have a website. Libraries are no exception to this trend. Websites can server a wide range of purposes for an organization, and this is also true for libraries and information agencies. For example, library web sites can be used to promote the library and its services, to provide current information about the library for library users; to provide access to online and CD-ROM based reference sources such as databases and encyclopedia etc. Some colleges have developed their own library website. These website have giving the students some important information about the college library. These are the total number of books, working hours, name of books and authors, renovation and reservation of books etc. A model Harvard university library web site is given below with A to Z searching facility.

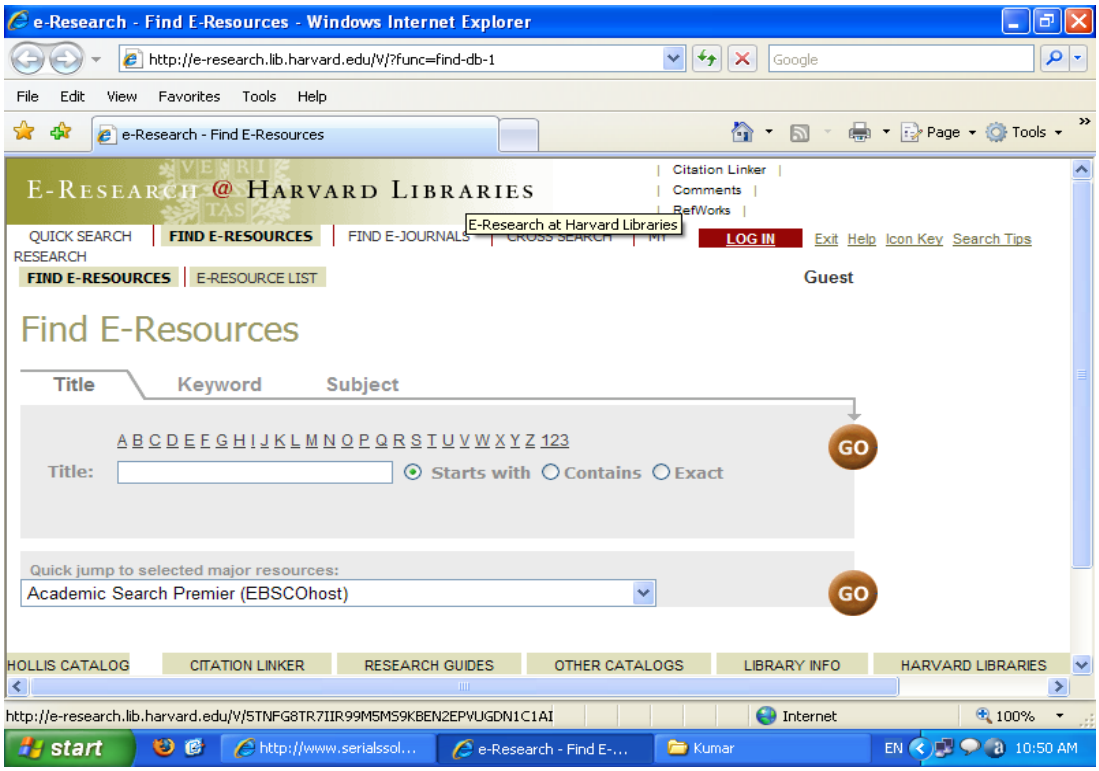


Table 1.47

Opinion about the college library website (course-wise)

Course	Opinion about the library website		
	Good	Average	Total
Undergraduates	54	300	354
	9%	50%	59%
Postgraduate	18	228	246
	3%	38%	41%
Total	72	528	600
	12%	88%	100

The respondents are asked to explain, what is your opinion regarding the organization of information in the college library web site or portal. This response is analyzed in the table 1.47. To this 54(9 Percent) undergraduates and 18(3 Percent) postgraduates said that the organization of information in the college library is good but 300(50 Percent) UG and 228(38 Percent) PGs said that their opinion about the college library website and its informations are only average. Majority of respondent 528 (88 Percent) responded that their opinion about their college library website is average and they commends that their college website has a link to the library that giving the rules and regulations of the library and number of books, working hours etc.

4.3.14 Supporting of the electronic information resources to the academic activities of the students

An electronic resource means the publication and dissemination of information by electronic means; especially by the use of optical disc formats (CD-ROM in particular) and networking. Other options can include the use of electronic databases, videotext, E-mail and electronic newsletter. Electronic journal for which the full end product is available on optical disc, over a network or in any other electronic form, strictly, a journal in which all aspects

of preparation, refereeing, assembling and distribution are carried out electronically. For getting NAAC accreditation, now most of the college libraries have internet connection and have using well equipped soft wares for library networking.

Table 1.48

Supporting of the electronic information resources to the academic activities of the students (gender-wise)

Gender	To a great extent	To some extent	Not at all	Not responded	Total
Male	216	30	30	30	306
	36%	5%	5%	5%	51%
Female	132	54	90	18	294
	22%	9%	15%	3%	49%
Total	348	84	120	48	600
	58%	14%	20%	8%	100%

The respondents are asked to what extent the electronic information resources available in their college library support your academic activities. To this 216(36 Percent) male and 132(22 Percent) females students said that in a greater extent the EIRs supporting their academic activities and 30(5 Percent) males and 90(15 percent) girls said that they does not get any help from the electronic information resources available in their college library support their academic activities. A grand total of 48(8 Percent) said they not responded about this question. A grand total of 348(58 Percent) students said that the electronic information resources available in their college library that is the CD-ROM attached with foreign books, text books, maps, the subscribed science magazines with CDs available in college library supporting their academic activities in greater extent and they said that in the IT environment it is an unavoidable thing and it is a must for their advanced and research studies.

Table 1.49

Supporting of the electronic information resources to the academic activities of the students (course-wise)

Course	To a great extent	To some extent	Not at all	Not responded	Total
Undergraduates	252	54	18	30	354
	42%	9%	3%	5%	59%
Postgraduates	96	30	102	18	246
	16%	5%	17%	3%	41%
Total	348	84	120	48	600
	58%	14%	20%	8%	100%

The table1.49 shows 252(42 Percent) undergraduates and 96(16 Percent) postgraduates opines that the electronic information resources available in their college library helps their academic activity in a great extent where as 18(3 Percent) undergraduates and 102(17 Percent) Post graduates said not at all and 30(5 Percent) UG students and 18(3 Percent) PG students not responded about to the question and majority 58 percent said that the electronic information resources available in their college library support their academic activities.

4.4 Service provided by the college library

The students are asked to explain the opinion about the service provided by the college library, whether they are satisfied or not.

Table 1.50

Opinion of students about college library services (gender-wise)

Gender	Fully satisfied	Not satisfied	Not responded	Total
Male	126	0	180	306
	21%	0	30%	51%
Female	144	36	114	294
	24%	6%	19%	49%
Total	270	36	294	600
	45%	6%	49%	100%

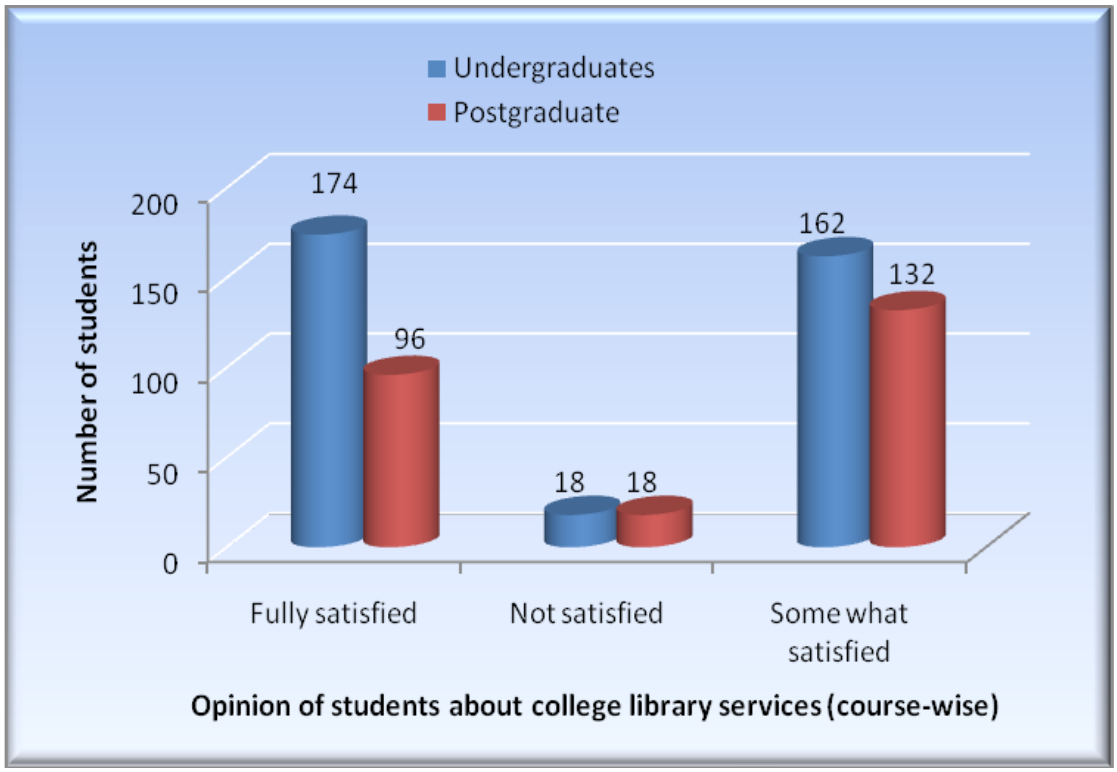
To this 126 (21 Percent) male students and 144 (24 Percent) female said that they are fully satisfied with service provided by their college library. Where as 36(6 Percent) females said they are not satisfied and 180 (30 Percent) male students and 114 (19 Percent) females not responded to the question asked to them and only 45 percent students said that they are satisfied with the service provided by the college library.

Table 1.51

General Opinion about the college library service (Course wise)

Course	Fully satisfied	Not satisfied	Not responded	Total
Undergraduates	174	18	162	354
	29%	3%	27%	59%
Postgraduate	96	18	132	246
	16%	3%	22%	41%
Total	270	36	294	600
	45%	6%	49%	100%

Fig no 8



The table 1.51 and figure no 8 shows that 174(29 Percent) undergraduates and 96(16 Percent) post graduates said that they are fully satisfied with the service provided by the college library and 18(3 Percent) UGs and 18(3 Percent)PGs said that they are not satisfied with the service provided by the college library. Most of the students opines, that is the 270(45 Percent) said that they are fully satisfied the service provided by the college library in the case of electronic information resources and other etc.

4.4.1 Opinion regarding electronic information resources available in the college library

Over the last decade all aspect of computer technology, processing techniques, storage media and input/output devices have become faster, more compact, sophisticated and less expensive, internet plays an important role in information technology. Introduction of internet and web technology has

reduced the cost, time and manpower of publishing documents. As a result organizations, institutions and even individuals are publishing on the internet. The places of exploitation of internet by the library and information center are unlimited and endless. Internet provides a wealth of information such as online E-books, E-Journals, E-news letters, E-databases etc. These vast resources can be accessed by the college library can be provided to the users. The respondents are asked to explain their opinion regarding the electronic information resources available in the college library.

