THE UTILIZATION OF INTERNET SERVICES BY THE USERS OF SCIENCE AND TECHNOLOGY LIBRARIES IN DELHI : A STUDY

DISSERTATION

Submitted in partial fulfilment of the requirements for the award of the degree of

Master of Library & Information Science
1998-99

BY

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1999

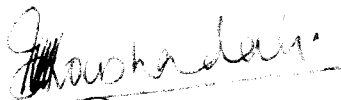# DEPARTMENT OF LIBRARY & INFORMATION SCIENCE

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Certificate

This is to certify that Ms. Zeeshan Anjum has completed her dissertation entitled "The Utilization of Internet Services by the Users of Science & Technology Libraries in Delhi: A Study" in partial fulfilment of the requirements for the degree of Master of Library and Information Science. She has conducted the work under my supervision.

Naushad Ali P.M.

Lecturer

Dedicated
To My
Loving Parents
Brothers & Sisters

ACKNOWLEDGEMENT

*I express my whole hearted thanks to my parents and other family members, especially to my elder brothers, **Mr. Zaman Aleem** and **Mr. Danish Aleem**, cousin **Miss Nuzhat Ayyub** for their valuable help and taking active interest in the completion of the present work.*

My heartful thanks are due to all my friends, classmates and well wishers. Finally I thanks to the heads, staff and scientists of AIIMS, IARI, INSDOC, DESIDOC, IIT, INSA, C-DOT libraries which I have visited in connection with data collections for the present study.

*I am also thankful to **Mr. Abul Kalam Azad** (Computer Professionals) and **Mr. Mohd Riaz Khan** for typing this dissertation neat and clean.*

(Zeeshan Anjum)

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1. INTRODUCTION :

A World Wide Communication System that links millions of computers has been developed. Such a network is called the information super highway or cyber space, most popularly known as the Internet. The Internet is a collection of interlinkedcomputer networks. In other words we can say Internetisnot only a network but also network of networks providing Global access across geographical boundaries[1].

1.1 CONCEPT OF INTERNET

In the modern scientific and technological world the connectivity to global network like INTERNET is an indispensable one as it facilitates communication across continents at low network cost, it is the advancement in information technology. Today qualitative improvement in scientific and technological and in other areas are being brought out by the Internet - a network of networks.

The term 'Internet' originates from the computer terms "Internet work" which means computer networks connected together. Internet is the joint venture between the National science Foundation other networks at local and regional levels and others international or intergovernmental organization. Internet is mentioned as an Internet working system. Internet is the advancement of information

technology. It is not really a single large computer network but it a collection of ten of thousands of networks thus it is known as network of networks.

Internet is not a program, it's not a piece of hardware, its not software, it's not even a system, instead it is a place where you can get information, make information available (for free or for sale) and where you can meet people all over the world.

The Internet is the greatest single factor in recent years which has changed and is further changing the society starting with basic tools like E-mail, File Transfer Protocol (FTP) remote begin (Telnet), to user friendly tools like Gopher, WAIS, and WWW for information publishing and accessing.Internet has emerged as the care and foundation of the information infrastructure.

1.2. THE INTERNET: YESTERDAY, TODAY AND TOMORROW

Internet evolved from a small computer network set up in 1969. American defence department agency DARPA (Defence Advanced Research Project Agency) established four computers network known as DARPANET. The system caught on although the name was soon changed to ARPANET and by 1972 had grown to include 37 computers[2].

In late 1970s, the ARPANET was so large the ARPANET switched from a technology known as package switch nodes to the

TCP/IP communication standard. A few years later the National Science Foundation used the model of ARPANET to form the NSF net. Around 1980s two uniffiliated network start USE net and BIT net currently the internet encompasses over 2,218 district network, according to the tables kept at the DDN Network information center. All of inter connected networks use the TCP/IP and OSI reference model every major research network world wide now has some sort of connection to the Internet.

Today's, information revolutionized world, Internet playing a vital role in information dissemination. All sort of library services can be offered through the Internet to day. The academic libraries of U.S. and U.K. and other developed countries have been using Internet media for information dessemination. Over 40 million people use the Internet, and that number is expected to increase to over 100 million within a few years. People from all over the world can access the Internet and more than 10 million do so daily. Today many Internet resources are available through which you can get information, communicate and connect to other computers. In addition, on the Internet your can send sound, images, video even computer software. It is a very important medium for the support of research and national development.

The figures at Fig.1 thrown light on the size, usage etc. of the Internet these. Figures indicate that today the Internet phenomenon

in merely in it's childhood with about 50 million computers con-
nected to it less than 20 percent of the 5.77 billion world population
has occurs to the Net clearly Internet usage in increasing the total
amount of time spent on media[3].

Growth of Internet

Fig 1. : Growth of Hosts

Fig 1. Growth of Web
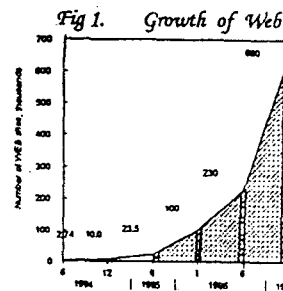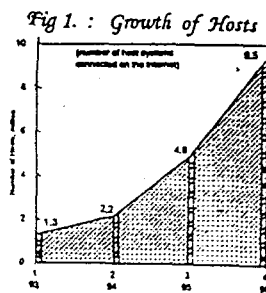
The future of the Internet is impossible to predict, clearly the
number of people with Internet access will continue to grow
"President Clinton's National expansion of the Internet with the US
will certainly have a huge impact on the size and tenor of the
internet"[4] "Government of India has decided that in the year 2000
the monopoly of the DOT will be ended interstate long distance,
The P-TelCos that complete with DOT in interestate STD from the
year 2000 will give Internet telephone; that will finish the DOT
because the price will be about Rupees 2 per minute irrespective
of distance"[5]. Similarly in a ruling on July 16, 1998, Justice Usha
Mehra of the Delhi High Court overruled the TRAI's order which

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had barred the DOT from issuing licences to private ISPs effectively ending VSNL's monopoly over internet services in India". As many other countries improve their internal, networks and the connections between those networks and the Internet more International expansion will occur.

Recently every one wanted to get in on the Internet. A wide talked about idea a few year ago was the NREN (National Research and Education Network), CIX (Commercial Internet Exchange) a group of companies that provides private access to the Internet, NSF got accounts on Internet machines illegally. Your connection to the Internet will be through one or more networks operating in your institution area. The major research networks, them solve sometimes collection of specific local or regional networks are listed below.

JANET   :   Joint Academic Network

ACSNET :   Australian Computer Science Network

EARN   :   European Academic Research Network

COSAC :   Communications SANs Connections Network

ROSE   :   Research Open System for Europe

USENET :   Unix Network in the U.S. News group article exchange

Each of these networks has its own operation center.

1.3 INTERNET VS INTRANET

Internet is a tremendous sources of information,which can be accessed and shared by millions of people across the world. Both the systems have interactive chat rooms, bulletin boards file transfer capability and browser interface. They also deliver timely customized information on demand.

On an Intranet information is generally distributed and organized around specific organizational needs and purpose. In addition, an Intranet is protected by a firewall, so that information is kept within the virtual walls of an organization. Intranet can be adopted as a team collaboration tool. It can help people communicate when they have difficulty in getting together in one place at one time. Daily organizational news and information, materials can be published over the internal web site[6].

1.4 INTERNET ACCESS TOOLS:

The Internet has grown enormously in the last few decades every year seen new and easier ways of accessing the information on it but at sometime it is hard to find. Its limitations depend on the user's ability to explore its sources. However, there are sets of core features that are considered essential tools on the Internet. These are:

1. Archie

2. Bulletin Board Systen

3. E-mail

4. FTP

5. Finger

6. Gopher

7. Internet Relay chat

8. Listserv

9. Telnet

10. Usenet

11. Veronica

12. World Wide Web

13. Wais

1.4.1 BULLETIN BOARD SYSTEM

BBS in similar to news group.It contain programmes, documents, graphics, sound or video chips. If it can be put in a computer file, it can be attached to another file. It allows to send (upload) information files to BBS. Exchange of "personal mail" is also another feature of BBS. Examples of BBS on the Internet would include FAO, NTIS, DDA, DOE, etc.

1.4.2 ELECTRONIC MAIL (E-mail)

The most pervasive and basic of Internet activities is electronic mail, or E-mail. E-mail facilitates exchange of messages across computers. E-mail make the memo cycle immediate no more time is wasted in dictating typing, printing copying and distributing. One of the problems often cited with e-mail, which is usually straight text with no formatting.

1.4.3 FTP

FTP stands for file transfer protocol it allows you to transfer all types of files from an Internet computer called FTP server. FTP downloads files to your server from any remote server that is connected to the Internet. FTP sites permit you to access their files without establishing an account with them. These sites are called anonymous sites.

1.4.4 FINGER

The finger command gives information about each user who is currently logged in with reference to a specific machine on the Internet. This helps to find complete e-mail address or the telephone number of the person if you want. Finger commands has the capability to give more information about a user on Internet host.

1.4.5 GOPHER

Gopher is a protocol designed to search, retrieve and display documents from remote sites on the Internet. Gopher developed at the University of Minnesota. It is a "Resource Browser", textual menu system. This menu structure also interconnects one Gopher server with other Gopher. One very useful feature of Gopher is that through it you access what you want without knowing where it is i.e. without knowing domain names, address, etc. Gopher exist for both line mode and GUI interfaces, which work in essentially the same ways. Additionally, web browsers are normally configured to be able to read Gopher resources.

1.4.6 TELNET:

TELNET is an Internet exploration tool allows your PC to connect another network and login as if you were a user on the system. Thus, Telnet is the main Internet protocol for login connection with a remote machine. You can communicate with a variety of remote systems. Telnet so important particularly in library and information world.

1.4.7 USENET

USENET is a large collection of discussion groups,USENET has more than 13,000 different discussion group or sites. USENET is set of machine that exchange articles stacked with or more

universally recognized tracks called news group. It is like a meeting place where people gather to meet friends.

1.4.8 VERONICA

VERONICA is an acronym for Very Easy Rodent Oriented Net work Index to Computer Archives. It is an index of titles and Internet Gopher items. Veronica is also very easy to use as it is menu derive. Veronica is used to search Gopher menu for key words. Veronica server actually creates a key word index from the words used to describe the entries of Gopher menu.

1.4.9 THE WORLD WIDE WEB:

The World Wide Web or w3 is the fastest growing highest profile part of the Internet today. This Internet service started in 1993. It can be described as the multimedia part of the Internet. WWW is a system, based on hypertext and HTTP, for providing and accessing a wide variety of resources (text, images and sound) that are available via the Internet HTTP, URL and HTML there are concepts that characterized the WWW. HTTP (Hyper Text Transfer Protocol) specify how hypertext document are transfered through the Internet as the WWW. URL (Uniform Resource Locator) specifies the protocol and location for information retrieval. HTML (Hyper Text Markup Language) is a set of standardized codes or tags. It defines and describes the structure of a web page.

A web page is a unit of information often called a document. Web pages are sent and received through HTTP. A web search engine is an interactive tool that enables users locate information available via the WWW. Its helps you travel around the world looking for information rather than searching for key world (as you do with WAIS).

1.5 SEARCH TOOL:

The search tools that have been developed to locate resources on the World Wide Web are generally referred to as search engines. The search engines are very large data bases of information about web resources.

There are several web search engines. These search engines are classified in the two types (i) Subject tree (ii) Robot. The directory or subject search engines are similar to the way that libraries are organised in that they group web resources by subject. The Robot search engines don't have subject arrangement, they are simply very large keyword searchable databse[7].

MAJOR SEARCH ENGINES:

1.5.1 ALTAVISTA

AltaVista (http://www.altavista.digital.com), a product of equipment corporation. AltaVista in the fastest and most pricise information agent on the web. AltaVista searches by keywords, which

is derives from the text of a web page. Alta vista updates its information constantly and each page returned from the search is given a data and time from AltaVista must recent update.

1.5.2 HOTBOT:

(http://hotbot.com), from the talks who publish wired magazine, performs fast and powerful keyword searches of web sites and news group.HotBot is based upon inktomi(http://inkotomi.cs.berkeley edu) technology from the university of California at Barkeley.

1.5.3 INFOSEEK:

(http://www2, infoseek.com) searches by keywords scanning the information in its database. With the infoseck you can search variety of database-web, usenet, e-mail addresses.

1.5.4 LYCOS:

(http://www.lycos.com) in a web indexing robot. Lycos searches by keywords Lycos has jumped on the channel bandwagon, offering listings grouped by category. An interesting feature of this search engine is the ability to locate picture and sounds on the web. With Lycos you can search new web,Gropher and FTP sities.

1.5.5 YAHOO:

(http://www.yahoo.com), one of the most popular hierarchical directories, is as good starting point. With its you can search by subject and you can specify a search term.

1.5.6 WEB CRAWLER:

(http://webcrawler.com) searches for documents within a web site that match your search term, not just web sites as a whole. Webcrawle searches the contents of pages with in a site.

1.5.7 MAGELLAN:

(http://www.mckinley.com) a subsidiary of excite. you can search just the reviewed sites or the entire web. Magellan, like most of its fellow search engines, groups sites into categories, such as Health, Hobbies and Inesting.

1.6 INTERNET: AN INDISPENSABLE RESOURCE

At first the Goal of the APRANET researches was to develop one large network to connect computers over long distance, provide information, to communicate all over the world. Thus it provide information in any field it may be social, political science, technology and economic. It is very useful for the research scholars and scientist because it is a rich source of information much of which was not accessible until recently.

