# RESOURCE SHARING IN DIGITAL ENVIRONMENT THROUGH INTERNET: PROBLEMS AND PROSPECTS

by

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## ABSTRACT

*The libraries exist in many forms and are of many types. With the advancement of information technology, we have image libraries, audio libraries and even digital libraries. A digital library may simply be defined as the library, which has all the documents in the digital form rather than the print media. In traditional libraries, we have the documents in printed forms while in case of digital libraries; all the documents are found in digitized forms. A library can serve at least three roles in learning, viz.; first, practical role in sharing expensive sources like physical and human resources, secondly, cultural role in preserving and organizing artifacts and ideas and thirdly social and intellectual roles by bringing together people and ideas. The libraries serve as centers of interdisciplinary places shared by learners from all disciplines. Digital libraries extend such interdisciplinary approach by making diverse information resources available beyond the physical space shared by a group of learners. Digital libraries have been in use for the last three decades, but there is a constant change and improvement in the technology used by digital libraries in the last decade. By the 1990's, the technology made it possible for digital libraries to include different items like text, image, audio and video. Nowadays, visual information systems are gaining more popularity as compared to text based information systems. Therefore, digital libraries are becoming more graphical in nature and they provide access to digital information collections. The digitalization is the process of conversion of any fixed or analog media – books, journal articles, photos, paintings, microforms into electronic form though scanning, sampling or even reeking. It is the creation of digital collection of information with multimedia features, that offer faster and easy access to a large number of users. In digitization, the documents are either scanned from print image or directly reproduced in digital form on Floppy, CDs, DVDs and other digital media. The digitalization process provides solutions to traditional library problems such as conservation, preservation, storage, multimedia documents, remote access to information collection and acquisition or original digital works created by publishers, agencies and scholars, access to external material not held in-house by providing pointers to website, other library collection and publishers servers. Though, there are various means of resource sharing like, telephone, fax, xeroxing and e-mail etc. (Dhiman, 1998) but the Internet is one of the media over which many library resources are put in the form of web sites in digitized form. The users can access the information from such sites in digitized form. This paper discusses some important issues regarding Internet uses in library and its role in resource sharing in digital environment.*

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## 0     Introduction

The Internet can be defined as the global network of networks. It is a network of interconnected worldwide webs of different types of organizations like universities, business, defense and science organizations etc. The emergence of INTERNET has changed the role of libraries radically. Now, the library users have no barriers, as the entire information is available on web. Today, the libraries have important functions of collecting, distributing and depositing of local information, talent and resources available with them to users world wide and also connect, retrieve and disseminate the information available across the globe to local users. All this could be possible only due to INTERNET facility.

It has emerged not only as an important search device of the research and development community but also of political activists, librarians, journalists, scientists and many others. As far as, the evolution of INTERNET is concerned, it has taken place over many years. Its foundation seems to be originated when a quarter century ago, Advanced Research Projects Agency NET  (ARPANET) was established in 1970 by Pentagon's ARP as a geographically dispersed reliable communication network for military use. This was followed by theories on Ethernet by Robert Metcalfe and TCP/IP by Vinton Cerf and Bub Kahn. Later the commercial version of ARPANET came into being, in 1982; TCP/IP became the protocol suite for ARPANET. Later, Internet's backbone, NSFNET (National Science Foundation NET) came into existence in 1986 (Raman Nair, 1999). In India, besides, government agency BSNL other private agencies like Satyam etc are providing INTERNET services. According to the Dennis et al., (1997), INTERNET can be used for:
- Accessing the electronic resources, such as bibliographic records, full text electronic journals with images, links to local and remote indices and databases document delivery and links to library – prepared user guides integrated through a common user interface like a hypertext browser.
- Expanded access beyond locally held resources via the OPACs as gateway.
- Seamless links from resource to resources
- Support of multiple electronic field and document formats and
- A graphic user interface display that can accommodate more textual explanation of searching instruction descriptions of resources.

While, Quterman, (1993) and Yumba (1997), have summarized the uses of INTERNET as follows:
- It is useful as search utility to access information stored on millions of computers world wide without the danger of being shut out.
- It gives  to an array of on-line journals and databases on various subjects and users can ignore irrelevant information.
- It gives access to colleagues through instantaneous transmissions/ receipts of e-mail messages and files as several people can provide input at the same time.
- It also facilitates book reviews that could enhance research and journal publications. It also encourages anonymity and constructive criticism of bad ideas.
- It also helps in distance education like co-operative projects and also used in solving conflicting viewpoints.

- It disseminates all kinds of data and information by keeping in touch with the latest developments in various disciplines.
- It serves as an index to educational and socio - economic developments.
- Developing countries can leap - frog using information in others countries.