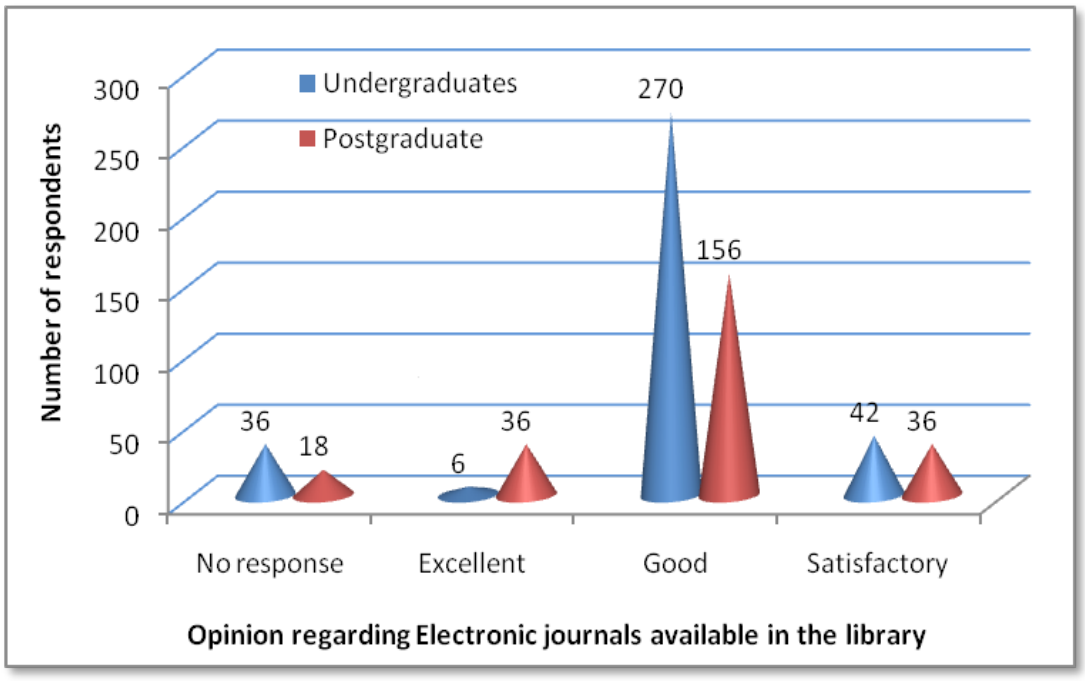
Opinion regarding e-journals: Electronic journals are a fast developing feature of electronic publishing. Electronic journal may be defined as "Any journal existing in an electronic format that embraces all periodicals available electronically as well as in a paper copy, including the text of periodicals distributed in CD-ROM form. E-Journals are full text journals that are accessible via internet/intranet. Today there are thousands of electronic journals, scholarly publications that are available online via an electronic network along with print.

Table 1.52

Opinion regarding Electronic Journals available in the Library (Course Wise)

Course	No response	Excellent	Good	Average/ Satisfactory	Total
Undergraduates	36	6	270	42	354
	6%	1%	45%	7%	59%
Postgraduates	18	36	156	36	246
	3%	6%	26%	6%	41
Total	54	42	426	78	600
	9%	7%	71%	13%	100%

Fig No 9



The table 1.52 and the figure 9 states that the 270 (45 Percent) undergraduates and 156 (26 Percent) PG students said that the electronic journal available in their college library is good and 42 (07 Percent) UGs and 36 (6 Percent) PGs said it is satisfactory/Average. Most of them 71 Percent students opine that the electronic journal available in the college library through the internet and subscribing science magazines attached with CDs are good and its helpful for their academic activities.

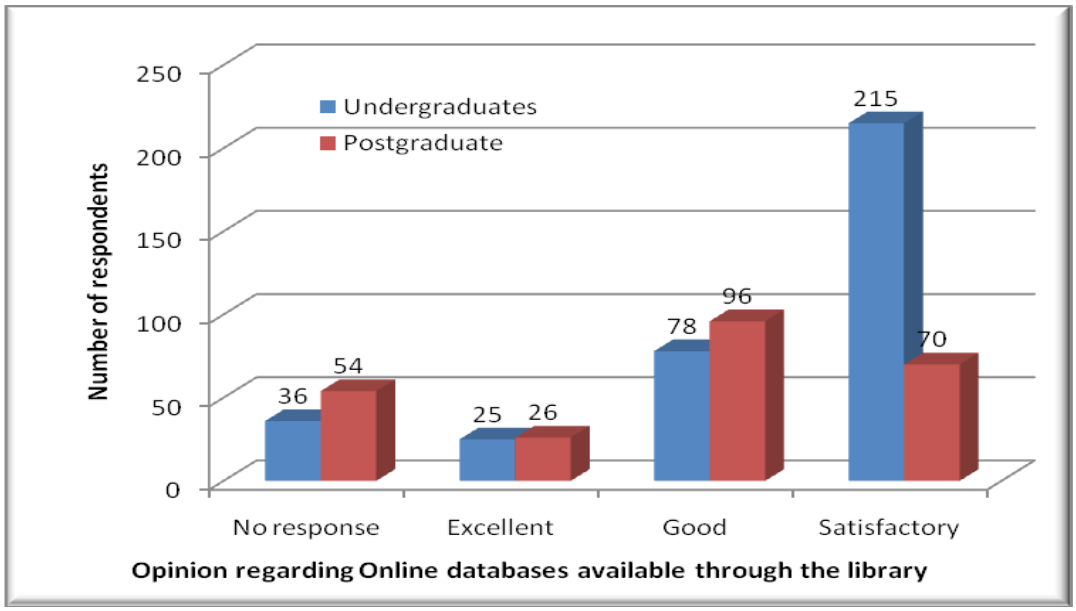
Opinion regarding online databases: The databases subscribed through online or internet is known as online databases. Now the internet is widespread and cheaper most of the college opening the internet centers by charging cheap rates, so the online search and databases is increased considerably among the college students. Arts and Science College libraries of Kerala is moving faster with the other special and engineering colleges with this instinct.

Table 1.53

Opinion regarding
online databases available through the library (Course wise)

Course	No response	Excellent	Good	Average/ Satisfactory	Total
Undergraduates	36	25	78	215	354
	6%	4.1%	13%	35.8%	59%
Postgraduates	54	26	96	70	246
	9%	4.3%	16%	11.6%	41%
Total	90	51	174	285	600
	15%	8.4%	29%	47.4%	100%

Fig No:10



The table1.53 shows that 78(13 Percent) UGs and 96(16 Percent) PGs said that the online database available in the college library is good and 215(35 Percent) UGs and 70(11 Percent) PGs said it is average. But undergraduates in 36(6 Percent) students and 54(9 Percent) Postgraduates have not responded to this opinion regarding online databases available in the

library. Most of the respondents opine that is the 285(47 Percent) said that the online databases available in the college library are only average.

Opinion regarding CD-ROM databases available in the library

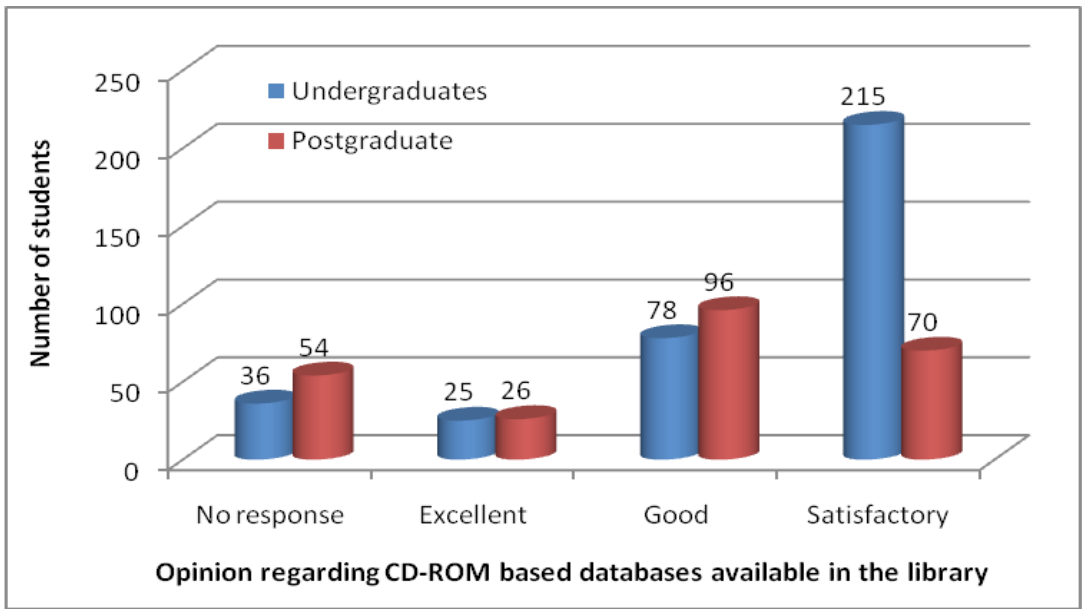
Database can mean any collection of information but, usually applies to information in computerized form, it may be a collection of indexed reference to the literature, perhaps with abstracts of summaries, or it may be a collection of facts, such as statistics, prices or addresses, or it may provide the full text of primary documents, such as law court judgments or newspaper clippings. Whatever be the information, it is logically organized for efficient retrieval. Whereas CD-ROM is ten to twelve year old technology that has emerged for high density compact storage of information on a disc which can be used by a personal computer. Information in this media, unlike online is physically available to the user for accessing and searching from his desktop computer and hence does not require expensive telecommunication infrastructure and high power computing facility. CD-ROM is an optical disc of 12cm diameter in which about 2,75,000 pages of information (600 mega bytes) can be stored. The recording is done by laser device. The recorded information can be read by a laser drive attached to a personal computer. The respondents are asked to describe your opinion about the CD-ROM based databases available in their college library.

Table 1.54

Opinion regarding CD-ROM based databases available in the library

Course	No response	Excellent	Good	Average/ Satisfactory	Total
Undergraduates	36 (6%)	25 (4.01%)	78(13%)	215(35.08%)	354(59%)
Postgraduate	54(9%)	26(4.33%)	96(16%)	70(11.66%)	246(41%)
Total	90(15%)	51(8.05%)	174(29%)	285(47.5%)	600(100%)

Fig No:11



As per the table 1.54 and the fig no: 11 describe 78(13 Percent) undergraduates and 96(16 Percent) post graduates said the CD-ROM based database available in their college library is good and 25(4.01 Percent) UGs and 26(4.33 Percent) PGs said it is excellent and 215(35.08 Percent) UG and 70(11.66 Percent) PG said that the CD-ROM databases available in the library are average. Some colleges that there is no internet connection or no network facility, so 36(6 Percent) UG and 54(9 Percent) PGs has no response, most of the students 285(47.05 Percent) opines that the CD-ROM database, available in the college library is average.