Every resource on the Internet exists because a person or a group volunteered their time. They had any idea developed it created something worth while and then made it available to anyone in the world. Internet do the grunt work of moving all the data from place to place and they execute the programs that let us access the

information.

1.7 APPLICATION OF INTERNET

The internet provide access to an enormous number of data base distributed around the world and to a variety of scientific facilities including digital ICLs Unique data base. The Internet collection offers tremendious potential for collaborating and for sharing resources such as documents software data and network service.

(i) Accessing the different database available in different libraries, facilitate research in interested area.

(ii) Student/Research scholar and workers of their institution may use the internet exchange

(iii) Information and tutorials to help to do more things are available on Internet.

(iv) Public domain program for DOS, windows, Unix or Amigo computers are available free on Internet.

(v) An electronic copy of documents available on the Internet.

(vi) The Internet lets the people meet around the world, with similar interest

(vii) Give access to special job listing.

The Internet is being used for research, government and commercial policy and decision making, education, medicine,

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deference etc.

1.8 INTERNET SERVICE PROVIDERS IN INDIA

1.8.1   National Information Centre Services Inc (NICSI):

NICSI provides 64 kbps Internet connections through VSAT looking at kV band of INSAT 26 geo stationary satellite.

1.8.2   Educational and Resarch Network (Ernet):

Ernet aimed at networking the educational and research institutions and universities. Internet access through ERNET was through dial up networking and leased lines. Recently it started providing internet access through VSAT by looking at extended C-band of one of INSAT series satellite

1.8.3   Videsh Sanchar Nigam Ltd. (VSNL):

In late 1994 VSNL announced its plant to provide Internet connectivity on payment through its Gateway Internet access service (GIAS) program. VSNL is currently providing Internet access services from Delhi, Mumbai, Calcutta, Chennai, Bangalore and Pune.

1.9   ROLE OF INTERNET IN THE DISSEMINTATION INFORMATION:

The Internet represents the transformation and evolution of the entire information age. Internet serves as a communication channel

for anybody. It is due to these factors that people all over the globe have recognized the Internet as their latest developmental tool. Internet plays a vital role to searching the information in any field of knowledge. Users can communicate with each other through e-mail or in chat room or through news groups. Some corporation use the Internet for all of their important in company communications many also provides information to their customers on the Internet. Almost every major university in the country use the Internet for academic communication. Through the Internet Businessmen can be established interactive communication with the customers and students, research scholars, teachers also established interactive communication professionals and lawyes can be established direct communication with the clients and the technology providers.

There is lot of scholarly information available on the Internet. The key features at networked information include easy publication and access, information delivery at the users desktop. Thus it is true that Internet in useful for every group of society for dissemination of information.

1.10 INTERNET IN LIBRARIES :

Internet has become an important part of our life. Internet is mainly used in libraries for resource sharing among libraries and educational centers information centers. Library network is meant for inter linked libraries points stretched across a locality city,

state, region, national or the world are linked with each other for information communication.

Users application on the internet cover a whole gamut of various subject areas from advertising to education, business to recreation, culture to science and technology and so on. It provides access to a variety of information sources such as electronic and online journals; bibliorgraphic and full test databses, table of contents of primary journals, OPAC, Multimedia walk through programme product and library catalogues, directories, campus information systems Internet provides a wealth of information for the library and informtion centres and also science and technology libraries.

The emerging trends in the application of electronic media for wide speed distribution of information is forcing the libraries to undergo a substantive structural modification. "The Prof. Tom Storviar describe the library will held materials in digitalized form and its users will communicate with it over a telephone link or coaxial of a fiber optic cable. Its purpose is to supply its users with copies of textual, audio, video material"[8].

Through the Internet every user access the information speedly, in time as awareness of the utility of the internet continues to increase out-side the Universities, it is to be expected that home

page product by public and special libraries will start to open on the web. Just as they already, have in USA and Europe

1.10.1 UTILITY TO LIBRARY RESOURCES

With this background on the Internet. It is time to consider the utility of the Internet to libraries as well as some resources of Internet to librarians and information specialists.

The earlydevelop conception of the Internet was of a pathway between a few supercomputer sites connecting fewer than 100 system's across the US. The growth of the Internet as a much wider utility really took of beginning in 1989. The following benefits of Internet growth have been amply demonstrated.

\# Direct search access to the major research library cataloge in the developed world with more additions each year.

\# Ability of one institution to provide its clienteles access to remote service provided by another information provider.

\# Access to rapidly expanding numbers of scholarly journals in electronic form and electronic archive sites for collections of these electronic publication.

\# Mail reflectors or in language of BITNET, Listserv's or USE NET News groups devoted to hundreds of topic allow concerned communities to have continuing interactions that

are rapid and dynamic compared with annual scholarly meetings, telephone conferencing or conventional mail.

\# Data transfer among researchers that can be accomplished in minutes or hours instead of days or weeks.

\# Worldwide electronic mail, including gateways between such disparate commercial services as MCI Mail.

Thus, Internet is very important resource to the library.

1.11 NEED TO ACCESS THE INTERNET IN THE LIBRARY:

Information dissemination is one of the primary objective of the library. Because information is vital resource for student, or research and development. Scientist need information on the work being or already done else where to avoid to repetition and to corroborate their work. Such information made available at the right time into right form would result in more efficient and fruitful. Research and development programs, it is done very easily by the Internet.

The growth of literature or information in the field of science and technology is too fast. The researcher and scientist can search millions of journals and developments available in all the libraries of the world on every subject of interest and it is possible by the Internet. Finally, there are many reason why the user's require to access information center and libraries for the Internet:

(i)   To get help publishing their information.

(ii)   To get help locating information (online search and catalog)

(iii)   To get help in determing the quality of various information resources.

(iv)   Document delivery and distribution in another area of traditional ICLs services that the Internet technology is changing.

(v) Full text document and information are also available via Internet.

Users can find path to current information about much organization, user can browse or search their document by using tool viz. Gopher, World Wide Web, E-mail, Bulletin Board System etc.

1.12   SCIENCE AND TECHNOLOGY LIBRARY AND INTERNET:

Science and technology library is a special library. Because it hold only science and technology and its related documents. Thus, it is include in the special type of library. It would not be difficult to observe that among the well-organized and effective library and information system in the country, majority is in the S.&T. sector, particularly in the research and development institution. With the advent of electronic information era, libraries all over the world are

computerizing their services and converting their library resource to electronic form specially in the S&T. libraries. Computerizing their service over half of the world's nations has sites on Internet. Many Russian, Indian, Mexico, European ... even Antarctica S&T. libraries have Internet.

India is estimated to have around 65,000 libraries that include Public libraries, college, university, departmental and other libraries. Mostly S&T. libraries are computerized and have Internet facility like, *INSDOC, DESIDOC, IARI, ICAR, INSA, IIT, C-DOT, BARC, DST, NISSAT, NSL, DOS etc.*

S&T. libraries in the country are usually better equipped because the investments in S&T. in the country are much larger than those in other field. Thus, mostly libraries provide Internet service to the users. Today, qualitative imporvements in scientific and techonological and in other areas being brought about by the Internet 'a network of networks'.

2. NEED AND SIGNIFICANCE OF THE STUDY:

In the present environment in India, the concept of information consultant and extension workers and users is becoming increasingly popular. Most of the scientific organizations and industrial organization both are adopted the Internet because today there is no better disseminator of knowledge than Internet. Thus, most of the

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science and technology libraries have Internet facility.

All most all important science and technology libraries are situated in Delhi like *INSDOC, INSA, DESIDOC, Science and Technology, AIIMS etc.* Mostly libraries are computerised and also have Internet facility. Scientist and Research scholars need to access latest information within a short span of time. Thus, it is essential to know that the utilization level of Internet services because every year libraries are spending a huge amount for this purpose. So the investigator decided to conduct study for measuring the utilization of Internet services by the users of S&Tec. libraries in Delhi.

3. SELECTION OF THE PROBLEM:

The problem of the present study is entitled "The utilization of Internet services by the users of science and technology libraries in Delhi: A study"

4. DEFINITONS:

UTILIZATION: According to Webster Universal Dictionary, *The action of utilizing or the state of being utilized*[9].

INTERNET: According to Encyclopaedia of Science & Technology.

1.   *"The Internet is a large data networks it grew out of the ARPA Net, which was original operated by the U.S.*

Defence Advanced Research Project Agency, and was based on TCP/IP the internet still supports TCP/IP. But encompasses additional networking protocols as well"[10].

2.   *"It is an information pool contributed by more than 70 countries all over the world"[11].*

SERVICE: According to Oxford Engligh Dictionary: *"Services is the action of serving, helping or benefiting, conduct tending to the welfare or advantage of another"[12].*

USERS:

According to Oxford Engligh Dictionary: *"User in generally defined as one who users or employs anything"[13].*

In this study users indicate that community which use the library internet.

SCIENCE AND TECHNOLOGY : According to Encyclopedia of Science & Technology, *"Any organization actively concerned with the science and related technologies must be cognizant of the great body of published information that comprises the scientific literature. To take full advantage of this important resource. It is imperative, that there be a unit in the organizational structure that is charged with the responsibility of locating and making available what ever knowledge and experience that may advance*

its activities. This unit is commonly called "special library because of its unique function"[14].

LIBRARY: According to Oxford English Dictioinary. A collection of books and other literary materials kept for reading study and collection[12].

STUDY: According to Oxford Engligh Dictionary, *Study is a work presenting the result of investigation inter a particular system[15].*

According to Webster Universal Dictionary, *Study is the process of aquiring knowledge[16].*

DELHI: Delhi is the capital of India. Here almost all modern and important libraries especially science and technology are situated like INSDOC, DESIDOC, INSA, AIIMS, C-DOT, IIT etc.

5. OBJECTIVES OF THE STUDY:

(a) To findout availability of Internet service in science and technology libraries in Delhi.

(b) To know the degree of utilization of existing services.

(c) To find out the purpose of using Internet services.

(d) To know which Internet service is most used and which used least.

(e) To know from which source users get latest information about website.

(f)   To find out most and least used website.

(g)   To find out the Internet serices provided by S&Tech. libraries to their users.

(h)   To know the problems faced by the users while they are using various internet serives.

(i)   To find out solution for some of the current semi problems.

(j)   To find out how many S&Tech. libraries providing Internet at free of cost.

(k)   To assess the satisfaction of the users with regard the working hour of the library Internet services.

(l)   To know the opinion of the uers about information access through Internet for research purpose.

(m)   To know the opinion of the user about the library staff.

(n)   To examine the satisfaction level users regarding infrastructure facilities, membership, reservation facilities and location.

(o)   To assess the opinion of the users with regard to the Internet services available in the S&Tech. libraries.

(p)   To find out the maintainer of the Internet services S&Tech. libraries in Delhi.

(q)   To know the availability of the Internet conferencing facilities in S&Tech. libraries.

(r)   To identified most use Internet application software.

(s)   To find out all S&Tech. libraries allows to their users to utilizing available Internet facilities.

(t)   To know whether S&Tech. libraries provide special training to their users for better utilization of the available Internet services or not.

6.   HYPOTHESIS:

1.   A large number of library users are utilizing the available Internet services in science & technology libraries of Delhi.

2.   The Internet services available in the libraries are not adequate to meet the information needs of the library users.

3.   Most of the users of S&Tech. libraries are facing some problems while they are using Internet services.

4.   Most of the users are satisfied with the services of the library staff/professional in S&Tech. libraries.

7. SCOPE AND LIMITATION OF THE STUDY

The present study is entitled "The utilization of Internet services by the users of science and technology libraries in Delhi; A study". The main purpose of study is to find the utilization of

Internet services, and which service is more used by the user of science & technology libraries. For the study, the variables taken for detailed analysis are, users and staff in science and technology libraries Delhi. The investigator was able to identify some of the major limitation such as:

(a) The present study consists only the Internet users.

(b) The geographical area is restricted in S& Tech. Libraries in Delhi only.

(c) It takes only scientists and staff/ professionals who have been using internet services in the academic year 1998-99.

(8) LIBRARIES VISITED:

(i)   Indian National Scientific Documentation Center, New Delhi.

(ii)   Indian National Science Academy, New Delhi.

(iii)   Indian Institute of Technology, New Delhi.

(iv)   Defence Scientific Information Documentation Center, New Delhi.

(v)   Indian Agriculture Research Institute, New Delhi.

(vi)   C-Dot (Telecommunication), New Delhi.

(vii)   B. B. Dixit Library, (All India Institute of Medical Science), New Delhi.

(i) *INDIAN NATIONAL SCIENTIFIC DOCUMENTATION CENTER* is the constituent laboratory of CSIR it is the national center for supplying information in all fields of science and technology to any user in India. It was established in 1952 with the support of UNESCO. INSDOC has its headquarters at New Delhi and has a regional center at Bangalore, Calcutta and Madras. Its activities are giving under five categories.

(i) Services, product and publication

(ii) Project in competency area.

(iii) Education and training.

(iv) National information resource

(v) International collaborations.

Its exchanges publications with over 150 institutions in 44 countries in the world. INSDOC's competency areas include- library automation, library networks, computer networking, electronic libraries, CD-ROM networking, design and development databases. It receives over 3320 periodical both India and foreign countries INSDOC has gained adequate expertise to design and establish cable or optical fibre LANs with CD-server, Five server, Internet server etc. GRANTHALAYA package has been used in the library. Its publications are

Indian Scence Abstracts (ISA); Annals of Library Science and Document; Directory of Indian Scientific Periodicals; containts list of Soviet scientific periodicals (monthly); Recent trends in wind energy (bi monthly)etc.