INTERNET is `Gagar mein Sagar' for the information users. The basic facilities, which can be availed through INTERNET, may be summarized as follows (Sinha and Dhiman, 2001):

**(i) Electronic Mail or e-mail:** It is the most used service of the Internet. The messages can be sent to a single person or to a group of persons separately at the same time through this facility. Its speed is high and charges are low in comparison to postal service; owing to which, it enables one to be in touch with the rest of the world in most economical and efficient way. E-mail programs allow us to save, print or reply the messages and also to attach word processing documents, graphics of video images with our reply.

**(ii) List Servers:** This is a discussion group created to share ideas and knowledge on a particular subject. The discussion groups are created and monitored by someone with an interest in that subject and are open to anyone. One can join the list simply by sending an e-mail request to the list. The programme automatically reads e-mail message and extracts your address and adds this to the circulation list. The message sent to a list is copied and then forwarded to every subscriber of the list. The first message tells you that you have successfully subscribed to the list.

**(ii) Usenet/News Groups:** Unlike the list servers, the newsgroup servers provide access to thousands of topic – based discussion group services that are open to everyone. The newsreader software allows you to post an article to any group for others to read. A comment to a message can be added to the thread of the article and one can find answer to a specific question.

**(iv) File Transfer Protocol or FTP:** This is mechanism that allows placing and retrieving of files over the Internet. It allows downloading of software, product up-gradation and other things. FTP servers also supply a small amount of text information. With the `help' command one gets online help to know more about any doubts.

**(v) Telnet:** This is used to denote the networking over the telephone. It is a simple programme created by the National Center for Super Computing Applications (NCSA) that uses transmission control protocol/internet protocol or TCP/IP to provide connection onto another computer. Using telnet you can contact a host machine by typing host name of IP member and can transfer files, from the TCP/IP host to your own computer and can access databases.

**(vi) Gopher:** The Gopher was created by the Microcomputer workstation center of University of Minnesota to find information on the Internet in a user-friendly way. It is a menu driven programme that allows you to click with information servers or 'Gopher holes' on the Internet to retrieve the information including text, sound and images.

**(vii) World Wide Web or WWW:** The web is a large system of servers and combines many of the Internet applications, which offers all kinds of information to any one on net. This is a series of interconnected documents stored on computer sites. If you use your computer and a software program called browser to visit a site on the web, the screen displays a document called a home page. Home page gives the name of the organization or individual sponsoring the web site and displays a slot of highlighted words, buttons or pictures. It is the text and graphical screen display that welcomes the user and explains the organization that has established the page. Information using client/server architecture, graphical users interfaces (GUI) and a hypertext language enable dynamic links to other documents.

## 1. Resource Sharing through Internet

Until, the emergence of World Wide Web, INTERNET surfing was not an easy task for the common man not having some skills and knowledge of commands and the ways of computers but World Wide Web or WWW has made it possible to access this information just by clicking the highlighted terms and icons on the screens. Now, it is very easy to access the information from the net. It can be used to access the information from remote locations to read, download and print the electronic books and journals besides some of the housekeeping operations like acquisition and cataloguing etc. As per Quterman (1993), Internet services fall into two basic categories; computer mediated communication (CMC) services and resource sharing services. The CMC allow users to exchange message while resource-sharing services allow users to access computing resources. The following Internet resources are useful to the academic libraries (Singh, 1999):

1.1 **Library Catalogue:** The Internet gives access to the bibliographic records of millions of books and details on the holdings of academic and research libraries around the world. One can check the new titles and even order them from a number of universities. The two directories available to locate address of libraries and for descriptions of software are:

?? Internet – Accessible Library Catalogue and Databases that is also known as St. George Director and UNT's Accessing online Bibliographic Databases.

Besides these, a number of software likes UBS, LIBTEL, HYTELNET are available on Internet, which can be used to access various library catalogues.

1.2 **Electronic Journals:** Hundreds of electronic journals are available in different fields of study, particularly in the library field on the Internet for the benefits of information users; as for example LIBRES (Library and Information Research Electronic Journals), MC (The Journal of Academic Media Librarianship), and Electronic Journal of Communication etc. All these journals also provide information on how to access the back issues and focus on a specific topic.

1.3 **References Sources:** A number of reference sources are also available on the Internet such as Martindales Reference Desk which has sites of various science-

related reference tables and databases, Physics – Astronomy – Mathematics (PAM) and Division of Special Libraries Association, which gives access to physics, astronomy and mathematics reference sources.

**1.4    Discussion Groups:** There are thousands of discussion groups available on net for various subjects, which act as forum for discussion and even as a media for exchanging information. The PRL library has subscribed to PAMNET. STS-L, LIBREFL and LISTFORUM for such purposes.

**1.5    Discussion Lists:** Hundreds of electronic discussions lists and conference proceedings are available over the Internet. They give direct access to scholars in their field of interests with an opportunity of assistance in the form of online help.