Opinion regarding E-books available in the college library

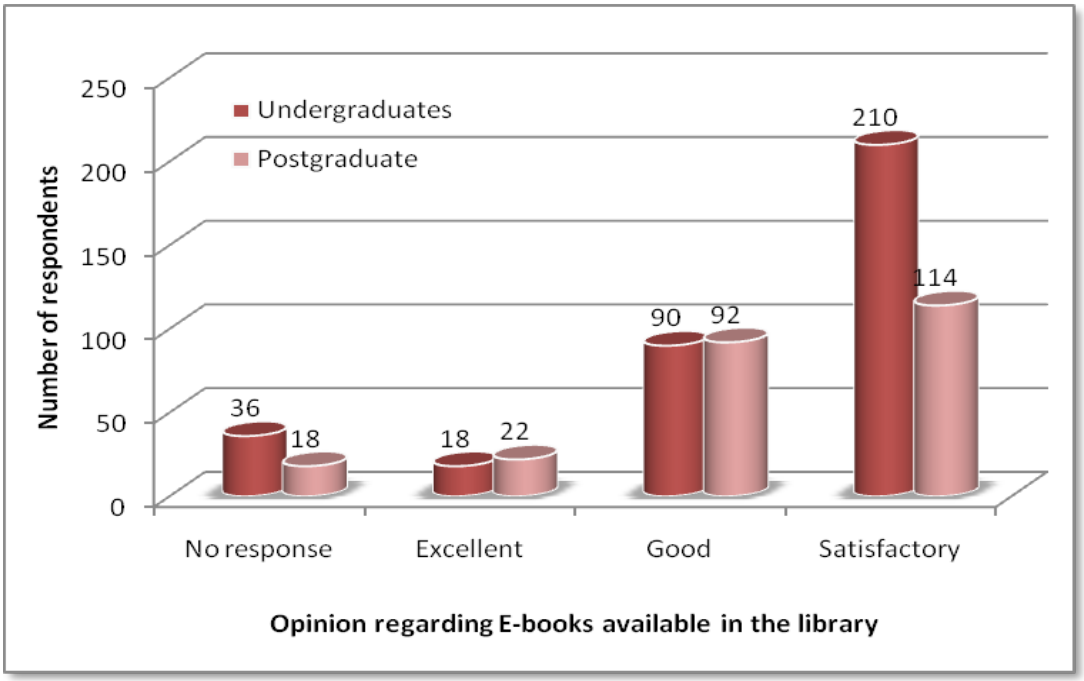
E-books are becoming available means of book publication. The rise in popularity of personal digital assistants has allowed a stable technical platform to be used, which allows user to download books or chapters. The respondents are asked what opinion regarding the e-books available in their college library, whether it is helpful for your academic work.

Table 1.55

Opinion regarding e- books available in the library

Course	No response	Excellent	Good	Average/ Satisfactory	Total
Undergraduates	36	18	90	210	354
	6%	3%	15%	35%	59%
Postgraduates	18	22	92	114	246
	3%	3.06%	15.03%	19%	41%
Total	54	40	182	324	600
	9%	6.06%	30.03%	54%	100%

Figure No:12



The table 1.55 and the figure 12 shows that 90(15 Percent) of undergraduate and 92(15.03 Percent) postgraduate students said that the electronic information resources available in their college library is good and 18(3 Percent) UGs and 22(3.06 Percent) PGs said it is excellent and 36(6 Percent) UGs and 18(3 Percent) PGs have no response about the e-books available in their library. A grand total of 324(54 Percent) UG and PG students said that the e-books available in the college library are average.

4.5 Use Pattern of Electronic Information Resources

4.5.1 E-Sources influence of reading habits

Electronic sources have increasingly become the focus of Research and Development institutions in the recent years. Academic libraries also could not remain behind and many academic institutions have created digital virtual libraries for their users to access electronic journals; because accessing the web has become very convenient. Web based full text electronic journals have naturally become the most popular tool for academic library users for locating desired resources. A question is asked to the respondents that whether they think the electronic resources influencing your reading habits more than before.

Table 1.56

E-sources influence reading habits (Course wise)

Course	Influencing	Not Influencing	Total
Undergraduate	270	84	354
	45%	14%	59%
Postgraduate	210	36	246
	35%	6%	41%
Total	480	120	600
	80%	20%	100%

The table 1.56 shows 270 (45 Percent) undergraduates and 210(35 Percent) post graduates said that the e-resources available to their college library have influencing their reading habits more than before where as only 84(14 Percent) UGs and 36(6 Percent)PGs said that the ‘e’ sources does not influencing their reading habits. An overall 480 (80 Percent) students opines that the e sources available in the college library as well as the internet center and the university infonet centers helping their reading habits more than before.

Table 1.57

E-sources influence reading habits (gender-wise)

Gender	Influencing	Not Influencing	Total
Male	276	30	306
	46%	5%	51%
Female	204	90	294
	34%	15%	49%
Total	480	120	600
	80%	20%	100%

As per the table 1.57 describes that the 276(46 Percent) male students and 204(34 Percent) females said the electronic resources available in the college library help their reading habits and 30(5 Percent) males students and 90(15 Percent) females said the electronic resources available is not influencing their reading habits more than before. Majority 80 Percent opines the e-sources available in the college library influencing their reading habits more than before. This shows the wide spreading habits of using electronic resources in the colleges in Kerala.

4.5.2 Satisfaction of respondents while using e-sources

For measuring the use of electronic information resources in the college libraries in Kerala, the respondents are asked whether electronic information resources available in their college library can satisfy your information needs.

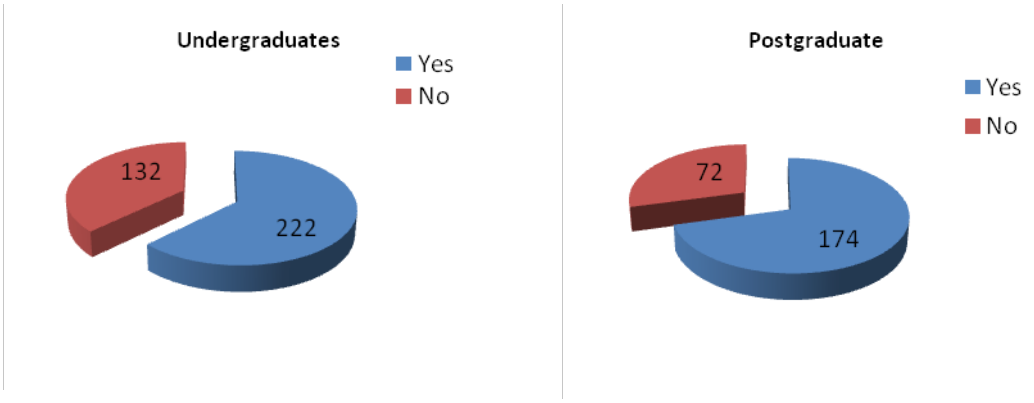
Table 1.58

Satisfaction of respondents while using e-sources

Course	Yes	N0	Total
UG	222	132	354

	37%	22%	59%
PG	174	72	246
	29%	12%	41%
Total	396	204	600
	66%	34%	100%

Figure No:13



Satisfaction of respondents while using the e-sources

The table1.58 and the fig 13 satiates that 132(22% Percent) under graduate and 72(12 Percent) Post graduates said they are not satisfied with the electronic resources available in their college library were as 222(37 Percent) undergraduate students and 174(29 Percent) post graduates said that the electronic resources available in their college library satisfied their information needs in required level. A grand total of 132+72=204(34 Percent) undergraduate and postgraduate students said that they are satisfied with the e-resources available in their college library.

4.5.3 Preferred sources of information (Course wise)

Here an attempt has been made to find whether electronic resources or printed books are most preferable for the college students in graduate and

postgraduate level. A grand total of 222+174 that is 396(66%) UG and PG students said that they are satisfied with the e-sources available in their college library.

Table 1.59

Preferred source of information (course-wise)

Course	E-resources	Printed Books	Missing Responses	Total
Undergraduates	183	123	48	354
	30.5%	20.5%	8%	59%
Postgraduate	162	36	48	246
	27%	6%	8%	41%
Total	345	159	96	600
	57.50%	26.50%	16%	100%

The table 1.59 shows those 183 (30.5 Percent) undergraduates and 162 (27 Percent) postgraduates giving more preference to the e-sources than compared to the printed books where as 123 (20.5 Percent) UG students and 48(8 Percent) PG students had given preference to printed books. In the new IT academic environment a grand total of 345(57.50 Percent) students giving preference to electronic resources than that of the printed books available in their college library. This shows that the use of electronic information resources in the college libraries in Kerala is increasing day to day.

Table 1.60

Preferred source of information (gender-wise)

Gender	Missing Responses	E-resources	Printed Books	Total
Male	60	168	78	306
	10%	28%	13%	51%
Female	36	177	81	294
	6%	29.5%	13.5%	49%
Total	96	345	159	600
	16%	57.50%	26.50%	100%

The table 1.60 shows that the 168(28 Percent) male students and 177(20.5 Percent) female students said that they giving more preference to the electronic resources than that of the printed books but 78(13 Percent) male students and 81(13.5 Percent) females given preference to the printed books. Majority of the students both genders have given more preference to the electronic resources than that of the printed books. Only a negligible 96(16 Percent) students avoided this question because their colleges have no internet connectivity. Female students preferred e-sources than that of the male students.

4.5.4 Use of e-books in comparison with conventional books

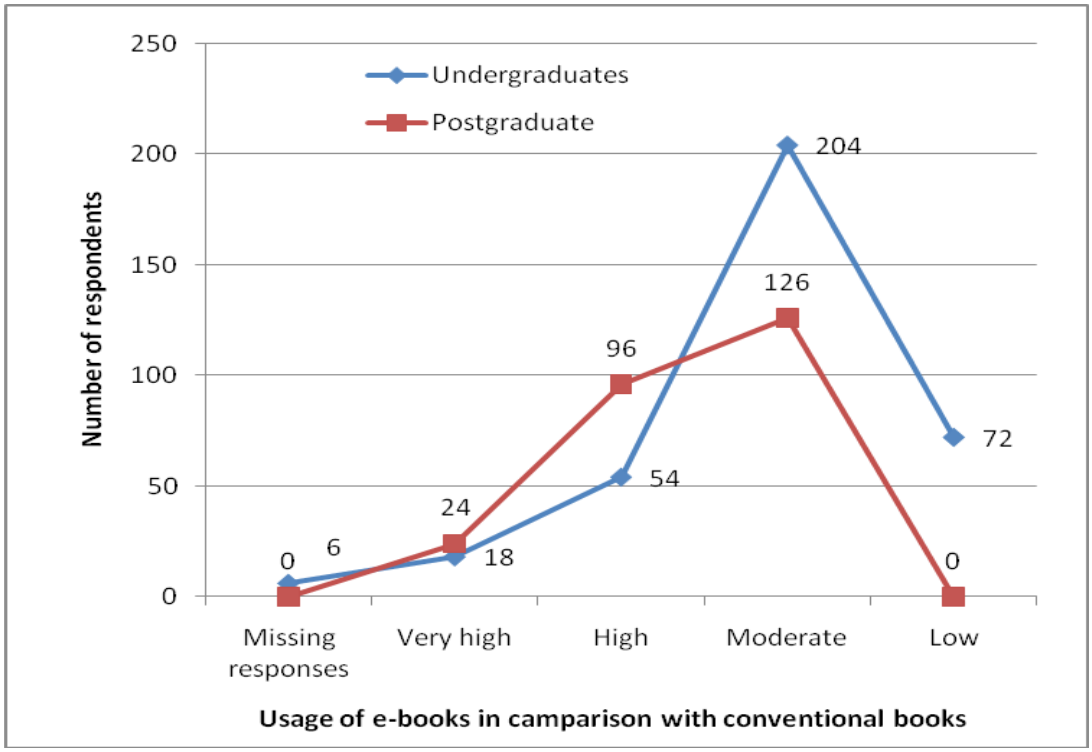
With the advent of modern technology in the publication field, the composition, printing and storage techniques changed to be not only more efficient and faster, but the final product becomes aesthetically pleasing. The revolution in the field of communication technology has ushered in an era of the electronic communication and electronic publishing along with e-commerce electronic books or ‘e-books’ are texts designed to be read solely on a computer screen using proprietary hardware devices or multi-purpose PCs.