(ii) *DEFENCE SCIENTIFIC INFORMATION AND DOCUMENTATION CENTRE.* The defence science library had its humble beginning in April 1448 with about 400 books and a dozen scientific periodicals, with the formation of the defence science organisation in 1954 the library was moved to National Physical Laboratory and in 1959 it was shifted to Metcalfe House. This centre is one of the DRDO Laboratories establishments and in headed by Director DSL provide some special services:

i.   Online public Access Catalouge

ii.   Knight-Ridder Search Service

iii. CD-ROM Search Service

iv.   CD-ROM Databases

v.   International Missile Proliferation project database.

vi.   Document Supply Services

vii. Resource sharing.

Its present collections are more than 2.5 lakh documents. The library uses a special designed software called SUCHIKA. This is

an integrated software written in C^{++} for DOS and Unix environment. publications are:

Defence Science Journal (quartrly); Popular science and techology (half year); R&D digest (bi monthly); SDI Bulletin; Desidoc list of current scientific literature,etc.

(iii) *INDIAN NATIONAL SCIECNCE ACADEMY* (Formerly National Institute of Science of India) This centre is equipped with modern information technology tools for retrieval and dissemination of information. The library provides services to interested readers for consulting its resources and has access to internet. Library have 800 (Around) significant and Technical Journals and 30,000 bound periodicals and have 15000 books, Audio & Video Cassettes, CD Net system. Its major services are,

i) CAS (Current Awareness Service), ii) Bibliographic Services

iii. Citation Analysis, iv) Public use of personal computer Network Station. v) Science Informatin Notes (SIN), vi) Reference Services vii. Photocopy Service, viii) Leading Service, ix. Internet Service etc. important publications are:

Monographs; Bulletins; Progress of Science in India; Journal of History of Science; Indian Journal of Pure and Applied Mathematics, etc.

(iv) *INDIAN AGRICULTURE RESEARCH INSTITUTE* in a leading

institution among the family of ICAR institutes or laboratories as sources of information in Agriculture and allied disciplines. It was established in year 1905 at Pusa. IARI in the largest with a collection of more than 3.5 lakh volumes and receives about 4800 current periodicals. Its maintains computerised informatoin systems documenting agriculture research projects and disseminating informatiion from these through search services and publication.

Publications: Bibliography of India; Development to News in Agriculture; Futuristic Agriculture; Monthly list of Acquisition.

(v) *INDIAN INSTITUTE OF TECHNOLOGY* was established in 1961 by the ministry of scientific research and cultural affairs government of India, by the institution of Technological Act 1963. The library of the institution has grown as an excellent technological library. The library was shifted to new building in May 1988 the central library of IIT had made an attempt to access the information requirements of industrial and business houses. The library have major collection at of document on technology and its provide internet service to the special users.

Its Important publiations is Research Report.

(vi) *C-DOT IS THE ACRONYMS OF DEPARTMENT OF TELECOMMUNICATION*. It was established in August 1984 by the Sampitroda. He was the colleague of Rajiv Gandhi C-DOT is the

totally computariesed library its major services are CD-ROM services, audio-vedio cassettes, internet services, newspaper cliping. etc.

(vii) *ALL INDIA INSTITUTE OF MEDICAL SCIENCE*, a premier institute of the country. It was established in 1956. as an autonomous body under the act of Parliament at Delhi.

The library of this institute has more than 1.5 lakh books. It provide various servicves to its readers related to the medical science. The library has internet facilities and also provides various online services to their users.

Publication - Annual Report.

8. Organisation of the Report:

Chapter 1 : Introduction

Describe the concept of Internet and explain the use of internet in libraries and its services followed by need and significance of the study selection of the problem, definition, objective of the study, hypothesis and scope and limitations of this study and list of visited libraries.

Chapter 2 : Review of Rleated Literature

A total number of 39 previously published literature related to the utilization of internet services and Internet services is summarised.

Chapter 3   :   Methodology

This chapter contains the selection of problem, objectives, hypothesis, methodology, sample population, variables taken, tools and techniques employed and data analysis method.

Chapter 4   :   Analysis and Interpretation   of Data

This chapter deals with the analysis and interpretation of data collected through questionnaire and observations.

Chapter 5   :   Conclusion,   Findings,   Suggestions and Recommenations for Further Study

The last part of dissertation forms bibliography and appendex.

REFERENCES

1. BROWN (Jenne M.). The Global Computer Network: Indication of its use word wide. <u>International Information and Library Review</u>. 26,1/9;1994; 51-65.

2. HANT (Rozer) and SHELLEY (John) (Ed.) <u>Computer and common sense.</u> 1991.

3. MUNSHI (Usha Mnjoo). User of Internet Indian Libraries with special reference to the Databases of relevence to rescearch in south Asia. <u>Library and Information Networking</u>. 1998, November; 227-57.

4. INTERNET OVERNEW.

5. CHOWDARY (T.H.). Will Internet kill PSTN. <u>Computer Today</u>. 1999,June; 74-75.

6. GUHA (Suparna). Internet: The New Information toolkit for the corporate sector. <u>Aslic Bullitin.</u> 43,4; 1998, December; 197-62.

7. DEVARAJAN (G). Progress Information Technology. 1966; 91-110

8. LEON (Alexis) and LEON (Mathews). <u>Internet for every one.</u> 1997.

9. Webster Universal Dictionary.

10. Encyclopedia of Science and Technology.

11.   SAGDEO (Vasant). Enjoy freedom via Internet. Telematics India. 1995, October: 1991.

12.   Oxford English Dictionary.

13.   Oxford English Dictionary.

14.   Encyclopedia of Science and Technology.

15.   Oxford English Dictionary.

16.   Webster Universal Dictionary.

CHAPTER- 2

REVIEW OF
RELATED LITERATURE

REVIEW OF RELATED LITERATURE

Literature search plays a very important role in research activities, as it forms the very first step of a research pursuit. Review of related literature is very essential in a new research topic:

The search for literature should be conducted in a systematic way to achieve optimum results. Otherwise the search may lead to the wastage of labour and time and poor retrieval of relevant information. Study of related literature implies locating, reacting and evaluating reports of research as well as reports of casual observation and opinion that are related to the individual's planned research project. Mualy[2] (1969) has point out the importance of related literaute as follows. "The survey of the literature is a crucial aspect of the planning of the body and the time spend in such a survey invariably is wise investment".

This chapter presents an overall review of studies conducted abroad as well as in India in chronological order regarding the topic utilization of internet services. The investigator reviewed only these studies which are related to the present study or indirectly related to the present study.

Charls T. Townley and Leigh Murry[1] (1999) conducted a study entitled "Use based criteria for selecting and rating electronic information : A case study". Objectives of this study were to identify

factors that are related to the use of electronic information in academic libraries length of use availability of instruction. Questionnaire method used for data collection. Major findings were (i) usage does not fill a predic table pattern, electronic resources are used very differently at different institutions, (ii) usage rates are positively related to length of use, (iii) limited access in positively related to use, (iv) technology in use appears to be associated in the following order of preference, Locally mounted Internet based and CD ROM, (v) library instruction positively effectively.

G.H.S. Naidu and others[2] (1999) made an attempt to identify, academic libraries, library network and the resourcefulness of Internet. Over a period of time, the requirements of the users, resources, methods and the concepts have changed considerably. As a result the libraries have been forced to redesign the library services to meet the growing needs. Network have enriched the usefulness of the library resource. With this background it is proposed to study. (i) Internet facility for the libraries. (ii) Identify the bibliographical data base. (iii) Availability of primary journal on Internet. (iv) Reference sources on internet (v) Union catalogues and other devices in promoting the resource sharing through internet. Internet provides a wide range of services in accessing information worldwide, provides access to a wide range

of bibliographical data base.

R. Venkata Kesavan and K.H. Shukla[3] presented a paper in the ILA Seminar (1999) entitled "Internet: A Vital tool for offering reference services in Academic Libraries". He discussed that Internet is widely used by the academic libraries for providing infromation services. Internet a global library of unlimited information resources, has been found very useful in LIS activities. The paper highlights the features of reference information resources available on the Internet and the advantages of web-based reference sources in offering library services. Finally, several useful web based reference sources have been listed in paper. In order to easy use of the internet, many academic libraries around the world have begun creating subject oriented internet resources guides.

H. Vernon Leighton and Jaideep Srivastava[4] (1999) conducted a study under the title "First 20 Precision among World Wide web search services (Search Engines)". This study was done, every search service in it has undergone major change in its features, including its ranking and retrieval strategy, as anyone who follows news report on search engines known. The objective of this study was, five search engines, Alta Vista, Excite, Hot Bot, Infoseek, and Lycos are compared for precision on the first 20 results returned for 15 queries adding weight for ranking effectiveness. They used search method and evaluation method for data collection. All search was

done from January 31 to March 12, 1997. The searching has been done to minimize the possibility of favouring the service queries first, or the one queries last. Analysis shows that Alta Vista, Excite and infoseek are the top three services with their relative rank changing depending on how one operationally defines the concept of relevance. Correspondence analysis shows that Lycos, performed better on short, unstructured queries, whereas HotBot performed better on structured queries.

David Nicholas and others[5] (1999) conducted a study under the title "Developing and Testing methods to determine the use of web sites: case study newspapers" was aimed to find out (i) how many users (individual or corporate) use the site per hour, day, week year, (ii) how many visits users make per hour, day, seek, (iii) how many pages user views per hour, day, week, (iv) how many hours . minutes the site / page is used per hour, day, week. All kinds of method have been used to obtain web user figures. "Softer" method telephone and face to face interview, mailed and web questionnaires was used. As an adjunct to these methods provide valuable background or causal data. (i) computer networks that was the virtual users of web, (ii) the www system is essentially a system for the distribution of web pages.

Rama Verma[6] (1999) presented a paper under the title " Internet: Its use at TCIRD and TIET" on ILA National Seminar author

discussed that Internet is the only solution for libraries to access unlimited information, progress towards this end at TIET and TCIRD, Patiala has been reported, Internet is a rich online source of information, tool and service on Internet. TCIRD got connectivity of Internet about eight month back. It is one node connectivity via VSNL. Scientist and library staff are browsing the Internet. TIET and TCIRD libraries are already sharing CD-ROM database. Finally, an academic libraries must be able to meet the fast growing demand through modernisation process within budgetary limitations.

M.M. Koganuramath and Suresh Jange[7] (1999) made a study under the title, "Use of Internet by Social Science research scholars: A Study". Keeping in view of objectives of the study, a structured questionnaire was designed to know the various internet services utilised by them. The questionnaires were distributed to 60 social science research scholars and collected only filled questionnaire with a 100% response rate. The major objectives of study were : (1) To know the purpose of using internet. (2) To ascertain how far internet services has been utilised. (3) To identify the popular sites used by the scholars; and (4) To suggest ways for optimising Internet service. The major findings were the main purpose for using internet is for communicating mails (100%) and followed by accessing academic and research information needs (90%). E-mail (100%) is the widely used service followed by world

wide web (98%). The popularity of search engines and its retrieval efficiency among social science research scholars.

Vincent Cassidy[8] (1999) made an attempt "The Role of Electronic Journals in the Corporate Library: A Publisher Perspective Serials". The advent of electronic journals is viewed by some as precipitating a narrowing of the differences between the corporate library and the academic library both in the way that information is provide to customer and in the general role of the library within the organization presents the opposing perspective arguing that though permissive licensing arrangements with publishers, the introduction of e-journals will instead generate the widening of the distinction between the corporate library and the academic library.

Jane Klobas and Laurel A. Clyde[9] (1998) made a study under the title "Learning to use the Internet in a developing country: validation of a user model". The objective of the study was to find out the network information resources use as a function of intention, the use a network information resources such as the internet, use of an established network information resource. The investigator used electronic mail survey and questionnaire method for data collection, the major findings of the study were: (i) Few of the respondents reported having an opportunity to use the internet before attending the course. (ii) Only two respondents

mentioned quality in their own right. (iii) Only small number of participants in Internet training course.

In order to find out information available on agricultural web sites at U.K., Gillian M Craig[10] (1998) conducted a survey under the title "Information available on U.K. Agricultural Web Sites". U.K. agricultural web sites were identified using variety of general and agricultural web indexes, directories and lists, and a total of 132 were selected for the investigation. These sites were placed in on the six categories: (i) University sites (42) (ii) C o l l e g e sites (17) (iii) Research sites (28), (iv) Government and quasi-government sites (9) (v) Association and Society sites (14), (vi) Commercial and miscellaneous sites (22). In the main survey in March 1998 second and third survey in June and September 1998. In September 1988 a further 28 sites were also identified. More than 60% mounted directory type information like that found in printed directories of information sources, but this was not always easily accessible. Document were available on slightly more than half the sites, but other types of content were available on fewer sites. Few sites explained how to locate information on site. Less than one-third of sites had facilities to aid site navigation, but there were difference between the site categories for these features. Just over half the web sites displayed revision dates, but only one third had been updated in the last three months.

Duncan Pruett with James Deane[11] (1998) made a study under the title "The Internet and Poverty : Real Help or Real Hype". It is a commonly held view that computerized communications will fundamentally change the world. But the hype should not mask the fact that this is only a communication tool and for those in developing countries an expensive one. The internet is no panacea and it will not absolute development workers from forming sound strategies in other area. Infrastructural constraints and poverty will limit access but the bottom line is that this technology favours the small user. Exclusively in access to the internet has led many to brand its yet another technology that is available only to the wealthy and powerful elite in developing countries. The true picture is more complex however and despite lack of access, the internet is having a real impact.

Nirmal K. Jain[12] (1998), presented a paper under the title, "Internet and library services" in this paper he explain impact of Internet on library services and the changing ways librarians organize, control and disseminate informatioin. The Internet is a cooperative group of network that have agree to connect to one another. The common method of communication on the Internet is electronic mail and Usenet can provide a valuable forrm of communication for library users and librarian alikes. The role of Internet in reference work, research, accessing electronic journals,

electronic document delivery, resource sharing and inter library loan has been discussed.

Reijo Savolainen[13] (1998), made a study under the title, "Use studies of electronic network: A review of Empirical Research approaches and challenges for their development". The present article aims at updating discussion by reviewing the nature of empirical use studies of networked service. The author reviews the major approaches and central finding of empirical use studies. Six major research approaches were identified by cross tabulating two criteria: the major context of network use and the social level of variables. For these studies analysis of job related use are most advanced.

Sarah Ormes[14] (1998) conduct a case study under the title, "Internet services in Danish Public Libraries" considers the potential value of the Internet for public libraries in Denmark with particular reference to three case studies the Public libraries selected were: Reskild, Silkeborg and Archus libraries. Internet conducts that there are many opportunities to learn from the Danish study. The three libraries funded the main development of their Internet services from outside sources. The three most important difference from most UK libraries were found. i) Libraries strong vision of what their role will be in the information society. ii) Management culture which encourage staff to have more control over their work.

Charlotte E. Ford and Stephen P. Harter[15] (1998) made an article under the title "The Downside of Scholarly Electronic Publishing : Problems in Accessing Electronic Journals through Online Directories and Catalogues". This article reports the results of a study on the "Usefulness of four Online e-journal directories and two online union catalogues in accessing electronic journals". The coverage, accuracy, currency and overlap among the six sources are compared. The objective of the study were : (i) E-journal coverage - what is the coverage of each directory and union catalogues, (ii) Accuracy - How accurate are the URLs listed in each directory or catalog" (iii) Agreement - How diverse are the URLs listed in the sources? (iv) URL coverage - What is missing from the directories and catalogues? For collecting the data author used evaluation, observation method. Multiple uniform resource locators (URLs) were found for most of the e-journals, Directories were found to include fewer URLs per title than the union catalogs, with a higher percentage of current, functioning URLs, the catalogs offered the highest number of working, current URLs.

John F. Lebaron and others[15] (1998) conducted a study under the title "How Educators find Education Resources on the Internet : A Discussion of Independent Search Behaviours by Graduate Education Students". Discussion method are used the objective of discussion is to knowing how educators find education resources on

the internet, and how do educator actually make sense of the information chaos, particularly on the world wide web. The purpose of this discussion is to offer a fresh perspective into the independent searching behaviours employed by experienced educators when they seek educational information on the internet. Students were asked to indicate how they found each discovered resources. More than 200 references to internet sites were contributed. There are several explanation for these anticipated student results. First, the e-journal assignment did not explicitly direct students to contribute resource postings exclusively from the dedicated use of internet search engines. Second, a relatively experienced group of educational practitioners entered this course with virtually on internet background. Third many students in the course lacked access to internet resources in their homes or work places and hence relied on their single weekly visit to the college to use the internet.

David L. King[17] (1998) conducted a study under the title "Library Home Page Design: A Comparison of Page Layout for Front-ends to ARL Library Web Sites". The investigator examines the home pages of all 120 libraries in the Association of Research Libraries in order to compare design similarities and differences. The goal of this project was to examine the main front-end home page of all 120 ARL libraries. The investigator use questionnaire

on each home page and then tabulating the findings using simple averages and medians. The result can be categorized in given sections: (i) background, (ii) Document headers, (iii) Document footers, (iv) Document body, (v) Page length, (vi) Number of steps to library page from parent institution websites, (vii) Domain home server. The findings presented here are not meant to show what is being done right in library web pages, but simply what is being done.

David Nicholas and others[18] (1997) conducted a study entitled "The Internet: Its early days, but there are some surprises". The research brief was straightforward, but possibly ambitious. They sought to discover whether the internet represented the big bang, a paradigm shift for the information world. Open-ended interviews were the chosen research instrument because of the complexity of the internet. Interviews were held with hundreds of editors, journalists and media libraries. The early findings indicate that the internet is not impacting in way forecasted.

Marjory S. Blumental[19] (1997) discussed Internet and the information infrastructure in this article. Interdependence of Internet related business means they could diversify from strategic alliences, or integrated vertically or horizontally. They discussed also advantages of economics scope or scale, Tries to depict Internet's future specially keeping in view Internet interaction with other information infrastructure which is dependent on business factors more than one technology.

Bill Jupp[20] (1997) presented a paper under the title 'The Internet library of early journal'. This paper was based on the internet library of early journals is a two year collaborative project by the universities of Birmighan Leeds, Manchester and Oxford funded within the Electronic libraries programme. This paper aims to give an introductory overview to the possible approaches to digitising library materials in order to show the complex and often conflicting decisions that have to be made. In this project the investigator used evolution method. The project gained experience with state of the art scanning equipment, OCR and fuzzy searching software. Technology improves the difference in cost between manual production and automatic production (scanning, OCR) will increase.

Devika V. Aptagiri[21] (1997) presented a study entitled 'New Vistas in Collection Development : The Internet Perspective'. The author discusses the constraints and information centres, and examines the internet as a world-wide source of information and as scope for electronic collection development. The role of internet as more than just a channel for communication is also discussd. The different rates the net has to play in the information scenario, specially in connection with collection development are given.

In order to find out electronic publishing on CD ROM and the internet, Keith Hart[22] (1997) conducted a project under the title

"Electronic Publishing on CD-ROM and the Internet : The Experience of Two Special Libraries". The librarian of the Royal College of Nursing (RCN) and the library manager of the institution of electrical engineers, described their recent experiences of publishing their information electronically, on CD-ROM and on the internet respectively. U.K's library has largest collection of specialist nursing journals. In 1993 he undertook a pilot project to publish journal articles on a CD-ROM. Investigator founds, the pilot project demostrated the value of the product, in this project he used the personal librarian software package from systematic database for textfiles. It was soon evident that the multiple sources of data were to provide more problems than purely technical ones. By way of summarising, librarian of RCN was pleased with the progress so far fill that both products were valuable resources and manager of IEE was pleased that anyone can access the catalgue over the WWW.

Amy M. De Brower and Robert Skinder[23] (1996) write a article entitled, "Designing an Internet class for a scientific and technical audience", they discussed scientific and technical research and development laboratory is training course, for using the Internet. This is the work of a team of librarians, networking staff, number of the publication group and human resources personnel. No other development has impacted the information user and information provide as much as the www.

Yasushi Takashima[24] (1996) made a study under the title "The study of information relationship on Internet: Comparison with vannevar, Bush's memex". Information on the internet in characterized by non-sequential or non-linear relationship i.e. links. Many discussions, observation about the itnernet point out that characteristic of its information and in this context vannevar Bush memex has been cited as the conceptual origin of the world wide web that the internet is the realization of memex. However, in these discussion, the reasons are not presented compares the characteristic of information relationship with the non-sequential and non-liner relationship of information i.e. trail, of memex, identifies and examines the essential differences of structure as well as the differences in the nature of the information relationship between the web and memex.

Judi Wolinsy[25] (1996), made a study under the title "Internet sites of librarians interest", the main purpose of this study was to know the Internet sites of librarian. For this study twenty seven topic are selected and arranged alphabetically, under each topic or subject names of site are given which can accessed for information on the topic above under each sites,

Surya Nath Singh[26] (1996), made a article under the title, "The Internet, an approach to finding answers to biomedical information", he discussed that computer network in general and Internet in

particular are likely to play vital role in money aspects of biomedicine in future, and also explain how Internet works, and information about biomedical sources and sites on Internet. It talks of Internet and Biomedical ICLS in India, and the governs the Internet.

V. Chaya Devi[27] (1996) made a study under the title "Attitude of end-users towards online information retrieval - a case study of NSDRC library Vishakhapatnam". The objective of this study was to know the attitude/behavior of the end user of the technical information cell (TIC) of National Ship Design Research Institute towards the online information search and retrieval. To collect the data from the users survey was conduct and questionnaire distributed to the users The important findings were: (i) Majority of the end users preferred to search the information through on-line that that of manual method due to the reasons of immediate and global accessibility of information. Further the survey revealed that the users had not experienced any difficulty with the online method, (ii) Most of the respondent opined that bibliographic database were most convenient source to access information, (iii) Most of the end-users agreed that the experience with the time made them expert in getting access to information through online.

Donna L Hoffman[28] (1996) conduct a study under the title, "Internet web use in the US", the main objective of this study was

to find out the use of web in US. For the data collection investigator used observation, evaluation and search method. He find that 15 million users used web to purchase something or other.

LA Clyde[29] (1996) conducted a survey udner the title, "Library as information provides: the home page" the objective of survey was to know library as a information provider and to find out the utility of home pages. Questionnaire method and observation method were used for data collection. Investigator finds library was used www to provide information via a home page. The final section of the paper deals with issues and problems associated with the creation and maintenance of a library home page.

Zlmin wu, and others[30] (1995) made study under the title "The user perspective of the ELINOR electronic library". For collecting the data the questionnaire method were used. The reading tasks also used by the investigator. The investigator done the pilot study before the survey. They selected 33 final year students doing BIS course for the reading task. The objective of this study was the usability of ELINOR by comparing the use of electronic book with that of printed books. The findings was the usability of image based electronic book seemed to them some what emperior to that of the printed book. Still they appreciated the concept of the electronic library and the ELS more useful then OPACs.

Gorddn Fleicher and others[31] (1995) made an article under the title "Academic referencing of Internet based resources". The author mainly discussed internet based resources and problem of internet based resources also explained in the article. Internet-Gopher, FTP, Usenet new list server, e-mail, also discussed. The method of getting information outlined have a very reliance upon the phenomena of the WWW and its method of accessing internet resources.

Johathan Furner Hines and Peter Willett[32] (1994) write an article under the title "The Use of WWW in U.K. Academic libraries". In this article they discussed a project "Use of Hypertext system in Academic, Public and Special Libraries in the U.K." This project consisted of a comprehensive review of the published literature in libraries. Using ISA, SCI, SCCI and defined the architecture of a retrieval system for distributed information. Questionnaire method were used, 55 of the 74 academic libraries responding to thier partial questionnaire mentioned use of web. In time as awareness of the utility of the internet continues to increase outside the universities.

Ram Gopal Garg[33] (1994) made an article entitled, "Information highway in India and Internet: Problems and Prospects". Author discussed advancement of a country depends on the optimum utilisation of information available in print is also discussed, department of electronics role in networking and illustrates the

media used in information highway. But diffusion of information technology in India was problem because of computer illiteracy and high cost of computer hardware.

Jeanna M. Brown[34] (1994) conducted a study under the title, "The Global Computer Network: Indication of its use World Wide" The dramatic increase in the use of the global network is examined through statistics and examples of the advancement of many countries. Evidence of the participation of libraries in the global network is sought through an analysis of subscribe lists for seelcted library-related list servs. Findings show that presentation of libraries from a few countries is very high while representation of librarian from most countries is low or non existent. The value of the Internet and the potentioal role librarians can play in this evolving environment are dicusssed.

Gerhard Obenaus[35] (1994) in his article "The internet - an electronic treasure trove" mentioned that internet is a network of computers with distinctive software and hardware, interconnects millions of people world wide and offers tremendous amounts of information, translators may benefit from the internet throughout the translation process. This paper discusses some of the benefits of the internet for the translator, and then points out various tools and guides which can be used to get the most out of the internet.

David Buckle[36] (1994) conducted a study under the title "Internet : Strategic issus for Libraries and Librarians - a commercial perspective". The goal of this study was to find out the importance of the information superhighway and highway is twofold for the investor in its building and maintenance, value of the real estate and value of the revenue to ride the highway. Content analysis and evaluation method are used. Investigator find that the economic importance of the information superhighway has captured the minds of governments having contributed to the election of Clinton and Gore it now features in the agendas of summits. The value of the real estate and the value of the revenue to ride the highway. Many of the carriers have already signed up offering monthly season ticket.

Manoj Joshi[37] (1992) made a study under the title "Use of CDS / ISIS in the libraries of Delhi: Analysis". The objective of the study were : (i) to know library functional system supported, (ii) to identify various lirbary services supported by CDS/ISIS, (iii) to assess user's reaction on various aspect of CDS/ISIS. Data collection was done by using questionnaire method, interview method, observation method. Findings were: (i) result of the study showed that many libraries had acquired CDS/ISIS only because it was being provided free of cost by NISSAT, (ii) Users were satisfied with the facilities available in CDS/ISIS.

Leela Rao[38] (1979) condcuted a brief survey under the title, "Computer Based Information System: A Brief Survey, the main objective of this study was find out the availability of computer based informatiion system in dveloped as well as developing countries. Investigator take major libraries in USA and Europe, which have developed computer data base for the storage of information and computer based information retrieval system. Regarding data collecting observation and evaluation method were used. Major and important libraries were take for the data processing system. By the survey it is evident that many data bases and their output facilities in various fields of S&Tech. have not been used in Indian. It is high time for India to organise their information cenres technically and scientifically and make use of the advanced technology.

Sangamswaran S.V. and Chandran Rajita[39] (1978) conducted a study under the title "Computer based information service in Food Science and Technology : A Survey of User Internet". The objectives of the study were to know (i) the number and category of users who required the computer based information services, (ii) the kind of information required by each category of users, (iii) the type of service required by each category of users, (iv) the nature of existing / alternative facilities which are already available to the users. Questionnaire survey was conducted to collect the data on

random basis. The important findings were: (i) users were facing problems in using computer in creating database and providing other services, (ii) most of the respondents mentioned two important parameters i.e. cost and usefulness which could decide either to subscribe or not to the services.