Table 1.61

Usage of e-books in comparison with conventional books

Course	Missing responses	Very high	High	Moderate	Low	Total
Undergraduates	6	18	54	204	72	354
	1%	3%	9%	34%	12%	59%
Postgraduate	0	24	96	126	0	246
	0	4%	16%	21%	0	41%
Total	6	42	150	330	72	600
	1%	7%	25%	55%	12%	100%

Figure No:14



As per the figure 14 describes that 18(3 Percent) undergraduates and 24(4 Percent) postgraduates students said that they are using the electronic book in a high rate in comparison with the conventional books and 54(9 Percent) UGs and 96(16 Percent) PGs have the same opinion and 204(34 Percent) UGs and 126(21 Percent) PGs said that it is moderate. But a

negligible 72(12 Percent) undergraduate opines the use of electronic book is very low than compared to the conventional books in the present education system. But majority opinion that the uses of e-book have increased day by day than compared to the conventional books. The students said that the internet and IT helps their education system more than before considerably.

4.5.5 Pre-requisite of access to e-resources needed for information Satisfaction

The respondents are asked to explain whether they agree that the access to e-resources is a pre-requisite to satisfy the information needs in the present scenario.

Table 1.62

Pre-requisite of access to e-resources needed for information satisfaction (course-wise)

Course	Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Total
Undergraduates	24	114	170	30	16	354
	4%	19%	28.3%	5%	2.6%	59%
Postgraduate	0	150	48	36	12	246
	0	25%	8%	6%	2%	41%
Total	24	264	218	66	28	600
	4%	44.00%	36.33%	11.00%	4.6%	100%

The table 1.62 states that the 24(4 Percent) undergraduates strongly agree that the access to E-resources is a must for information satisfaction in the present Information Technology age. It helps their study as well as the research and influences the e-resources for the preparation of project, dissertation and examination as well. As the same time 114(19 Percent) UGs and 150(25 Percent) agrees with the opinion where as 170(28.3 Percent) UGs and 48(8 Percent) PGs disagree with the opinion that the access to e-resources

is a pre-requisite to satisfy the information needs in the present IT Era. About 44 Percent students said that in the present situation of IT, accessing of e-resources is a must for getting more knowledge than compared to the present conventional system.

4.5.6 Role of E-resources

The places of exploitation of internet by the library and information center are unlimited and endless. Internet provides a wealth of information such as online E-books, E-Journal, E-news letter, E-databases etc. Theses vast resources can be accessed by the library and information centers and can be provided to the users. The respondents are asked to prove whether an electronic resource acts only as a supplement to the print medium.

Table 1.63

Role of E-resources (gender-wise)

Gender	Strongly agree	Agree	Disagree	Total
Male	42	24	240	306
	7%	4%	40%	51.00%
Female	18	126	150	294
	3%	21%	25%	49.00%
Total	60	150	390	600
	10.00%	25.00%	65.00%	100.00%

Table 1.63 states that the 42(7 Percent) male students and 18(3 Percent) females strongly agrees to the opinion but 24(4 Percent) males and 126(21 Percent) females only agrees but 240(40 Percent) male students and 150(25 Percent) females disagrees to this opinions. The course wise opinion regarding the role of e-resources is given in the table 1.64.

Table 1.64

Role of E-Resources (course-wise)

Course	Strongly agree	Agree	Disagree	Total
Undergraduates	42	72	240	354
	7%	12%	40%	59.00%
Postgraduate	18	78	150	246
	3%	13%	25%	41.00%
Total	60	150	390	600
	10.00%	25.00%	65.00%	100.00%

As per the table 1.64 states those 42 (7 Percent) undergraduates and 18(3 Percent) postgraduates students strongly agrees that e-resources acts only as a supplement to the print medium where as 240(40 Percent) UGs and 150(25 Percent) PG strongly disagrees with this opinion. For evaluating the common opinion that 390(65 Percent) said that e-resources acts not a supplement to the print medium that shows e-resources play a major role than compared to the print medium for their research and academic activities.

4.5.7 Effect of E-Resources on reading habits (Gender wise)

This is the information revolution era, the shift from print-based medium to electronic resources is essential. Today, there are thousands of electronic journals, scholarly publications that are available through online and in an electronic network along with print. A question is asked to the respondents that whether electronic resources badly affect their reading habits than compared to the conventional or print based publication, so whether it is encouraged.

Table 1.65

Effect of e-resources on reading habits

Gender	Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Total
Male	0	36	234	18	18	306
	0.00%	6%	39%	3%	3%	51.00%
Female	18	54	180	36	6	294
	3%	9%	30%	6%	1%	49.00%
Total	18	90	414	54	24	600
	3.00%	15.00%	69.00%	9.00%	4.00%	100.00%

The table 1.65 shows those 36(6 Percent) male students and 54 (9 Percent) females agree that the e-resources badly affecting their reading habits but 234(39 Percent) males and 180 (30 Percent) females disagree to this statement. A negligible 24(4.00 Percent) students not responded to the above question asked to them.

4.5.8 Effect of E-Resources on reading habits (Course wise)

When analyzing the course wise opinion to the questions asked to which whether e-resources affect to their reading habits. To this following opinion is found.

Table 1.66

Effect of e-resources on reading habits (course-wise)

Course	Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Total
Undergraduates	0	60	252	18	24	354
	0.00%	10%	42%	3%	4%	59.00%
Postgraduates	18	30	162	36	0	246
	3%	5%	27%	6%	0.00%	41.00%
Total	18	90	414	54	24	600
	3.00%	15.00%	69.00%	9.00%	4.00%	100.00%

The table no 1.66 shows 60(10 Percent) undergraduates and 30(5 Percent) postgraduates agrees to the question that the e-resources badly affects their reading habits but 252(42 Percent) UGs and 162(27 Percent) PGs disagree to this question that e-resources only support and encouraging their reading habits.

4.5.9 The importance of e-resources in academic activities

Electronic resources facilitated researcher for quick and precise search for scientific information. Knowledge plays a vital role to the modern society and in this modern age. The information in print format is now being added to with electronic information resources. People want to get pinpointed information in speediest way. Electronic resources can organize, handle, disseminate, vast amount of information effectively. The students of undergraduates and post graduate are asked to explain how you rate the value of electronic resources on conducting your study and research.

Table 1.67

Importance of e-resources in academic activities (Gender wise)

Gender	Very much important	Unimportant	Not responded	Total
Male	252	54	0	306
	42%	9%	0.00%	51%
Female	240	30	24	294
	40%	5%	4%	49%
Total	492	84	24	600
	82.00%	14.00%	4.00%	100

To this 252(42 Percent) male students and 240(40 Percent) females said the value of electronic resources is very much important on conducting their study and research only a negligible 24(4 Percent) students not responded. For considering the opinion about course wise, the following opinion is expressed. Majority 82 Percent students said that the value of electronic resources is very much on conducting their study and research.

Table 1.68

Importance of e-resources in academic activities (course-wise)

Course	Very much important	Unimportant	Not responded	Total
Undergraduates	312	36	6	354
	52%	6%	1%	59.00%
Postgraduates	180	48	18	246
	30%	8%	3%	41.00%
Total	492	84	24	600
	82.00%	14.00%	4.00%	100

As per the table 1.68 describes that the 312(52 Percent) undergraduate and 180(30 Percent) postgraduates said that the value of electronic resources is very much important for their research and study, but 6(1 Percent) UGs and 18(3 Percent) PG student not responded and 36(6Percent) UG and 48(8 Percent) PG said the value of electronic resources is unimportant. Majority opines 492 (82 Percent) said the electronic resources and its help is very much important and it is a must for their study and research.

4.5.10 Improvement of academic activity due to e-resources

Electronic information sources become an effective means of enriching and updating of information. The networks are the important systems for effective communication of information. Information Communication Technology (ICT) is a scientific, technological and engineering discipline and management techniques used in handling information, its application and association with social, economical and cultural matters. Another question asked to the respondents is that whether with the influence of the electronic information sources their quality of learning/research improved or not.

Table 1.69

Improvement of academic activity due to e-resources (Gender –wise)

Gender	Improved very much	Improved slightly	Not improved	Don't know	Total
Male	240	66	0	0	306
	40%	11%			51%
Female	270	24	0	0	294
	45%	4%			49%
Total	510	90	0	0	600
	85%	15%			100

Figure No 15

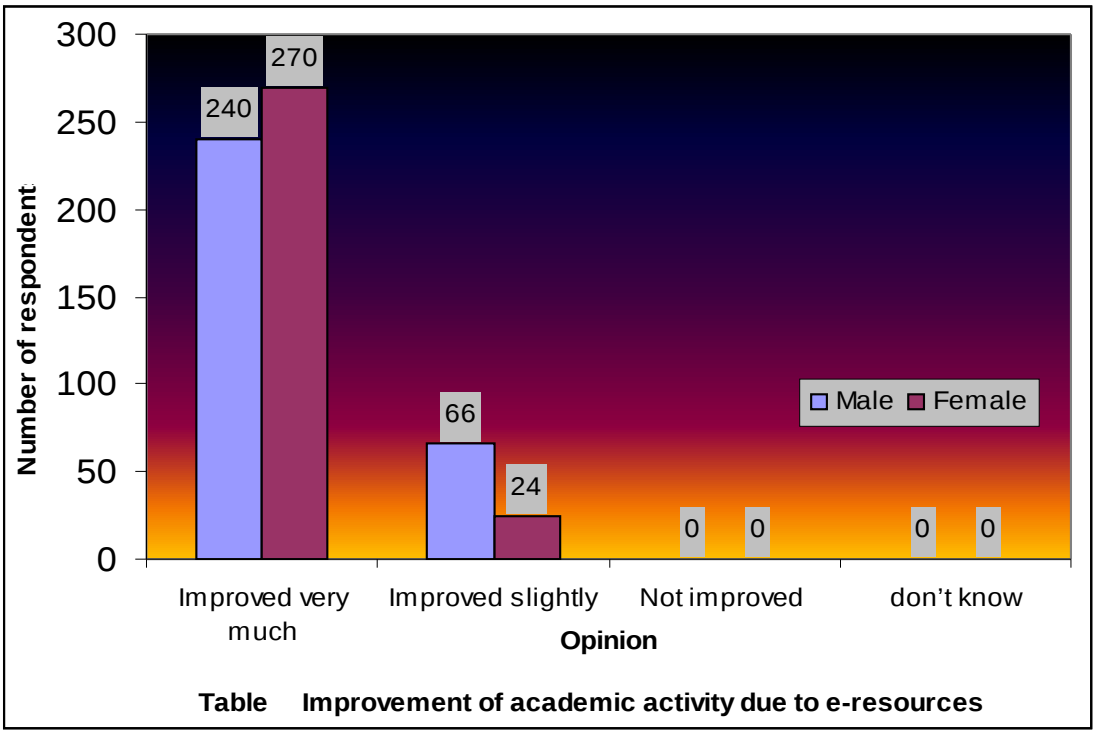


Table1.69 and the figure No: 15 explains that 240(40 Percent) male students and 270(45 Percent) females said that with the influence the electronic information sources, the quality of learning and research is improved very much and 66(11 Percent) male students and 24(4 Percent) female said their quality of learning and research improved slightly. Majority

510(85 Percent) said that with the influence of electronic information sources, the quality of learning and research is improved very much.