BIBLIOGRAPHY

1. TOWNLEY (Charls T) and MURRY (Leigh). Use based criterias for selecting and Retraining Electronic Information : A Case Study. Information Technology and Libraries. 18, 1; 1999.

2. NAIDU (G.H.S.) and others. Academic libraries, Library Networks and the Resourcefulness of Internet. Library and Information Network. 1999, August; 9-12.

3. KESAVAN (R Venkata) and SHUKLA (KH). Internet : A Vital Tool for Offering Reference Services in Academic Libraries. Challenges Before the University Libraries in India in the 21st Century. 1999, August; 315-19.

4. LEIGHTON (H Veronon) and SRIVASTAVA (Jaideep). First 20 Precision Among World Wide Search Services (Search Engines). Journal of American Society for Information Science. 50, 10; 1999; 870-81.

5. NICHOLAS (David) and others. Developing and Testing Methods to Determine the Use of Web Sites : Case Study Newspapers. Aslib Proceeding. 51, 5; 1999; 144-59.

6. VERMA (Rama). Internet : Its Use at TCIRD and TIET. Challenges Before the University Libraries in India in the 21st Century. 1999, August; 9-12.

7. KOGANURAMATH (MMK) and JANGE (Suresh). Use of Internet by Social Science Research Scholars : Study. Caliber, 1999.

8. CASSIDY (Vincent). The Role of Electronic Journals in the Corporate Library. A Publisher Perspective Serials. 12, 1; 1999. 31-3.

9. KLOBAS (Jane) and CLYDE (Laured A). Learning to Use the Internet in a developing country : Validation of a User Model. <u>Library International Journal of Libraries and Information Science</u>. 48, 3; 1998.

10. CRAIG (Gillian M). Information available on U.K. Agricultures Web Sites. <u>Aslib Proceeding</u>. 1999; 155-65.

11. PREUETT (Duncan) and DEANE (James). The Internet and Poverty : Real Help or Real Hype. <u>FID Bulletin</u>. 48, 3/4-6; 1998; 77-81.

12. *JAIN (Nirmal K). Internet and Library Services. <u>50 Year Library and Information Services in India</u>. 38; 1998; 240-49.*

13. SAVOLAINEN (Reijo). Use Studies of Electronic Networks : A Review of Empirical Research Approaches and Challenges for their Development. <u>Journal of Documentation</u>. 54, 3; 1998; 332-51.

14. ORMES (Sarah). Internet Services in Danish Public Libraries. <u>Journal of Library and Information Science</u>. 30; 2; 1998, 123-32.

15. FORD (Charlotte E) and HARTER (Stemphen P). The Downside of Scholarly Electric Publishing : Problem in Accessing Electronic Journal. <u>College and Research Librarian</u>. 1998, 338-45.

16. Lebaron (John E) and others. How educators find Education Rsources on the Internet : A Discussion of Independent Search Behavior by Graduate Education Student. <u>The Internet and Higher Education</u>. 1, 3; 1998; 191-201.

17. KING (David L). Library Home Page Design : A Comparison of Page Layout for Front-end to ARL Library Web Sites. <u>College and Research Library</u>. 1998; 13.

18. NICHOLAS (David) and others. The Internet : Its Early Days but there are Some Surprises. <u>Aslib Proceedign</u>. 49, 8; 1997; 214-16.

19. BLUMENTAL (Marjory S). Internet and the Information Infrastructure. <u>Computer</u>. 30, 1; 1997, January; 50-6.

20. JUPP (Bill). The Internet Library of Early Journal. <u>Aslib Proceeding</u>. 44, 6; 1997, 149-72.

21. APTAGIRI (Devika V). New Vistas in Collection Development : The Internet Perspective. <u>DESIDOC Bulletin of Information Technology</u>. 17, 2; 1997; 23-6.

22. HART (Keith). Electronic Publishing on CD-ROM and Internet : The Experience of two special libraries. <u>Aslib Proceeding</u>. 49; 1997; 159-61.

23. DEBROWER (Amy M) and SKINDER (Robert F). Designing on Internet class for a Scientific and Technical Audience. <u>Special Libraries</u>. 87, 3; 1996, Summer; 189-46.

24. TAKASHIMA (Yasushi). The Study of Information Relationship on Internet : Comparison with Vannevar, Bush's, memex. <u>Library and Information Science</u>. 36; 1996; 45-50.

25. WOLINSKY(Judi).Internet sites of Librarian's Interest.<u>DESIDOC Bulletin of Information Technology</u>.16,3;1996,May;21-8.

26. SINGH (Surya Nath).The Internet,an approach to find anserces to Biomedical Information.<u>Annds Of Library Science and Documentation</u>. 43,4;1996,December;121-31.

27. DEVI (V Chaya).Attitude of end users towards online Information retrieval-A Case study of NSDRC library Vishakapatnam.<u>Annls of</u>

Library and Information Science and Documentation. 44,1;1996;18-31.

28. HOFFMAN (Donna L).and Others.Internet Web Use in the US.Comminication Of the ACM. 39,12; 1996, December; 36-46.

29. LAYDE (L.A.). Library as information provider: the home page. Electronic Library. 14,6;1996, December: 549-58.

30. WU (Zlmin) and others. The user perspective of the ELINOR electronic library. Aslib Proceeding. 41,1:1995; 13-22.

31. FLEICHER (Gorddn) and others. Academic referneing of Internet based resource. Aslb Proceeding. 47, 11/12; 1995; 245-50.

32. FURNER (Johathan) and WILLETT (Peter).The Use of WWW in Academic Libraries. Aslib Proceeding. 47, 1; 1995, Januay.

33. GARG (Ram Gopal). Information highway in India and Internet: Problem and Prospects. Library Herald. 32,12; 1994, April-September: 80-5.

34. BROWN (Jeanne M). The Global Computer Network: Indication of its use world wide. International informations & Library Review. 26,1/4;1994; 51-65.

35. OBENAUS (Garhard). The internet an electronic treasures trone. Aslib proceeding. 46, 4; 1994; 95-100.

36. BUCKIE (David). Internet: strategic issue for libraries and librarians-a commercial perspective. Aslib proceeding. 46, 11/12; 1994; 259-67.

37. JOSHI (Manoj). Use of CDS/ISIS in the libraries of Delhi: Analysis. ILA Bulletin. 28, 3/4; 1993: 95-104.

38. RAO (Leela). computer based information system: A brief survey. Aslib Bulletin. 3,7; 1979.

39. SANGAMSWARAN (SV). and CHANDRAN (Rajita). Computer based information survice in food science and technology: Survey of user interest. Library Science with a slant to documentation. 16,4; 1979; 11-29.

CHAPTER - 3

METHODOLOGY

Selection of the Problem

Objectives of the Study

Hypothesis

Methodology

Sample Population

Pilot Survey

Variable Taken

Tools and Techniques Employed

Data Collection Procedure

Data Analysis Method

METHODOLOGY

This chapter deals with the methodology used in the study and has been discussed under the following heading :

- Selection of the problem
- Objective of the study
- Hypotheses
- Methodology
- Sample population
- Pilot survey
- Variables taken
- Tools and techniques employed
- Data collection procedure
- Data analysis method

Selection of the Problem:

The problem for the present study is entitled "The Utilization of Internet Services by the Users of Science and Technology Libraries in Delhi : A Study".

Objectives of the Study:

(a)   To findout availability of Internet service in science and technology libraries in Delhi.

(b)   To know the degree of utilization of existing services.

(c)   To find out the purpose of using Internet services.

(d)   To know which Internet service is most used and which used least.

(e)   To know from which source users get latest information about website.

(f)   To find out most and least used website.

(g)   To find out the Internet serices provided by S&Tech. libraries to their users.

(h)   To know the problems faced by the users while they are using various internet serives.

(i)   To find out solution for some of the current semi problems.

(j)   To find out how many S&Tech. libraries providing Internet at free of cost.

(k)   To assess the satisfaction of the users with regard the working hour of the library Internet services.

(l)   To know the opinion of the uers about information access through Internet for research purpose.

(m)   To know the opinion of the user about the library staff.

(n)   To examine the satisfaction level users   regarding infrastructure facilities, membership, reservation facilities and location.

(o)   To assess the opinion of the users with regard to the Internet services available in the S&Tech. libraries.

(p)   To find out the maintainer of the Internet services S&Tech. libraries in Delhi.

(q)   To know the availability of the Internet conferencing facilities in S&Tech. libraries.

(r)   To identified most use Internet application software.

(s)   To find out all S&Tech. libraries allows to their users to utilizing available Internet facilities.

(t)   To know whether S&Tech. libraries provide special training to their users for better utilization of the available Internet services or not.

Hypotheses:

1)   A large number of library users are utilizing the available internet services in science and technology libraries of Delhi.

2)   The internet services available in the library are not adequate to meet the information needs of the library users.

3)   Most of the user of S&Tech. libraries are facing some problems while they are using internet services.

4)   Most of the users are satisfied with the services of library staff/professional in service and technology libraries.

Methodology:

The cateogorisation of the proposed investigation into a certain type of research/survey, a corresponding method or methods designed for it and appropriate techniques for collecting and analysing data are together known as methodology.

There are several techniques for collecting data such as (i) observation method, (ii) interview method, (iii) questionnaire, (iv) schedules, (v) diary method, (vi) other methods which include : (a) using mechanical device, (b) through project techniques, (c) depth interviews, and (d) content analysis etc. For this study the investigator used questionnaire, observation and interview method for collecting necessary data.

Questionnaire Method :

Goode and Hatt state: "Questionnaire refers to a device for securing answers to questions by using a form which the respondent fills himself". Questionnaire is a tool to collect data from diverse large and widely scattered population groups. The imporatnat step in this method is to take care in the design of questions. This method consists of a careful translation of the objectives of survey into a set of questions, may ask for the opinion or factful information. The question are formed in such a way that the relation of one qustion to another can be readly apparent to the respondent, question

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sequence must be clear and answer can be given by checking yes or no by selecting one of the possible answer provided in the questionnaire.

Observation Method :

Goode and Hatt state: "observation may take many forms and is at once the most primitive and the modern of research techniques". Observation is a well established technique for collection of data. It is the method of acquiring knowledge about the world around us. The observation method is normally employed in measuring, testing, characterising human behaviour. Under the observation method, the information is sought by way of investigator's own direct observation without asking from the respondent. In measuring, testing characterising human beings, the researcher usually being with the observation behaviour.

Interview Method

Young defines "Intrview as a systematic method by which a person enters more or less imaginatively into the life of a "comparative stranger". Goode and Hatt state "Perhaps the research problems as the interviewer". Interview method, as a social survey tool is used by contemporary investigators. The interview method is more direct and has greater flexibility. This method is unique because the collection of data is through direct verbal interaction between individual. The investigator used personal interview method

in this method interviewer asked question generally in a face to face contact to the other persons or respondents.

Sample Population

The collection of large quantity of data from the entire population of internet users of science and technology libraries. Therefore, the sample was selectd by using satisfied sampling method given the representation to medical libraries, agricultural libraries, scientific libraries, documentation centres and technological libraries under satisfied sampling, random sample technique was used to choice of libraries. 7 libraries such as *AIIMS, IARI, INSA, INSDOC, DESIDOC, IIT, C-DOT.* The total number 300 questionnaire distributed among 250 users and 50 library staff/professionals. During the academic year 1998-1999. A total number of 270(90%) filled questionnaire were returned back from 220(88%) users and 50(100%) from library staff/professionals. 30(12%) unfilled questionnaire were returned back with the users because they are not using internet services in the libraries. Thus the investigator selected 270 for the analysis of data from 220 users and 50 library staff / professionals.

Pilot Survey :

A study preceding the main study usually to check the viability of the study design is known as pilot study or survey. To deciding

the present questionnaire or questions were relevant for the purpose of the study, the investigator were distributed questionnaire among 24 users and staff of the science and technology libraries for the pilot study which was helpful in modifying the questionnaire suitably.

Variables Taken:

In order to collect and get the meaningful conclusion the following variables are analysed in detail :

- Library Internet users

- Library staff / professionals

Library Internet Users : The group of people who use th internet service available in the *INSDOC, DESIDOC, INSA, IARI, AIIMS, C-DOT AND IIT* libraries.

Library Staff / Professionals : The group of people who use as well as provide internet services to their users in the *INSDOC, DESIDOC, INSA, IARI, AIIMS, C-DOT & IIT* libraries at Delhi.

Tools and Techniques Employed :

Questionnaire prepared by the investigator supplemented by observation and interview are used as tool for data collection.

Data Collection Procedure:

Investigator visited all the selected libraries and approached the librarian seeking permission to collect necessary data. Questionnaire were distributed to the scientist and filled questionnaire were collected back next day. The investigator taken interview with head of the librarian as well as staff, besides this the observation method also used to observe the functioning and working condition of the internet services.

Data Analysis Method :

The data collected through questionnaire are organised and tabulated by using statistical method.

CHAPTER - 4

ANALYSIS
AND
INTERPRETATION

ANALYSIS AND INTERPRETATION

The problem for the present study is "The Utilization of Internet Services by the users of Science and Technology Libraries in Delhi: A Study". The collected data are organised and tabulated by using statistical method, tables and percentages. This chapter deals with the analysis and interpretation of the data collected through questionnaire and observation. A total number 300 questionnaire were distributed among 7 libraries i.e. INSDOC, DESIDOC, INSA, IARI, AIIMS, IIT and C-DOT library users and staff, during the academic year 1998-99, 220 filled questionnaire were returned and 30 users not give response because they were not use internet in the library. The investigator selected 220 questionnaire from users and 50 questionnaire from staff for the analysis of data.