4.5.11 Improvement of academic activity due to e-resources (Course wise)

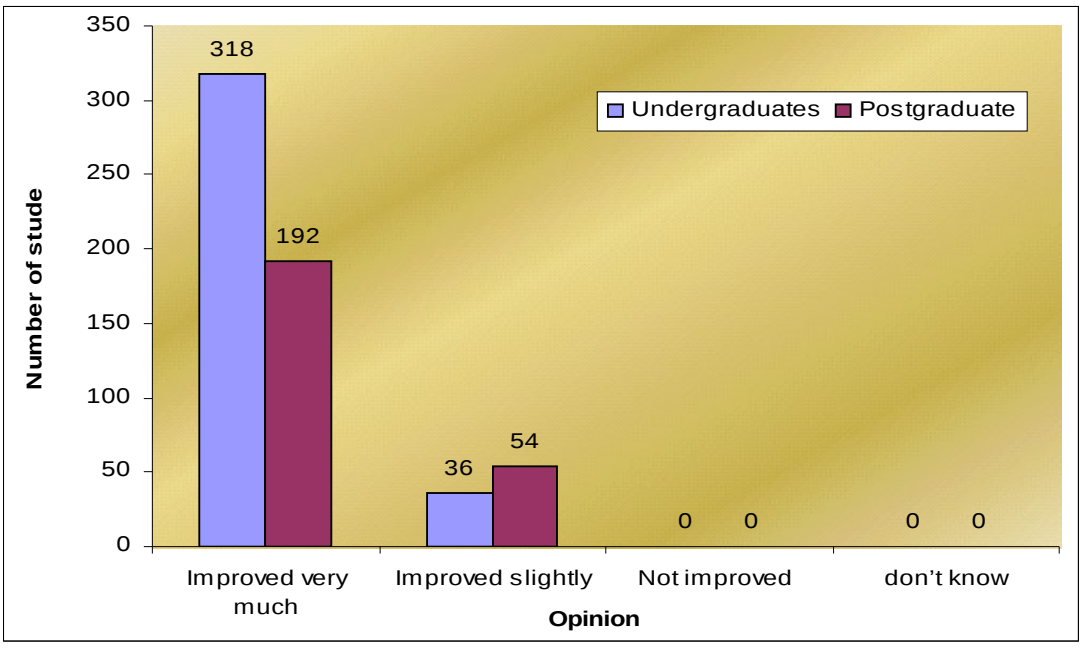
For considering the courses, the undergraduates and post graduates students are asked whether their quality of research and learning is improved with influence of the electronic information sources. To this following result is get.

Table 1.70

Improvement of academic activity due to e-resources (Course wise)

Course	Improved very much	Improved slightly	Not improved	Don't know	Total
Undergraduates	318	36	0	0	354
	53%	6%			59%
Postgraduate	192	54	0	0	246
	32%	9%			41%
Total	510	90	0	0	600
	85%	15%			100%

Figure No:16



As per the table 1.70 shows that 318(53 Percent) undergraduates and 192 (32 Percent) post graduate students said that with the influence of the electronic information sources their quality of learning and research improved very much.

4.5.12 Reason for opting e-resources

The respondents are asked, why do they opting electronic information sources, whether it is for 1) the information available in electronic form is easy to search 2) The search output is get conveniently on floppy/CD/Print out 3) To get information not available elsewhere 4) To get latest techniques in research. To this the following result is received

Table 1.71

Reason for opting e-resources (gender wise)

Gender	1	2	3	4	Total
Male	120	72	42	72	306
	20%	12%	7%	12%	51%
Female	78	54	54	108	294
	13%	9%	9%	18%	49%
Total	198	126	96	180	600
	33%	21%	16%	30%	100%

The table 1.71 describes that the 120(20 Percent) male students and 78(13 Percent) females said that they go for electronic information sources because the information available in electronic form is easy to search but 72 (12 Percent) males and 54 (9 Percent) females said they sought it for the search output is to copy conveniently in floppy/CD/Print out and 42(7 Percent) males and 54(9 Percent) females said they sought it for getting required information not available elsewhere. Where as 72 (12 Percent) male

students and 108 (18 Percent) females said they go for electronic information sources for getting latest techniques in research. A majority of 198(33 Percent) male and female students sought for electronic information sources for the information available in electronic for easy to search and store.

Table 1.72

Reason for opting e-resources (course-wise)

Course	1	2	3	4	Total
Undergraduate	138	60	18	138	354
	23%	10%	3%	23%	59%
Postgraduate	60	66	78	42	246
	10%	11%	13%	7%	41%
Total	198	126	96	180	600
	33%	21%	16%	30%	100%

The table 1.72 shows the course wise analysis of opting e-resources. Among this 138 (23 Percent) undergraduate and 60 (10 Percent) postgraduates said they sought electronic information sources because of the information available in electronic form is easy to search and 60 (10 Percent) UGs and 66(11 Percent) PGs said they sought it for the search output is got conveniently in floppy/CD/print out and 18 (3 Percent) UGs and 78 (13 Percent) PGs said they sought electronic information sources because of getting required information getting which is not available elsewhere but 138 (23 Percent) UGs and 42 (7 Percent) PGs said they selected electronic information sources because of getting latest knowledge in research.

4.5.13 E-Resources based curriculum

Education systems or curriculum around the world are changing rapidly in response to technological advancement. The sphere of education has been influenced by the twin phenomena of globalization and liberalization. The rapid technological change affects many aspects of human lives, including the way one learns. The challenges for students today is to

acquire skills such as how to learn, how to make critical judgments, and how to communicate intelligently, to be flexible, adaptable and tolerant to other creeds and cultures and to make contributions to the society and to the well-beings of others. Based upon the new curriculum and syllabus the students are asked, does their curriculum recommend using the e-resources. To this the following comment is received.

Table 1.73

E-resources based curriculum (Gender wise)

Gender	Very often	Often	Rarely	Never	Total
Male	60	144	60	42	306
	10%	24%	10%	7%	51%
Female	78	144	60	12	294
	13%	24%	10%	2%	49%
Total	138	288	120	54	600
	23%	48%	20%	9%	100%

Figure No:17

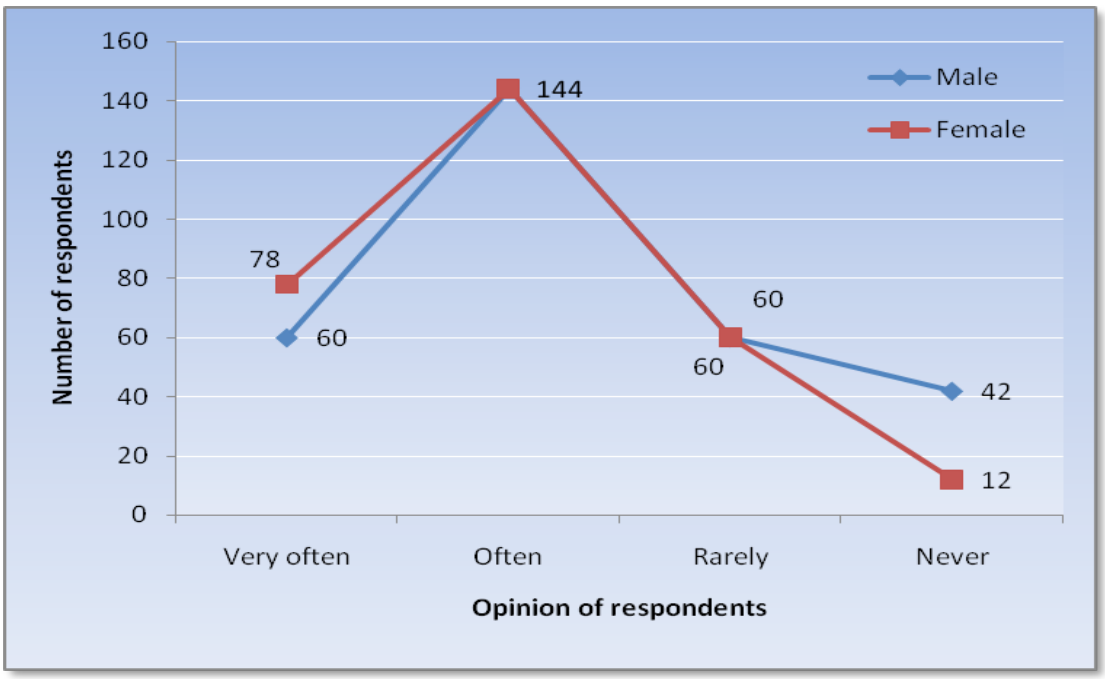


Fig 17 illustrates that the 60 (10 Percent) male students and 78 (13 Percent) females said that their curriculum recommends using e-resources and 144 (24 Percent) males and 144 (24 Percent) females said often and 42 (7 Percent) males and 12(2 Percent) females said that their curriculum never recommends e-resources. Most of the students opine their curriculum recommends using e-resources.

E-Resources based curriculum (Course wise)

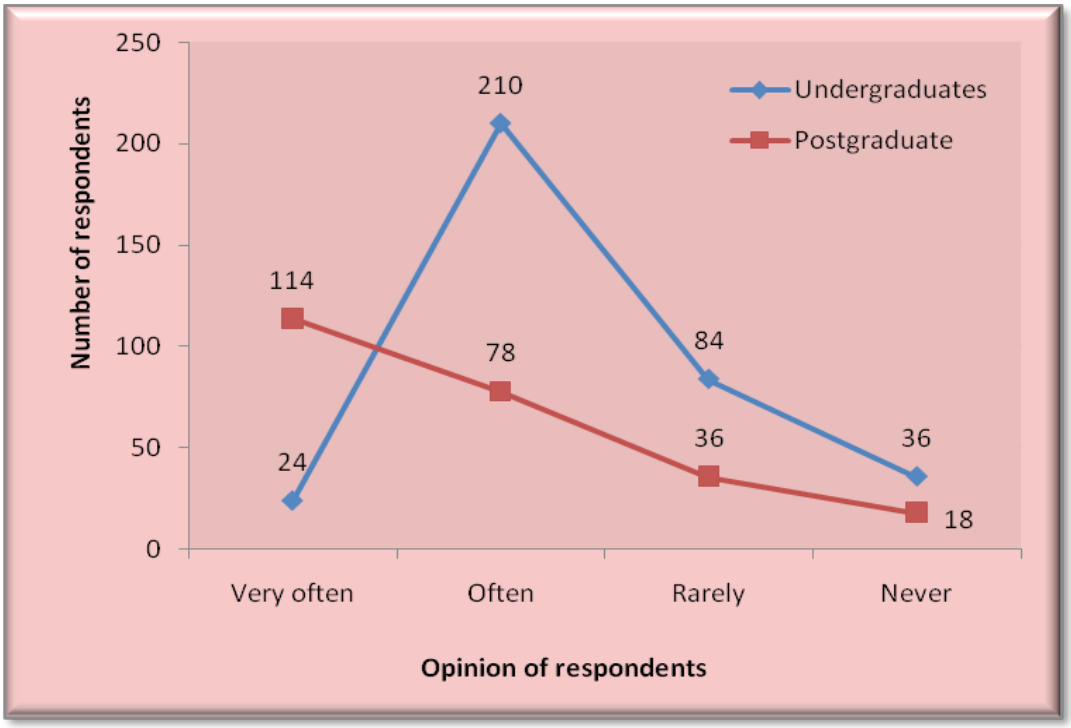
The table 1.74 describes the course wise analysis of the e-resources based curriculum and its results

Table 1.74

E-Resource based curriculum (Course-wise)

Course	Very often	Often	Rarely	Never	Total
Undergraduates	24	210	84	36	354
	4%	35%	14%	6%	59%
Postgraduate	114	78	36	18	246
	19%	13%	6%	3%	41%
Total	138	288	120	54	600
	23%	48%	20%	9%	100%

Figure No: 18



As per the figure 18 describes that the 24(4 Percent) undergraduates and 114 (19 Percent) postgraduates said that their curriculum recommends of using e-resources where as 210 (35 Percent) UGs and 78 (13 Percent) PGs said it is often and 84 (14 Percent) UGs and 36 (6 Percent) PGs said rarely and 36 (6 Percent) UGs and 18 (3 Percent) PGs said that their curriculum never recommends the e-resources for their study. Most of the UGs and PGs 288(48 Percent) opine that their curriculum recommends of using e-resources.