A. User Data Analysis:

Frequency of Use

Table - 1

Category	Respondents	Percentage
Daily	59	26.82
2-3 time in a week	55	25
Once in a week	50	22.73
Not specific period	46	20.91
NR	10	4.54
Total	220	100

NR= No Response (Figure within paranthesis are %age)

Frequency Use

Bar chart titled "Frequency Use" showing Percentage (y-axis, 0 to 30) by Category (x-axis): Daily, 2-3 time in a week, Once in a week, No specific period, No response.
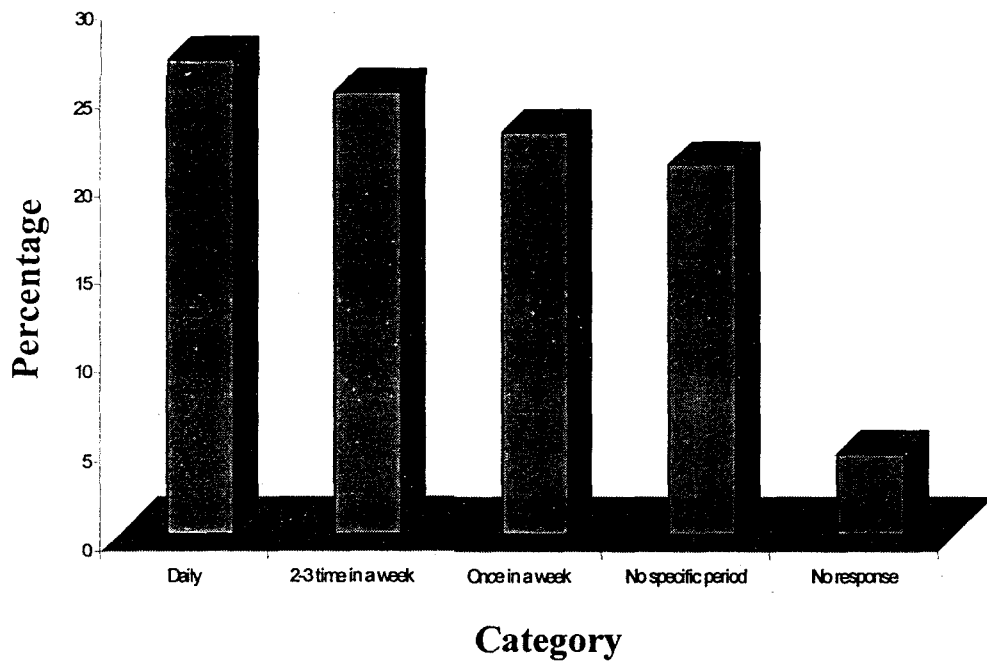
In order to assess the frequency of using library internet services, the time gap has been classified into 4 different categories as shown in table-1. On the analysis. It is observed that 59(26.82%) respondents using internet services daily, followed by 55(25%) respondents using 2-3 times in a week, 50(22.73%) using once in a week, and 46(20.91%) respondents without any regular period.

It is clear from the analysis that most of the library users 59% use library internet service daily and 25% of users 2-3 time in a week.

Purpose of Using Internet Services

Table - 2

Purpose	1	2	3	4	NR	Total
For accessing the information speedily	141 (64.10)	19 (8.63)	12 (5.45)	--	48 (21.82)	220 (100)
For Study/Research Purpose	68 (30.91)	65 (29.54)	12 (5.45)	--	75 (34.10)	220 (100)
Economic in term of cost	--	8 (3.64)	25 (11.36)	43 (19.54)	144 (65.46)	220 (100)
For Career Development	11 (5)	126 (57.27)	55 (25)	28 (12.73)	--	220 (100)
Others	--	--	--	--	--	--

NR=No Response   (Figures within parenthesis are %age).

The table 2 indicates the rank order of purpose of using internet services by the S. & Tech. Libraries users that 64.10% of the respondents gives first rank to accessing information speedily as their first purpose of using internet and 8.63% gives record rank. And 30.91% of the respondent gives first rank for study and research purpose as their first purpose of using internet while 29.54% gives second rank. No body gives first preference Economic in terms of cost. For career development purpose only 5% gives first rank and 57.25% gives second rank.

It is quite natural that the library users will give top priority to the purpose of accessing information speedily because users don't want to waste their previous time to access the information manually from journals or other media of communications.

Most and Least Used Internet Service

It is clear after the analysis that large majority of respondents i.e. 40% of the respondents used WWW and 30% used E-mail service. 30% users i.e. 66 out of 220 expressed that services like BBs, USEnet, E-journal, FTP, Telnet, Veronica, Finger, Chatmode etc. using regularly.

The investigator observed that mostly scientists, research scholars and library staff using WWW and Gophers. Under graduate students and some research scholars used E-mail for their personal use not for academic purpose. Worldwide Web and E-mail

are most used internet services and Chatmode, Veronica are least used Internet services by the users of S&T libraries.

Sources of Getting Information About Internet Websites

Table-3

S.N.	Source(s)	No. of respondents	Percentage
1.	Internet itself	107	48.64
2.	Journals/Magazines	59	26.82
3.	Newspapers	06	02.73
4.	Staff	23	10.45
5.	N.R.	25	11.36
	Total	220	100

NR=No Response   (Figures within parenthesis are %age).

The various sources of getting information about websites. The sources were sought under 4 categories. The table 3 shows that internet itself and journals/magazines are the best sources for getting latest information about website. 107(48.63%) respondents collects information through internet itself; 59 (26.84%) respondents collects through journals/magazine, 23 (10.45%) by computer professional and 6 (2.72%) respondent getting information though newspapers.

It is very interesting to note that number of respondent getting information about website through the internet itself and least population of respondent collect through staff and newspapers.

Most Used Websites

Table 4

S.No.	Category	No. of respondents	Percentage
1.	General	33	15.00
2.	Discipline based	108	49.09
3.	Recreational	26	11.82
4.	N.R.	53	24.09
	Total	220	100

NR=No Response   (Figures within parenthesis are %age).

On the analysis it is clear that 108 (49.09%) respondents used discipline based website; 33(15%) and 26(11.82%) respondents expressed that they general website and recreational website respectively. The table-4 clearly shown that majority of respondents using discipline based website for accessing the latest information and least used recreational website.

Most and Least Used Website

The investigator observes that Yahoo, Netscape and Altavista are use more by the C-Dot respondents; Altavista, WWW, Yahoo are use more by the scientists of INSA; Yahoo Infoseek are most demanded site by the DESIDOC respondents. IARI scientists prefer sites like Yahoo, Altavista, HotBot, Netscape and Yahoo, Altavista, Infoseek, America on-line use more by the INSDOC users.

Most Used Websites

Category
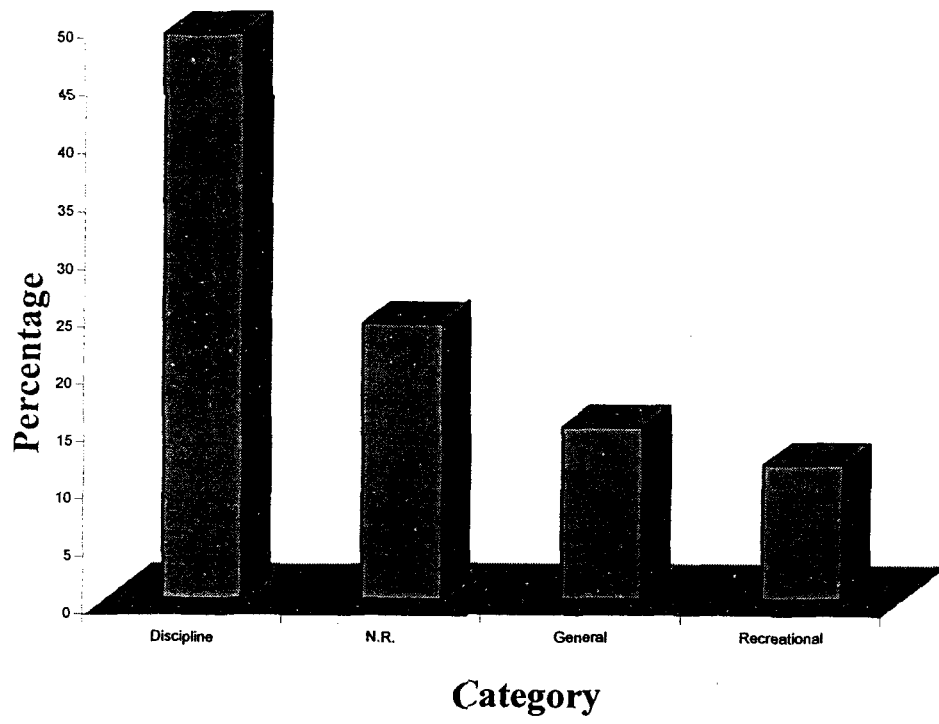
AIIMS (BB Dixit) library provides only Pub Med (Medline) website to their users.

It is clear from the analysis that Yahoo, Altavista and not bot are most used website among the science and technology library users.

Problems Facing by the Users

Table 5

S.No.	Category	No. of respondents	Percentage
1.	Finance Problem	09	4.09
2.	Technical Problem	--	--
3.	Guidance Problem	29	13.18
4.	Slow down loding Problem	57	25.91
5.	No Problem	125	56.82
	Total	220	100

In order to know the problems facing by the users of the science and technology libraries, the problems has been classified into 5 different categories as shown in the table-5. On the analysis it is observed that 57(25.91%) facing slow down loading problem, followed by 29(13.18%) and 9(4.09%) respondent facing guidance and finance problem respectively. 125(56.82%) indicates that they didn't face any problem while using various internet services.

Problems Facing by the Users
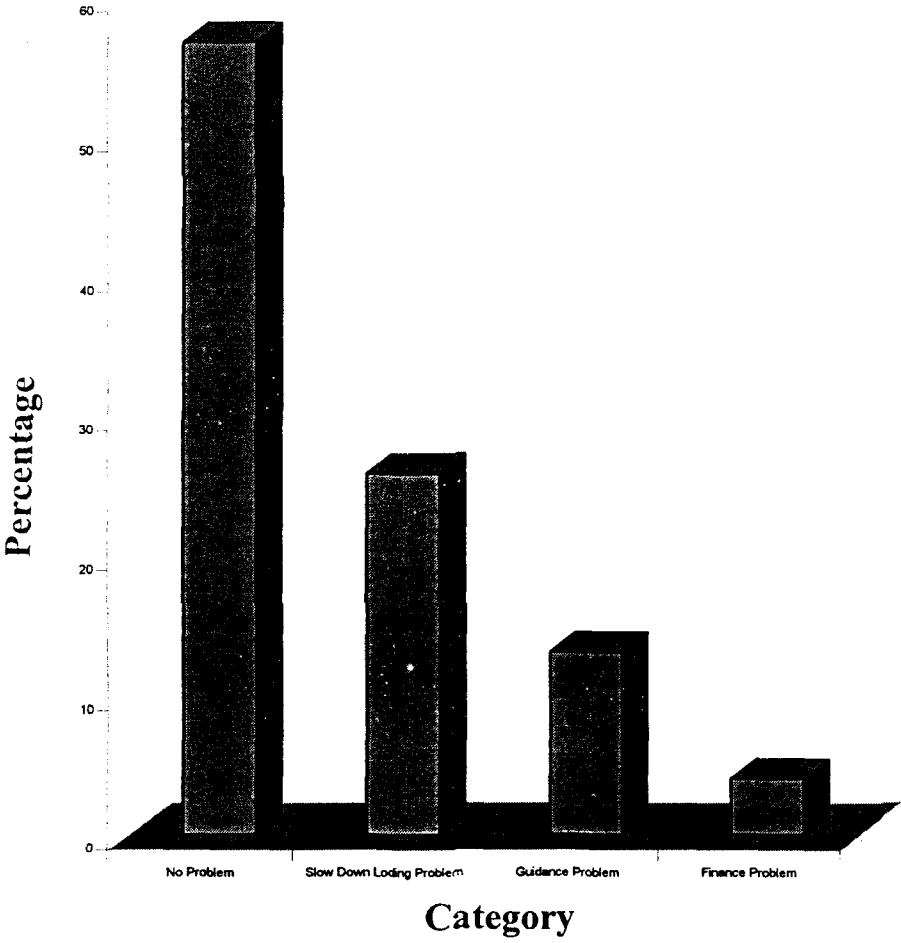
The investigator observes that slow down loading is a major problem faced by the users. But another interesting fact that majority of users i.e. 56.82% are not facing any type of problem.

Charges for Internet

Table-6

S.No.	No. of Respondents		Total
	Yes	No	
1.	101	119	220
	45.91%	54.09%	100

(Figures within parenthesis are %age)

Table-6 clearly shown that mostly respondent used internet after payed a fix amount of money i.e. 101(45.91%) and 119(54.09%) respondents using internet facility in the libraries free of cost.

The investigator observes that most of the libraries are providing internet facility at free of cost to their users like IARI, C-DOT, DESIDOC and INSA. The libraries like INSDOC, IIT, AIIMS are collects some amounts from the selected users.