4.6 Use of Electronic Journals

4.6.1 Places Sought for Accessing E-Journals

The respondents are asked from where they access ‘e-journal’. That is from the college library, University library and through online. To this the following information is get.

Table 1.75

Place access of e-journals (gender-wise)

Gender	College Library	University Library	Any other place	Total
Male	108	144	54	306
	18%	24%	9%	51%
Female	30	114	150	294
	5%	19%	25%	49%
Total	138	258	204	600
	23%	43%	34%	100%

The table 1.75 shows that the 108 (18 Percent) males and 30(5 Percent) female students said that they accessing ‘e’ journals from their college library and 144(24 Percent) males and 114 (19 Percent) females said that they access e-journals from the university library and 54 (9 Percent) male and 150 (25 Percent) females said they access e-journals from the nearby internet café. A majority 43 Percent students accessing e-journals from the University library.

Table 1.76

Place access of e-journals (course-wise)

Course	College Library	University Library	Any other place	Total
Undergraduates	48	138	168	354
	8%	23%	28%	59%
Postgraduate	90	120	36	246
	15%	20%	6%	41%
Total	138	258	204	600
	23%	43%	34%	100%

For considering the course wise analysis 48 (8 Percent) undergraduates and 90 (15 Percent) postgraduate students said they access e-journal form their college library and 138 (23 Percent) UGs and 120 (20 Percent) PGs from University library and 168 (28 Percent) UGs and 36 (6 Percent) Post Graduate students accessing the e-journals from the nearby internet café. The table shows that majority 258(43 Percent) UG and PG student students accessing e-journals from the University library.

4.6.2 Satisfaction of the e-journal collection

The electronic scholarly journals have become necessarily of academic environment which help the stakeholders for archiving excellence in the era of teaching, research, development, consultancy and also other diversified academic pursuits. The major advantages of e-journals over print journals are listed below.

- Speedier Delivery
- Easy and effective search
- Multidimensional Interaction
- Dynamic Hyperlinks
- Multimedia effects
- Downloads
- Cost effective options
- Flexibility
- Operating cost free

So the students are asked whether they satisfied with the total e-journal collection available in the college library or not. To this following response is found.

Table 1.77

Satisfaction over the e-journal collection (Gender Wise)

Gender	Satisfied	Partly satisfied	Not satisfied	Total
Male	96	174	36	306
	16%	29%	6%	51%
Female	132	156	6	294
	22%	26%	1%	49%
Total	228	330	42	600
	38.00%	55.00%	7.00%	100%

The table 1.77 shows that the 96 (16 Percent) male and 132 (22 Percent) females said they are satisfied with the total e-journal collection available in their college library where as 174 (29 Percent) males and 156(26 Percent) females said it as partially satisfied and a negligible 36 (6 Percent) males and 6(1 Percent) females said they are not satisfied with the total e-journal collection that available in their college library. The analysis shows 16 Percent males and 22 Percent female students satisfied with the total e-journal collection available in the library.

Table 1.78

Satisfaction over the e-journal collection (Course wise)

Course	Satisfied	Partly satisfied	Not satisfied	Total
Undergraduate	138	174	42	354
	23%	29%	7%	59%
Postgraduate	90	156	0	246
	15%	26%	0	41%
Total	228	330	42	600
	38%	55%	7%	100%

For considering the course wise opinion 138 (23 Percent) undergraduates and 90 (15 Percent) post graduates said they are satisfied with the total e-journal collection available in the library and 174 (29 Percent) UGs and 156 (26 Percent) PGs said they are partially satisfied and a negligible 42 (7 Percent) UGs and PGs said they are not satisfied. Most of them have the opinion that they are satisfied with the total e-journal collections available in their college library.

4.7 Infonet Facility

4.7.1 Availability of the Infonet facility

UGC Infonet is the ambitious project launched by UGC to provide electronic access over the internet to scholarly literature in all areas of learning to the higher education sector of the country in order to increase in a very fundamental way the resources available to the universities for research and teaching. A good Infonet center should provide sufficient number of core journals and the articles should be in an easy to read format. It should provide

full text of article and updated information to attract more users to the centre. Therefore, Information quality is considered as an important dimension of the quality of Infonet centre. Recently UGC decided to give Infonet connection to certain arts and science colleges in Kerala and they allotted trial version to some of the selected colleges. The college students are asked whether your college library have infonet facility. To this following responds is found.

Table 1.79

Availability of Infonet e-journal facility

Course	Available	Not available	Total
Undergraduates	66	288	354
	11%	48%	59.00%
Postgraduate	36	210	246
	6%	35%	41.00%
Total	102	498	600
	17.00%	83.00%	100.00%

The table 1.79 that the 102 (17 Percent) Undergraduate and postgraduate students said that their college library have infonet facility but a majority 498 (83 Percent) said that their college have no infonet facility. Most of them are aware about e-journals and it is got free from the Infonet centers. Some students said that it is available in university library but most of they are unaware about this. For the popularity of Infonet center the university made certain measures or steps for getting the students to their Infonet centers. But it is not happening. Provide proper user education to the students of the college and also to the other academic community for easy and proper use of Infonet center.

4.8 Satisfaction of the students over the facilities allotted in the college library

Electronic equipments available in the libraries including computers and related peripherals such as hardware, diskettes, magnetic tapes and various optical disks, laser disks used for storage of information. Electronic information environment facilities enhancement in the speed of service, number of users served, the quantum and exhaustiveness of information provided. In this situation of digital environment of the library the student of the art and science colleges are asked to proved their satisfaction with the facilities of their college libraries such as the number of computer, printing and scanning facility, CD-writing facility etc that are available. The response to this question is analyzed as below.

Table 1.80

Satisfaction of students over number of computers (course-wise)

Course	Satisfied	Not satisfied	Total
Undergraduates	258	96	354
	43%	16%	59%
Postgraduate	132	114	246
	22%	19%	41%
Total	390	210	600
	65%	35%	100%

As per the table 1.80 describes that the 258(43 Percent) undergraduates and 132(22 Percent) postgraduate students satisfied with the number of computer allowed to their college library were as 96(16 Percent)

undergraduates and 114(19 Percent) postgraduates are not satisfied with the number of computer allotted to the college library. Due to the accreditation of NAAC most of the colleges increased facilities so they allotted more number of computer to their college library with internet connection. So a sum total of 390(65 Percent) students are satisfied with the number of computer allotted to the college library.

Table 1.81

Satisfaction of students over printing and scanning facility (course-wise)

Course	Satisfied	Slightly satisfied	Not satisfied	Total
Undergraduates	138	36	180	354
	23%	6%	30%	59%
Postgraduate	204	18	24	246
	34%	3%	4%	41%
Total	342	54	204	600
	57%	9%	34%	100%

The table 1.81 shows 138(23 Percent) undergraduates and 204(34 Percent) postgraduates satisfied with the printing and scanning facilities allotted to their college library were as 180(30 Percent) undergraduates and 24(4 Percent) post graduates said that there library has no facility to take print out or scanning of any article, pages or books so they are not satisfied. A grand total to 342(57 Percent) students are satisfied with the printing and scanning allowed to their college library.

Table 1.82

Satisfaction of students over CD writing facility (course-wise)

Course	Satisfied	Slightly satisfied	Not satisfied	Total
Undergraduates	168	54	132	354
	28%	9%	22%	59%
Postgraduate	210	6	30	246
	35%	1%	5%	41%
Total	378	60	162	600
	63%	10%	27%	100%

The table no.1.82 states that 168(28 Percent) undergraduates and 210 (35 Percent) post graduates satisfied with the CD-writing facility allotted to their college library were as 132(22 Percent) undergraduates and 30(5 Percent) postgraduates are not satisfied with the printing facility because there library has no CD-Writer or copying facility. The number of students 378(63 Percent) are satisfied because their library has a CD-writer and students allowed to write their files in their CDs and can take print out of their required article and books by paying minimum charges.

4.9 Interview with the College Librarians

For the Collection of data, the investigator visited all the forty arts and science colleges under the four universities for the distribution of questions among the undergraduate and postgraduate students of that college. Through the visit a formal interview is conducted with the college librarians. At the time of visit the researcher met 31 librarians, 3 librarians are on leave, 3 colleges have in charge librarians and 3 of them said they give required information through mail. Most of the colleges that is 13 colleges have internet facility 29 colleges are accredited by NAAC and 11 colleges are not accredited and 22 colleges have some collection CD-ROMS attached with

books, dictionaries, maps, encyclopedia and they are subscribing science journals attached with CDs like IT magazines, Science direct, Elsevier's etc. An average 32 colleges have qualified librarians with professional qualifications like BLISc, MLISc PGDCA and computer knowledge and they said that they are getting refresher courses from universities about the recent development of the library and they have chance for attending seminars and workshops. For their response to the library budget is that the college fee is collected from the students is for lab and library. The total revenue of the college is from Government grand, UGC grand, PTA fund etc, from all the above the allocation of the library budget is 3 to 5% in a year.

CHAPTER V

SUMMARY OF FINDINGS AND CONCLUSION

Information is a fundamental resource for social development and for the progress of the society. During the passage of years the mode and methods of accessing information has change. Technology in its broad sense is the main factor determines the development of information. Electronic information resources provide unprecedented access to digital information. Electronic information resources allows users to access information through remote terminals situated outside the library, save time, give greater access to current information, and allow to get more information with less effort.

Overall works and detailed analysis in previous sections have been reviewed in this chapter to reach a meaningful conclusion. This chapter includes major findings, conclusion reached, and tenability of hypothesis, suggestion for improvement of the condition and for further research.

Based on the analysis of data the following finding and suggestions are made to improve the use of electronic information resources in the college libraries in Kerala.

5.1 Major Findings

1. UGC NAAC Accreditation improves the present quality and environment of the college. For getting NAAC accreditation the colleges are competating each other for developing the existing condition of the college. An average of 138 Arts and Science colleges throughout in Kerala are accredited by NAAC. As per the analysis 432 (72 Percent) undergraduate and postgraduate students said, they are

studying in the NAAC Accredited colleges. So they have more facilities than that of the not accredited colleges.

2. For considering the frequency of visit to the library 144(24 Percent) females and 174(29 Percent) male students visiting the library daily. This shows male students are visiting the library daily than compared to the female students.

3. The average time spent in the library 150(25 Percent) female and 84(14 Percent) male spent between half an hours to 2 hours. This shows that female students spending more time to the library than compared to the male students.

4. Library users make use of internet facility for academic purposes and the web browsing, email searching, chatting, accessing e-journals, job search, seminar preparation etc.

5. The number of students that is 366 (61 Percent) students are using internet for academic purpose and 198 (33 Percent) using internet for searching the jobs. Only 3 Percent students using internet for chatting.

6. For the rating of information retrieved for the internet that is the accessibility, accuracy, authoritative etc for this an average 406 (67 Percent) students said accessibility is good and 78 Percent commends about the accuracy and 68 Percent said about the authoritativeness. All these show that due to the influence of Information Technology, students heavily depending internet for searching informations for their academic activities. As per the review of Natrajan (2003) also mentioned about the influence of the internet and its influence of the academic activities of the students

7. About 78 Percent students faced difficulty while accessing the internet and 57 Percent students faces difficulty while opening the WebPages and 37 Percent faced difficulty while browsing 63 Percent students facing difficulty while downloading from the internet. A majority 64 Percent students getting back up or outdated informations from the internet.

8. The favorable search engine according to the students is Google, 40 Percent students using Google as search engine for searching informations form the internet, 31 Percent using Yahoo, 13 Percent using Altavista, 5 Percent Infoseek and 11 Percent others. The literature review mentioned in this thesis (The Panda K.C2006) has conducted a study has the same opinion regarding the popularity of search engines.

9. The first priority given by the students for the using of internet is 63 percent for project work 36 Percent for preparing study materials, 25 Percent for writing article, 19 Percent for preparing seminar papers, 32 Percent for up dating knowledge

10. Most used library and information web services; according to the students is that the online e-journals 49 Percent. The study of (Frnklin 2001) showed in literature review has the same opinion that the number of e journals available online is increasing day by day.

11. For using electronic information resources training and help is needed but 63 Percent students said that they are not getting any help or training from their library for using internet and electronic information sources. This shows that an urgent training is essential for the college students for the using of modern electronic information resources.

12. About 85 percent students said that their colleges have no webpage or portal so they are not visiting their college websites. This shows the urgent development of the college website duly update in time, is essential in modern IT age.

13. The Engineering colleges in Kerala and IIT's have an independent library website but the arts and science college library have no independent library website. Among the students 97 Percent said that their colleges have no independent college library website. This shows it is very urgent to create independent college library website for the arts and science college libraries in Kerala.

14. An average 72 Percent student said that the electronic information resources available in their college library and through online support their academic activities.

15. A grand total of 132 (22 Percent) females and 216 (36 Percent) male students said that the electronic information resources available in the college library supporting their academic activities in a greater extent.

16. About 45 Percent students are satisfied with the services provided by the college library for using electronic information sources.

17. For getting help from the library 92(15 Percent) females and 133 (22.16 Percent) male students said that they are getting help from the library for using the electronic information resources available in the college library.

18. Opinion regarding electronic information resources available in the college library, an average 46 percent UG and 32 Percent PG students opines that the e-journals available in the college library is good, and 17 percent UG and 20 Percent PG said that the online databases

available is good, and 17 percent UG and 20 Percent PG students opines the CD-ROM databases available in the library is good.

19. The college students an average 45 Percent UG and 35 Percent PG students said that the e-sources available in the college library influencing their reading habits and they are satisfied with the using e-sources.

20. Grand total of 345 (57.50 Percent) students giving more preference to the e-sources than compared to the conventional printed books only 159 (26.50 Percent) gives preference to the conventional printed books.

21. An average 23 Percent UG and 25 Percent PG students agree that e-resources are a pre-requisite to satisfying their information needs.

22. A grand total of 65 Percent students said that electronic resources are not a supplement to the print medium. Electronic resources have a separate or independent role for helping their academic purpose and updating knowledge.

23. The number of college students that is 69 Percent admits that the electronic resources are not badly affecting their reading habits than compared to the conventional book or print medium but only supporting.

24. Majority of the students that is 82 Percent said that the value of electronic resources is very much on conducting their study and research.

25. An average 85 Percent respondent said due to the influence of electronic information sources their quality of learning/research is improved very much.

26. The reason for opting e-resources, 33 Percent students said the information available in electronic form is easy to search and 21 Percent students said the search out put is get conveniently copy on floppy/CD/Print out and 16 Percent students said the information got from electronic information resources is not getting elsewhere and 30 Percent said e-resources helps to get recent developments in research.

27. An average 71 Percent students said that their curriculum recommends using or exploiting the e-resources

28. Only 43 Percent students are accessing e- journals from the university library and 23 Percent from their college library.

29. Majority 83 Percent students said that their colleges have no infonet facility. This shows the infonet that is UGC e-journal consortium is urgent to the college library.

30. Above 50 Percent students are satisfied with the facility that is printing, CD-writing, number of computer etc of the college library.

5.2 Tenability of Hypothesis

On the basis of the findings drawn out of the study, the tenability of the hypothesis formulated for the study is tested.

Hypothesis-1

"Users are not fully satisfied with the electronic information resources available in the college libraries in Kerala"

This is evident from the finding no.7: About 78 Percent students faced difficulty while accessing the internet and 57 Percent students faced difficulty while opening the web pages and 37 Percent faced difficulty while browsing and 63 Percent students facing difficulty while down loading from the internet

and a majority 64 Percent students getting outdated or back up informations from the internet.

The finding no 11: For using electronic information resources training and help is needed but 63 Percent students said that they are not getting any help or training from their library for using internet and electronic information sources and services.

The finding no 13: proves through the statement of students that 97 Percent colleges have no independent college library website.

Hence the first hypothesis has been established by the above findings of the study.

Hypothesis-2

"There is a significant difference between male and female students regarding the use of electronic resources in college libraries in Kerala".

To this finding no2: for considering the frequency of visit to the library 24 Percent females and 29 Percent male students visiting the library daily. This shows male students are visiting the library daily than compared to the female students.

Finding no 3: 25 Percent female and 14 Percent male students said that they are spending between half hours to 2 hours time in the library. This shows that female students spending more time to the library than compared to the male students.

Finding no15: A grand total of 22 Percent females and 36 Percent male students said that the electronic information resources available in the college library supporting their academic activities in a greater extent.

Hence the second hypothesis has been accepted.

Hypothesis-3

"There exists a significant difference between UG and PG students in the use of electronic information resources"

To this finding no 18: Opinion regarding electronic information resources available in the college library, an average 46 percent UG and 32 Percent PG students opines that the e-journals available in the college library is good, and 17 percent UG and 20 Percent PG said that the online databases available is good, and 17 percent UG and 20 Percent PG students opines the CD-ROM databases available in the library is good and

The finding no19: The college students an average 45 Percent UG and 35 Percent PG students said that the e-sources available in the college library influencing their reading habits and they are satisfied with the using e-sources.

Finding no: 21 An average 23 Percent UG and 25 Percent PG students agree that e-resources are a pre-requisite to satisfying their information needs.

Hence the second hypothesis has been accepted based upon the findings.

Hypothesis-4

"The use of electronic information resources is very high for the academic activities of the college students"

Based upon the finding no 6,9,10,14,15,16,18,19,22,24,25,26 the hypotheses 4 is accepted and fully substantiated.

Hypothesis-5

"The UGC NAAC accreditation improves the present quality and environment of the colleges"

The finding no1: For getting NAAC accreditation the colleges are competating each other for developing the existing condition of the college. An average of 138 Arts and Science colleges throughout in Kerala are accredited by NAAC. As per the analysis 432 (72 Percent) undergraduate and postgraduate students said, they are studying in the NAAC Accredited colleges. So they have more facilities than that of the not accredited colleges. So the hypothesis 5 is established substantiated and accepted.

Hypothesis-6

"Electronic Journals are the most favored electronic information resources available in the colleges"

This hypothesis is proved in the finding no.10 hence the hypothesis is accepted.

Hypothesis-7

"Most of the users are not properly using the electronic information resource available in the college library"

The finding no 11: For using electronic information resources training and help is needed but 63 Percent students said that they are not getting any help or training form their library for using the internet and the electronic information resources.

So the hypothesis 7 is established correct.

5.3 Suggestion for improving the use of Electronic Information Resources

The investigator is offering the following suggestions for improving the use of electronic information resources in the college libraries by the students on the basis of the present study.

1. User education is necessary for the students of the colleges regarding the OPAC, e-journals, Infonet, Edusat services to make effective and efficient use of these resources.

2. To take steps from the government, UGC and other agencies like BSNL, VSNL to provide internet connection to the college libraries in Kerala at free of cost.

3. Every college library has to provide CD-ROM books, CD/DVD databases, bibliographic databases etc to satisfy the needs of the students. This will help them to cope up with new and latest developments.

4. All the information of the holdings of the library has to be made available electronically so that the students can retrieve information very quickly and easily.

5. Every college must have an independent library web page or portal for showing the working time of the library, number of books, reservation, renovation, OPAC etc. Considering the widespread use of the internet it is useful to create library website for browsing information to the students from any where at any time.

6. The internet facility should be made available in every departments of the college to maximize the use of internet by the students.

7. Each department of the college and the central library is connected with Local Area Net Works (LAN) facility for downloading information from the library for the students and teachers of the college.

8. The students should be taught about the search strategies and the use of controlled vocabulary to make the online search process easier and

precise and to make optimum utilization of the internationally available online information sources.

9. College libraries should be promoted to participate in local, regional and the national consortia of networks such as INFLIBNET, DELNET etc. E-journal consortia is made available through UGC INONET should be brought down to the college libraries also.

10. A good and user friendly software is used for IT applications of the college libraries.

11. College libraries need better finance, if they are to give more productive and effective information resources and services.

12. A good digital library system is enforced to every college libraries in Kerala which is the main features of present day global information society including library and information.

13. The IT application of the college libraries in Kerala is needed a good man power, skill and expertise of the library staff. So the librarians and staffs of the college libraries had given proper training and refreshed course for updating their knowledge time to time.

5.4 Suggestion for Further Research

The investigator, while conducting the present study, could identify certain areas for further research. They are as follows

1. Detailed studies may be carried out on developing library consortia of different arts and science college libraries in Kerala.

2. Impact of information and communication technology on collection development and provision of information services in academic libraries of the state can be carried out.

3. The information search pattern of the college students in the electronic environment can be conducted.

4. The use of a unified or national level Library Software application and its urgency and need in the arts and Science College in Kerala in the new electronic environment can be conducted.

5.5 Conclusion

Several experts have conducted a number of works in the field of usage of electronic information resources. The perspective of the present study can be understood from the related literature review in this chapter. A preliminary review of the literature revealed that the studies about the use of EIR in the college libraries in Kerala are negligible or insignificant. Most of the colleges in the rural area have no Internet connection. So the lack of expertness and unawareness leads to the students of the college for avoiding the electronic information resources. Serious efforts should take to conduct studies on the use of EIR and related technologies used by the students and teachers of the college, which is need of the Electronic Information Era.