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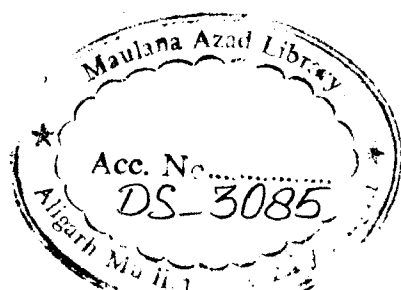
Satisfaction with the timing of Internet

Table-7

SR	NSR	NR	TOTAL
106 (48.18%)	73 (33.18%)	41 (18.64%)	220 (100%)

The Table-7 clearly depicts that 48.18% users are satisfied with the timing of the internet facility available in the science and technology libraries. While 33.18% are not satisfied with the timing and 18.64% have not responded for the question.

Internet for Research Purpose

Table-8

Most helpful	Helpful	Not helpful	N.R.	Total
70 (31.82%)	106 (48.18%)	14 (6.36%)	30 (13.64%)	220 (100%)

NR=No Response   (Figures within parenthesis are %age).

The data shows in table-8 indicates that 31.82% respondents expressed that information access through internet for the research purpose are most helpful, while 48.18% i.e. 106 respondents out of 220 expressed helpful; opinion of 6.36% users that it is not helpful for research purpose and 13.64% have no response to this query.

Satisfaction with the Library Staff/Professionals

Table-9

Satisfied	Not satisfied	No Response	Total
156 (70.91%)	46 (20.91%)	18 (8.18%)	220 (100%)

NR=No Response   (Figures within parenthesis are %age).

The data shown in Table-9 indicates that 156(70.91%) science and technology library users are satisfy with the library staff / professionals. But 46(20.91%) are not satisfy and 18(8.18%) have no response. To this investigator observes that mostly library staff /professionals are able to fulfilling the information needs of users.

Satisfaction with various facilities

Table-10

S.No.	Category	Respondent		Total
		Yes	No	
1.	Membership fee	179 (81.36%)	41 (18.64%)	220 (100%)
2.	Reservation facility	196 (89.09%)	24 (10.91%)	220 (100%)
3.	Location	188 (85.45%)	32 (14.55%)	220 (100%)

(Figures within parenthesis are %age)

The data shows in table-10 clearly depicts that 179(81.36%) out of 220 science and technology library users are satisfied with the membership fee, while 41(18.64%) are not satisfied.

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Similarly 196(89.09%) out of 220 respondents are satisfied with reservation facility but 24(10.41%) are not satisfied. In case of location 188 (85.45%) are satisfied while 32(14.55%) are not satisfied.

Infrastructure Facilities available in the libraries

Table-11

S.No.	Category	Respondent		Total
		Satisfied	Not Satisfied	
1.	Number of nodes	96 (43.64%)	124 (56.36%)	220 (100%)
2.	Number of Printer	48 (38.18%)	136 (61.82%)	220 (100%)
3.	Multimedia facility	103 (46.82%)	117 (53.18%)	220 (100%)
4.	Sitting arrangement	165 (75%)	55 (25%)	220 (100%)

(Figures within parenthesis are %age)

The data shown in table-11 indicates that out of 220 users, 96(43.64%) respondents said that number of nodes available in the library are adequate, while 124(56.36%) indicates Number of nodes are inadequate. Similarly 84(38.18%) respondents expressed that the number of printers are not sufficient but 136(61.82%) said sufficient. In the case of multimedia facility 103(46.82%) respondents out of 220 indicate that multimedia facility are adequate, while 117(53.18%) say multimedia facility are not adequate.

Similarly 165(75%) out of 220 respondents are satisfied with the sitting arrangement and 55(25%) are not satisfied.

Satisfaction with available Internet Facility

Table-12

Satisfied		NR	Total
Yes	No		
108 (49.09%)	112 (50.91%)	-- --	220 100%

(Figures within parenthesis are %age)

The table-12 clearly shown that 50.91% of the science and technology library user not satisfied with the available internet facility. Only 49.09 respondents are satisfied with the internet facility available in the libraries. This may be the reason that the infrastructure facility available in the science and technology libraries are inadequate to meet the information needs of the scientist.

B. STAFF DATA ANALYSIS:

MAINTAINER OF INTERNET SERVICES

Table 1: Service

Category	INSDOC	DESIDOC	INSA	IARI	AIIMS	IIT	C-DOT
Library Staff	√					√	
Computer Professional				√	√		√
Both		√	√				

√= Maintained by

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Satisfaction with Available Internet Facility

51%   49%

Satisfied   Not Satisfied
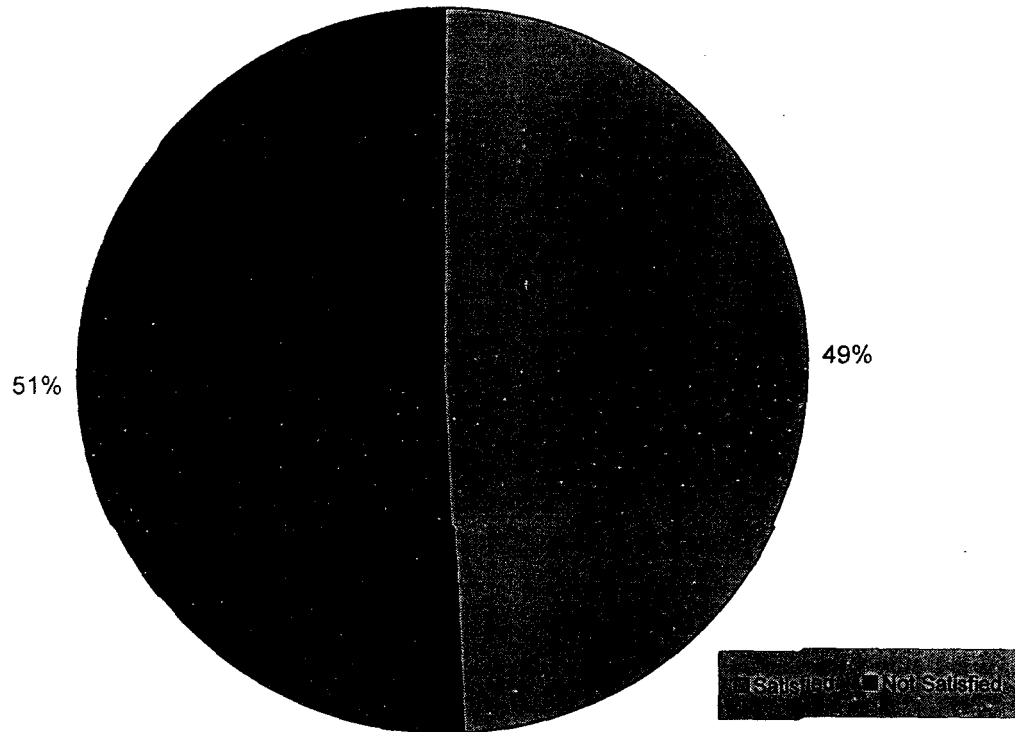
Table - 2 : Internet Services Provided by the Libraries

Service(s)	INSDOC	DESIDOC	INSA	IARI	AIIMS	IIT	C-DOT	Total
1. E-mail	√	√	√	√		√	√	6
2. Bulletin Board System(BBS)			√	√				2
3. File Transfer Protocol(FTP)		√	√	√		√	√	5
4. Document Division Support System							√	1
5. Telnet	√	√	√	√		√	√	6
6. Usenet		√	√			√		3
7. World Wide Web (WWW)	√	√	√	√	√	√	√	7
8. Veronica		√						1
9. Finger		√				√	√	3
10. Document Management	√	√	√	√		√		5
11. Gopher	√	√		√			√	4
12. E-Journal				√		√	√	3
13. Chat mode			√				√	2
Total	5	9	8	8	1	8	9	

√ = Service are available in the library

Maintenance of the internet services is a major task. The investigator observed that most of the libraries Internet is maintained by computer pforessionals such as IARI, AIIMS, C-DOT libraries. Library staff also maintains Internet services like INSDOC and IIT Libraries. In INSA and DESIDOC Internet service is maintaine by both computer professional and library staff.

Internet Services Provided by the Libraries:

The data given in the table 2 shows that INSDOC provied 5 Internet services to their users. i.e. e-mail, Telnet, www, Document management, Gopher. DESIDOC gives 9 Internet service to the users i.e. E-mail, FTP, Telnet, Usenet, www, Gopher and E-Journal. Similarly INSA and IARI provied 8 Internet services i.e. E-mail, FTP, BBS, Telnet, Usenet, www, Document management, Gopher and BBS, document management, Telnet, www, E-mail, Gopher, Chat mode.

Similarly IIT provides 8 Internet services i.e. E-mail, FTP, Telnet, Usenet, www, Finger, Document management, Chat mode and C-DOT Provides 9 Internet services i.e. E-mail, FTP, Document division support system, Telnet www, Finger, Document management, E-Journal, chat mode.

It is interesting that AIIMS library provide only 2 internet services www and PubMed to their users. Investigator observe that www and E-mail service are commonly provided by the all S.& Tech. libraries.

Most and Least Used Internet Service:

On the analysis it is clear that www, E-mail and USEnet are more used by the users of S. & Tech libraries. While Veronica, Telnet, Chat mode are least demanded Services.

Internet Conferencing Facilities:

Table-3

Category	INSDOC	DESIDOC	INSA	IARI	AIIMS	IIT	C-DOT
1. Audio Tele Conference				√	*		
2. Video Tele Conference				√	*		√
3. Computerized Conference				√	*		√

*=No. Responce   √= Library having

Table 3 clearly shows that only two S&Tech. libraries IARI & C-DOT Provides conferencing facilities to their users. The IARI library Provides both Audio teleconference, Vedio tele conference and computerized conferencing facilities C-DOT library provides Video tele conference and conputerized conferencing facilities.

The investigator find after the interview with staff that INSDOC participating in various tele conferences .In ,near future it will also adopt all other internet conferencing facilities.

Internet Application Software:

Table-4

Application Software			NR	Total
JAVA	**HTML**	**OTHERS**		
15 (30%)	28 (56%)	3 (6%)	4 (8%)	50 (100%)

(Figure within paranthesis are %age)

The data shows clearly in the table-4 that 56% respondents of the S. & Tech. libraries uses HTML application software package while 30% of the respondents using JAVA and a small persentage i.e. 6% using other application software.

Investigator observes that HTML application software is most used and helpful for the users of S. & Tech. libraries.

Most and Least Used Search Engines:

On the analysis it is clear that some search engines like Yahoo, Netscape and AltaVista are most used by the C-DOT library users. AltaVista and Yahoo are most used by the IARI respondents.

Similarly DESIDOC library internet users uses mostly Yahoo, Infoseck, while INSA library users are using mostly Yahoo, HotBot, Altavista, Infoseck and American on line search. Some search engines like Yahoo, Altavista are used more by the IIT respondents.

It is also clear from the analysis that Yahoo and Altavista, are most used search engines while Netscape and Infoseck are used least. The investigator observe that AIIMS library users searching information only through the Medline search because library have

only Medline (Pub Med) Search engine.

Library Allows to Using Internet Services to its Users:

The investigator observation reveals that all science and technology libraries except INSDOC allows their users to use available Internet Services in the library. But INSDOC allows only selected users from scientists and staff members.

Training Provided by the Library:

The investigator observed that mostly S. & Tech. Libraries given training to its user for better utilization of Internet services. It is clear through the anlysis that INSDOC, DESIDOC, IARI, C-DOT. and IIT libraries are giving training to the users IARI C-DOT libraries conduct one day orientation program and DESIDOC provide training only internal users. IIT it also provides training for the maximum exploitation use of Internet service which are available in the library.

CHAPTER - 5

CONCLUSION, FINDINGS AND SUGGESTIONS

Conclusion

Findings

Tenability of Hypothesis

Suggestions

Recommendations for Futher Study

CONCLUSION, FINDINGS AND SUGGESTIONS

CONCLUSION:

This study sought to examine the utilization of Internet Service by the users of S & Tech libraries in Delhi, by taking users and staff as samples. This study related to only selected 7 S&Tech libraries in Delhi.

Most of the objectives are meet satisfactorily and most of the users of S&Tech library use available Internet Services, but ratio of services used by users is different because it is dependent upon the type of work or library. World Wide Web and E-mail are the most used services by the library users. All libraries allow their users to use the Internet. Information is considered as a vital resource for alround development of society. In every sphere of activity people are dependent on information. The Internet is a useful source for accessing information speedily, thus it is the primary responsibility of libraries to provide high speed Internet connection, a number of modes and printer.

More computer should be used in expanding the Internet user because in such a fast life we need something which can give good results

Findings:

1. Almost all Delhi Science and Technology libraries have Internet facility.

2. Most of the users in science and technology libraries have a tendency to use Internet service regularly.

3. Most of the users depend on internet services because of quick access of relevant information through Internet.

4. World Wide Web and E-mail are the most used Internet Services by the users of S&Tech. libraries.

5. Veronica, Chatmode and Telnet are the least used Internet Services by the users.

6. Most of users get latest information about website from the Internet itself, followed by journals/Magazines.

7. 49.09% of the S&Tech. library users prefer Discipline based Websites.

8. Yahoo, Altavista search engines have been more popular among scientists.

9. Netscope and infoseek search engines have been used least.

10. Majority of the users are not facing any problem while they are using Internet services, but 25.91% of the users are facing slow down loading problem.

11. Most of the libraries are providing Internet facility free of cost to the users.

12. 48.18% of the S.&Tech. library users are satisfied with the timing of Internet services.

13. Majority of the users expressed that Internet is very helpful for their research work.

14. Most of the users are satisfied with the library staff/professionals.

15. A large group of users are satisfied with the membership fee, reservation facility and location.

16. A large number of Internet users are not satisfied with the infrastructure facilities available in the S.&Technology libraries. They expressed that the facilities like no. of nodes, Printer, multimedia facility, are inadequate for the fulfilment of requirements of the users-while most of (75%) the users are satisfied with the sitting arrangements of the libraries.

17. A large number (50.91%) of users are not satisfied with the available Internet facility in the S.&Tech. libraries.

18. In most of the S.&Tech. libraries, the Internet Services are maintained by library professionals rather than library staff.

19. Almost all S&Tech Libraries provide maximum number of Internet Services to their users except AIIMS library.

20. Only 2 libraries (i.e. IARI and C-DOT) have Internet conferencing facility.

21. HTML is the most used Internet application software by the S&Tech libraries in Delhi.

22. All S&Tech libraries except INSDOC allow their users to utilize Internet facilities available in the S&Tech. libraries.

23. Almost all S&Tech. libraries give special training to their users for better utilization of the Internet Services.

Tenability of Hypotheses:

The tenability of the hypotheses can be checked in the light of the above findings.

Hypothesis 1

States that, large number of library users are utilizing the available Internet Services in Science and technology libraries of Delhi.

According to the result of this study, most of the users in S&Tech libraries have a tendency to use internet service regularly.

Mostly users depend on Internet Services because of quick access to information.

Hypothesis 2

The Internet services available in the libraries are not adequate to meet the information needs of the library users.

It is clear from the result of the study that most of the users are not satisfied with the available Internet facility in the libraries. They expressed that the facilities like number of nodes, Printers, multimedia facility are inadequate to fulfilment of their requirements of the users. So the hypothesis becomes fully true.

Hypothesis 3

Most of the user of S.&Tech. libraries are facing some problems while there are using Internet Services.

The findings reveals that a good percentage of users from S.&Tech. libraries are not facing any type of problems at the time of using Internet in the library, only small percentage of users take slow down loading problem. So the hypothesis is not fully true.

Hypothesis 4

Most of the users are satisfied with the services of library staff/Professionals in S&Tech. libraries.

It is clear from the findings that most of the users are satisfied with library staff/professionals in the science and technology libraries. This supports the truth fullness of hypothesis.

SUGGESTIONS:

The present study puts forward the following suggestions to be implemented for the improvement of Internet service in science and technology libraries in Delhi.

1. In order to remove the slow down loading problem in S.&Tech. libraries, the libraries should acquire high speed internet connection.

2. Users training programme is essential for the proper exploitation of the internet resources.

3. Library staff must be skilled to navigate various Internet resources eg. Electronic Journals/Publisher Website etc.

4. A large number of Internet users are not satisfied with the infrastructure facility available in S.&Tech. libraries. So number of nodes, Printers must be increased. the multimedia facilities should be improved.

5. Libraries should have one notice board on which information regarding latest Website must be displayed with their addresses.

6. The timing of the Internet Service should be extended to round the clock.

7. The service charge of the Internet Services should be reduced.

8. Internet access should be provided to each & every section of the research laboratory.

Suggestion For Further Study:

1. The study can also conduct to find utilization of Internet services in different libraries of Delhi.

2. The study can also extended to whole of India.

3. The study can be conducted to find the utilization of Internet Services by disparately Male and Female Science and Technology library users.

4. The same study can also be extended to the university libraries.

APPENDICES

Bibliography

List of Websites in the Field of S&Tech.

Questionnaires

APPENDIX-1

BIBLIOGRAPHY

1. AXFORD (Mary A) and others. Internet education abounds at annual conference. <u>Specialist.</u> 17,7; 1994, July-August; 7-8.

2. BARBROOK (Richard). *Electronic power to the pepole.* <u>New Scientist.</u> 147, 1988; 1995, July 26; 46-47.

3. BERGHEL (Hal). HTML compliance and the tertum of the test pattern. <u>Communication of ACM.</u> 39,2; 1996, February; 19-22.

4. BERNARD (Reyan). The corporate Internet: Create and manage an Internet web for your organization. 1996.

5. Computer Today. 1999 June.

6. CARFELL (Sion). Intergrate Internet access. <u>The Libarary Association Record.</u> 97,6; 1995, June; 313.

7. CRUZ (Jose Villareal). Intranet/Internet Technology. <u>ASTINFO Newsletter.</u> 12,1; 1997, January; 6-7.

8. FALK (H). Working with the web. <u>Electronic Library.</u> 14,5; 1996, October; 453-58.

9. HUMPHRIES (S). How the Internet benefits Aferica. <u>Intermedia.</u> 1997, May.

10. HERRON (Teori L). Teaching with the Internet. <u>The Internet and Higher education.</u> 1,3;1998; 217-222.

11. KOWACK (Glenn). Internet governarce and the emergence of Global civil society. <u>IEEE Communication.</u> 35,5; 1997, May; 52-7.

12. LOSEE (Robert M). and PARIS (Lee Hlnne H). Measuring search-Engine Quality and Query Difficulty: Ranking with target and free style. <u>Journal of the American Society for information Science.</u> 50 10· 1999; 877-86.

13   Mc CARN (D.B.) and LEITER (J). On line services in Medicine and Byond. <u>Science.</u> 181, 4096; 1973; 318-24.

14.   MARSHALL (O.B.). A survey of the uses of online computer based scientific research services by Academic libraries. <u>Journal of chemical information and computer services.</u> 15, 4; 1975; 247-49.

15.   NICHOLAS (D.). An assessment of the online searching behaviour of practitioner and users. <u>Journal of Docmuntation.</u> 52,3; 1996, September; 227-51.

16.   SAGDEO (Vasant). Enjoy freedom via internet. <u>Telematics India.</u> 1995, October; 1991.

17.   SRIVASTAVA (H.O.). Broad casting via interent. <u>Telemetics India.</u> 106, 1996, June; 58.

18.   SINGH (Mahindar), Online information system and their impact on libraries and information centres. <u>Aslib bulletin.</u> 3, 1/2; 1979.

19.   STOVER (M). Librarian as publisher: A world wide web publishing project. <u>Computer in libraries.</u> 1619, 1996, October; 40-3.

20.   STEWART (Barbara). Internet advntaged for the technical services librarian <u>DESIDOC Bulletin of Information technology.</u> 16,3; 1996, May; 9-48.

21   WATSON (A). and SASSE (A). Evaluating audio and vedio quality in low-cost multimedia conferencing system. <u>Interacting with computers.</u> 81,2; 1996, November; 255-75.

22.   WEIBEL (Stuart L). The world wide web and Emerging Internet Resource Discovery Standard for scholarly litrature. <u>Library Trends.</u> 43, 1/4; 1994; 627-44.

APPENDIX -2

LIST OF WEBSITES IN THE FIELD OF SCIENCE & TECHNOLOGY

Astotonomy	http://marvel.Stsci.edu/netresources.html
Cyber Space tools	http://Pimf.earth link.q
Chinese Medical Journal	www.cmj.org
Chemistry International	www.iupac.org
Environmental Conservation	www.cup.cam.ac.uk/
Genes and Genetic Systems	http://spinner.lab.nig.ac.jp/GGS/GGS.html
Indian Institute of Science	http://www.issc. conet.in
Industrial and Engineering Chemistry Research	http://pubs.acs.org
Journal of Chemical Education	http://jchemed.chem.wisc.edu
MED Search Ami-RICA	URL:Gopher://gopher.medsearch.com.9001/1
Medical web	http://www.medical web.com/
Hospital Net	http://hospital net/
Medical News	http://www.ncpac.syr.edu/projects/vis human
Med nexus	http://www.mednexas.com
Micromaths	http:mcs.open.ac.uk/cme/micromath
National Library Medline	URL:http:www.hlm.nih.gov/extramural research.dif/ visible.human.html
NASA	http://www.nasa.gov.
NASA Homepage	http://www.fsfc.nasa.gov/NASA-homepage.html
Nature Biotechnology	http://biotech.nature.com/

Nature Genetics	http://genetics.nature.com
Natural History Museum	http://www.nhm.ac.uk/sc/index.html
On Earth Gallery	http://www./earth.com./
Physics World	http:/physicsweb.org
Science	www.sciencemag.org/
Science Clearinghouse	http://www.lib.imich.edu/chouse/tree/sci.html
Science Web	http://Scienceweb.dao.nrc.ca/
Sci-FI	http://scifi.com/
US National Library of Medicine	http://www.nlm.nih.gov/
USA Today Healthline	http://web.Usatoday.com/healthnet/medapp
Volcano world	http://Volcono.und.nodak.edu/vw.html
Virtual Public Health Centre Martindale's Science Guide	http://www-sci.lib./Uci.edu/HSG/PHealth.html.
World health	http://www.worldhealth.net
Your health daily	http://web.usatoday.com/life/health

APPENDIX-3

"QUESTIONNAIRE ADMINISTERED TO USERS"

Please fill the information in the blank space or put a tick mark

A. Personal Data:

1. NAME: _____

2. NAME OF ORGANISATION:_____

3. NAME OF LIBRARY:_____

4. DESIGNATION:

        (a) Student   ( )

        (b) Scientist   ( )

        (c) Research Scholar   ( )

        (d) Other_____

B. Frequency of Use:

5.   Do you have Internet facility in your library.   YES/NO

6.   Are you familear to using Internet services.   YES/NO

7 (a).   Do you use Internet services Frequently   YES/NO

  (b)   If yes, please specify the frequency of use(Pleace Tick):

        (a) Daily   ( )

        (b) 2-3 time in a week   ( )

        (c) Once in a week   ( )

        (d) No specific   ( )

  (c)   If No, (Please specify reason):_____

_____

C. Purpose:

8. What purpose do you use Internet services(Pleace Tick):

        a) For accessing the information speedily   ( )

        b) For study/research purpose   ( )

        c) Economy in-term of cost   ( )

        d) For career development   ( )

        e) Other, Please specity_____

D. Services.

9. Which Internet Service is using more by you (please specify):_____

_____

10. Which Internet Service is using least by you (please specify:_____

_____

11. From which sources (s) you are getting latest information about website (Please tick) :

a) Internet itself ( )   b) Journals/Magazines ( )

c) News papers ( )   d) Staff ( )

e) Others (Please specify):_____

12. Which type of Website using more by you (Please tick):

a) General ( )

b) Discipline based ( )

c) Recreational ( )

13. Which Inernet Website is most used and least used by you (please specify):

Most used: ─────────────────────────────

Least used: ─────────────────────────────

E. Problem:

14. a) Are you facing any problem in using Internet Services: YES/NO

b) If yes, please specify the problem and its solution

PROBLEM		SOLUTION (if any)
a) Finance	( )	─────────────────
b) Technical	( )	─────────────────
c) Guidance	( )	─────────────────
d) Slow down loading	( )	─────────────────
e) Other, specify:		─────────────────

F. Chargees:

15. a) Do you have to pay for using Internet services   YES/NO

b) If yes, how much per hour: ─────────────────

G. Satisfaction:

16. a) Are you safisfied with the timing of Internet service: YES/NO

    b) If no, Please indicate how many hours should be extended: ——

---

17. How do you feel about information access through Internet is related to your research purpose (Please tick):

    a) Most helpful   ( )

    b) Helpful   ( )

    c) Not helpful   ( )

18. a) Are you satisfied with the library professionals/staff, in the way of providing guidance using Internet servies: YES/NO

    b) If No, then (why) ——————————————————

19. Do you feel the following things are convenient (Please tick):

    a) Membership Fee   ( )

    b) Reservation facililty   ( )

    c) Location   ( )

20. Do you feel the following facilities provide by the library is adequate (Please tick):

    a. Number of nodes available   ( )

    b. Number of printer available   ( )

    c. Multimeida facility   ( )

    d. Sitting arrangement   ( )

21. Are you satisfy with available Inernet services in your library: YES/NO

22. Please give valuable suggestions to improve the Internet facility in your library.

————————————————————————————————

————————————————————————————————

————————————————————————————————

Thanking you

APPENDIX-4

"QUESTIONNAIRE ADMINISTERED TO STAFF"

Please fill the information in the blank space or put a tick mark

A. Personal Data

1. NAME: _____

2. NAME OF ORGANISATION:_____

3. NAME OF LIBRARY:_____

4. DESIGNATION (Specify): _____

B. Availability:

5. Do you have Internet facility in your library: YES/NO

6. Who maintain the Internet Services (Please tick):

    (a) Library Staff   ( )

    (b) Computer Professional   ( )

C. Services:

7. Following Internet services are availble in your library: YES/NO

a. E-mail (Electronic mail)	( )	( )
b. Bulletin board system	( )	( )
c. File Transfer Protocol	( )	( )
d. Document divisioin support system	( )	( )
e. Tel net	( )	( )
f. Use net	( )	( )
g. World Wide Web	( )	( )
h. Veronica	( )	( )
i. Finger	( )	( )
j. Document management	( )	( )
k. Goper	( )	( )
l. Electronic Journal	( )	( )
m Chatmode	( )	( )

Others (Please specify) ——————————————————

8. Which Internet Service is most used (please specify): _____

_____

9. Which Internet service is least used (Please specify): _____

_____

10. Do you have the following Internet conferencing facilities

    a. Audio Tele Conference   YES/NO

    b. Video Tele Conference   YES/NO

    c. Computerized Conference   YES/NO

    d. If other, (Pease specify) _____

11. Which Application software do you use (please write the name of Internet software used by you)

    a. JAVA   ( )

    b. HTML   ( )

    c. Others (please specify) _____

12. Which search engines are most used and least used by the users:

Most used :_____

Least used:_____

13. Do you allow your users to use Internet services   YES/NO

14. a. Are you given any special training on Internet to provide better service to the users of the library.   YES/NO

    b. If yes please specify: _____

_____

15. Please give valuable suggestions to improve the Internet services of Science & Technology Libraries.

_____

_____

_____

Thanking you