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APPENDIX -A

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

CALICUT UNIVERSITY

KERALA-673635

Dr. Jalaja. V
(Reader& Head)

A. Vijayakumar
Research Scholar (FIP)

Dear Sir/Madam,

You are requested to kindly fill this questionnaire, which is intended to collect data in connection with a research study on the topic "Use Pattern of Electronic Information Resources in the College Libraries in Kerala: An Analytical Study", as part of my Ph.D work. I seek your valuable co-operation in obtaining the necessary information. Please indicate your response with a tick mark or write in the spaces provided. The information given by you will be kept confidential and will not be used for any other purpose.

Thanking you,

Yours Sincerely,

A. VIJAYAKUMAR.

Date: Sl No:

Personal Information

Name:

Sex: Male Female

Course of Study:

Under Graduate Post Graduate

1. Information about the College Library

1.1. Name & address of the college or Institution:

1.2 Location:
Rural Urban

1.3 Management:

Government Private

1.4 Financial Nature:

Government Aided Unaided

1.5 Whether the college is accredited by NAAC

Yes No

1.6 Frequency of visit (Please tick mark)

Daily
Alternative days
Ones in three days
Ones in a week
Rarely…….

1.7 Average time spent in library on a visit

Half hours
Between ½ hours to 2 hours
Between 2 to 5 hours

2. Availability of Electronic Informations

2.1 Do you get Internet facility in the library?

Yes No

2.2 If No, are you visiting Internet cafe?

Yes No

2.3 What purpose(s) you use Internet

Academic purpose Accessing online Journals
Searching job opportunity Chatting

2.4 How do you rate the information retrieved from the Internet?
(Please tick appropriate boxes)

Sl No	Features	Excellent	Good	Poor
1	Accessibility			
2	Accuracy			

3	Authoritative			
4	Consistency			
5	Ease of use			

2.5. Do you have any difficulties while accessing Internet (Please tick appropriate boxes)?

Sl No	Difficulties	No	A little	High
1	Obtaining Connection			
2	Opening WebPages			
3	Browsing			
4	Down Loading			
5	Slow accessibility			

2.6. Specify the search engines you regularly used

Yahoo Google
Info seek AltaVista
Hot Boat Others……..

2.7. What is your purpose/motive of retrieving information from electronic resources (first priority 1,2,3……)

Project work Preparing Study Materials
To write article Preparing Seminar Papers
Updating Knowledge

2.8. Which is the most used Library and Information services on the web
Online Electronic Journal
E-Books
Online Database
OPAC
Any other

3. Services Provided by the College Library

3.1. Do you get any help or training from the Library for using the electronic information resources?

Yes No

3.2 Does your college have a website?

Yes No

3.3. Have you visited the library Web site?

Yes No

3.4. If 'Yes' is it part of the college website or Independent?

Yes No

3.5. What is your opinion about the organization of information in the library web page/portal

Excellent Average

Good

3.6. To what extent the electronic information resources available in your college library supporting your academic activity

To a great extent To some extent

Not at all

3.7. Are you satisfied with the services provided by your college library

Fully satisfied Not satisfied

Some what satisfied

3.8. What is your opinion regarding the electronic information resources available in the College library

	Excellent	**Good**	**Satisfactory**
Electronic Journal			
E-books			
Online Database			
CD ROM based databases			
Others…….			

4. Use pattern of Electronic Information Resources

4.1. Do you think electronic resources influencing your reading habits more than before?

Yes No

4.2. Whether Electronic resources satisfy your information needs?

Yes No

4.3. What do you think whether electronic resources or printed books are most Preferable?

Electronic resources Printed Books

4.4. What is your opinion on the aspect that the use of electronic books have increased in comparison with the conventional books (Tick (√) mark against your opinion regarding the following statement)

1 Very high 2 High 3 Satisfactory

4 Low 5 Very low

4.5. What do you feel about E resources?

4.5.1.Do you agree that the access to E resources is a pre-requisite to satisfy the Information needs, in the present scenario: Please Tick (√) marks

1 Strongly agree 2 Agree 3 Disagree

4 Strongly disagree 5 Don't Know

4.5.2 E resources act only as a supplement to the print medium

1 Strongly agree 2 Agree 3 Disagree

4 Strongly disagree 5 Don't Know

4.5.3 E resources badly affect the reading habit. So it is not be encouraged.

1 Strongly agree 2 Agree 3 Disagree

4 Strongly disagree 5 Don't Know

4.6 How do you rate the value of electronic resources on conducting your study and research

Very much important Important

Somewhat Unimportant

4.7 With the influence the electronic information sources, the quality of learning/research: Please Tick(√) marks

Improved very much Improved slightly

Not improved Don't know

4.8 Why do you go for electronic information sources (Please Tick(√) marks all those applicable)

The information available in electronic for is easy to search

The search output is got conveniently in floppy/CD/Print out

To get information not available elsewhere

To get latest knowledge in research

4.9. Does your curriculum recommend using e resources? Please Tick(√) marks

Very often Often Rarely Never

5. Electronic Journals

5.1. From Where, you accessing 'e' Journal?

College Library
University Library
Any Other…….

5.2 What are the Major problems that you face while using e-journals?

Lack of system speed

Difficulty in accessing full text

Core journals are few in number

Searching is difficulty

Payment facilities are very comparable

Difficulty to read from a computer

Others (Please specify)

5.3 Are you satisfied with the total e-journal collection?

Satisfied
Partly satisfied
Not satisfied

6. INFONET

6.1 Does your College library have Infonet facility?

Yes No

6.2 If 'No' where do you access it

University Infonet Center Any other……..

6.3 Do you find it helpful for your research work?

Yes No

6.4 How often do you visit the INFONET Centre?

Every day Twice in a week
Once in a month Occasionally

6.5 Are you satisfied with the following facilities in your college library?

Service and Facilities	Very satisfied	Satisfied	Slightly satisfied	Not satisfied
INFONET Facility				
Number of Computer				
Printing and Scanning facility				
CD-Writing facility				

6.6. Do you have any suggestion/comments about the state-of-art of electronic information resources in your college library?

.....
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APPENDIX-B

INTERVIEW SCHEDULE

(With College Librarian)

A. General Information

1. Name

2. Name of the College

B. Use of Electronic Information Resources

A. Please discuss the adequacy/Success/Problems in the following resources/services/facilities in your college

1. Library Budget

2. Library's Electronic resources

3. Skill and expertise of Library Staff

4. Number of computer of the college library

5. Library Network

6. What are the major barriers facing while using the electronic information resources

7. Do you give training for the using the electronic information resources

8. Do you get adequate facility for improving the total e-journal collection of the college library

9. Do you satisfy the internet facility available in your college library and the number of computers.

APPENDIX-C

OBSERVATION

A. General Information

1. Name of the Institution

C. Use of Electronic Information Resources

1. Skill and Expertise of the Library Staff

2. Time spent by the students

3. Number of computer with Internet facility

4. Library network

5. Barriers of using electronic information resources

6. Users Satisfaction

7. Total e-journal collection

List of Colleges Selected for the study

Kerala University					
	Name of College	**Govt./Aided/Unaided**	**Accredited/Non Accredited**	**EIRS**	**Internet**
1	All Saints' College Thiruvananthapuram	Pvt. Aided	Accredited	Yes	Yes
2	Bishop Moore College, Mavelikkara	Pvt. Aided	Accredited	Yes	Yes
3	D.B. College, Sasthamcotta	Pvt. Aided	Accredited	Yes	Yes
4	Vidyadiraja N.S.S. College, Karunagappally	Unaided (Pvt.)	Not Accredited	No	No
5	Govt. Sanskrit College, Thrivananthapuram	Govt.	Accredited	No	No
6	Mar Ivaneous College, Thiruvananthapuram	Pvt. Aided	Accredited	Yes	Yes
7	Govt. College	Govt.	Not Accredited	No	No
8	T.K.M. Arts and Science College, Kollam	Pvt. Aided	Accredited	Yes	No
9	S.N. College Kollam	Pvt. Aided	Accredited	Yes	No
10	University College, Thiruvananthapuram	Govt.	Accredited	No	No

MG University					
	Name of College	**Govt./Aided/Unaided**	**Accredited/Non Accredited**	**EIRS**	**Internet**
1	S.B. College, Changanachery	Pvt. Aided	Accredited	Yes	Yes
2	K.E. College, …..	Pvt. Aided	Accredited	Yes	Yes
3	D.B. College, Thalayolaparambu	Pvt. Aided	Not Accredited	Yes	No
4	S.H.College, Thevara	Pvt. Aided	Accredited	Yes	Yes
5	Bishop Chulaparambil Memorial College, Kottayam	Unaided (Pvt.)	Accredited	No	No
6	Sree Sankara College, Kalady	Pvt. Aided	Accredited	Yes	No
7	St. Albert College	Pvt. Aided	Accredited	Yes	No
8	Govt. College, Kottayam	Govt.	Not Accredited	No	No
9	D.B. College, Mannur	Pvt. Aided	Accredited	Yes	No
10	Bishop Abraham Memorial College, Thuruthicadu	Pvt. Aided	Not Accredited	No	No

Calicut University					
	Name of College	**Govt./Aided/Unaided**	**Accredited/Non Accredited**	**EIRS**	**Internet**
1	Thunchan Memorial Govt. College, Thirur, Malappuram	Govt	Not Accredited	No	No
2	Govt. College, Vatakara	Govt.	Accredited	No	No
3	MES Sullamussalam Science College, Arecode	Pvt. Aided	Accredited		
4	Mercy College, Palakkad	Pvt. Aided	Accredited	Yes	Yes
5	MES College, Vatakara Villyappalli, Kozhikode	Unaided (Pvt.)	Not Accredited	No	No
6	Nirmala College Nirmalagiri	Pvt. Aided	Accredited	Yes	Yes
7	Farook College, Faroke	Pvt. Aided	Accredited	Yes	Yes
8	Malabar Christian College, Calicut	Pvt. Aided	Accredited	Yes	Yes
9	N.S.S. College, Palakkad, Ottapalam	Pvt. Aided	Accredited	Yes	No
10	Govt. College, Meenchanda, Calicut	Govt.	Accredited	No	No

Kannoor University					
	Name of College	**Govt./Aided/Unaided**	**Accredited/Non Accredited**	**EIRS**	**Internet**
1	Govt. College, Vidyanagar, Kasargod	Govt.	Accredited	Yes	Yes
2	Govt. Brennan College, Thalassery	Govt.	Accredited	Yes	Yes
3	Nehru Arts and Science College Padnekat, Kasargod	Pvt. Aided	Accredited	Yes	No
4	Mery Matha Arts and Science College, ….Wayanad, Mananthavady	Pvt. Aided	Accredited		
5	Payyannur College, Dist Kannur, Payannur	Unaided (Pvt.)	Not Accredited	No	No
6	M.G. College, Iritty	Pvt. Aided	Not Accredited	No	No
7	Nirmalagiri College Kuthuparamba	Pvt. Aided	Accredited	Yes	No
8	A.R. N.S.S. College Mattanoor	Pvt. Aided	Not Accredited	No	No
9	S.N. College, Kannur	Pvt. Aided	Not Accredited	No	No
10	Co-operative Arts and Science College	Pvt. Aided	Not Accredited		

Universities	Government College	Aided	Unaided	Accredited	Non-accredited	Internet
Kannur University	2	8	Nil	6	4	2
Kerala University	3	6	1	8	2	4
MG University	1	8	1	7	3	3
Calicut University	3	6	1	8	2	4
Total	**9**	**28**	**3**	**29**	**11**	**13**