**1.6    OPACs:** The OPACs or Online Public Access Catalogues are playing an important role in information retrieval. These can be broadly divided as (i) OPACs, which are used in a particular library using either a multi-user system or a local area network and (ii) those, which can be accessed by other libraries through emergence of Internet. These are very easily and quickly accessible on the Internet from any part of the world. The availability of these catalogues on web allows any one to see the contents of various library collections at their home.

**1.7    Newsgroups:** There are many sites, which give news for various subjects and also bring out electronic newsletters as, Young scientist Network Digest, Yahoo Physics etc. In addition to these, there are thousands of Bulletin Board Services (BBBs) covering various subjects.

**1.8    Databases:** There are different types of databases, which are exceedingly useful; for example, Carl Uncover is a database that contains table of contents of over 17000 multidisciplinary journals published since 1988. The uncover database search is free for periodicals.

Besides, the above sources on Internet, it provides access to software archives, directory of electronic serials, Frequently Asked Questions (FAQ) documents, workshops etc.

Resource sharing is an old concept of library but it became more effective due to advancement of information technology. Since, the procurement of all relevant documents is not feasible and with a view of optimum use of acquired document, resource sharing among various points seems beneficial. It helps in enhancing the efficiency of library services. In a library and information center, resources amenable to share can include:
-    Books including monographs, technical reports, conference proceedings etc.
-    Periodicals publications.
-    Manuscripts or rare documents.
-    Information / documentation services like abstracting and indexing services.

- Computer based databases on CDs, DVDs, cartridge etc.

All these can be shared in any library and information center, through INTERNET; if the documents are available in digital form and in full or their part is put on Internet websites.

## 2.      Legal and other issues regarding Internet

Although, Internet is giving us various opportunities and the librarians and the users are getting much benefit from its use, yet this in not the perfect medium. The Internet is a virtual mass, which is too hard to navigate and is very difficult to control over non-productive use of Internet. And overall, many of the information sources on net are of doubtful quality. The major threats in the use of INTERNET can be summarized as under:

1.  On the web sites, documents are updated regularly so there is always a possibility of not getting the earlier information on searching the sites after sometimes. So the information cannot be considered authentic, as these cannot be crosschecked.
2.  The other problem is of Intellectual Property Rights (IPR), which is a collective term used for independent rights such as patents, copyrights, trademark, registered design, and protection of integrated circuits (IC) layout design, geographical indications and protection of undisclosed information. As per copyright law, once a material is published anywhere in member countries of the Berne Convention, it becomes copyrighted. Therefore, any information on INTERNET is copyrighted. But in many cases, it is copied, transmitted, downloaded, and retrieved through a number of sequences in a chain. There are several players whenever one is dealing with transaction of information over Internet. There are Internet Service Providers, Contents Providers, Bulletin Board Service Providers (BBBs) and the persons downloading the information in a chain, who can be held responsible for infringement of copyright. Further, it is very difficult to locate the infringer and sometimes, the place of infringement may not have proper IPR laws.

     According to Saha (2000), there are many court cases pending dealing with infringement of copyright. Playboy Enterprise claimed in 1993 that 170 center fold photographs and other photographs from its publications appeared on Bulletin Board Service run by Mr. Frena for which he did not seek the permission from enterprise. District court held Mr. Frena as an infringer. Similarly, in other case, court granted a restraining order against the uploading and downloading of computer software of Sega Entertainment permitted by BBS operator. But library and information professional feel that copyright law for paper - based environment is no longer required in e - environment.
3.  The other problem is of Domain name. The SLD (Second Level Domain) is the unique identifying element in any INTERNET address, which usually corresponds to user trading name. There is always a possibility of assigning the same words constituting the trademark of the other if the names of two organizations started with the same words. If both are in different business then it is all right otherwise, there is

the possibility of infringement arising due to confusion to the consumers that which mark is belongs to which organization. At present, it is also very difficult to find who is the real infringer whether the owner of domain name or NIS or the service provider. Although, there is no domain law as domain name is not a legal right yet it seems essential that there should be some law for domain identity to avoid confusion.

4. There are also threats to the browser itself in browsing the sites on net because the packet snuffers may capture your credit card number, when you buy something like online purchase of books or the journal. Later, the cracker or hacker can easily misuse your account.

5. In receiving e-mails, there is always a possibility of getting the system infected with viruses. Your system may get damaged wholly within fraction of a minute.

6. Sometimes, hackers, who are people skilled in the art of breaking into computer systems, may enter your sites on the web and can create havoc in your library computer, which is connected continuously to the INTERNET and erase all your billing records or databases.

7. The other threat is from the cookies, which are created or sent by any way to your computer, it will save itself into your hard disk in a special file. It acts as a bookmark that saves all the information about your web tour but it can store other types of information as well-user preferences. It can also preserve searches' usernames, passwords, and other verification data, so that they need not enter the same information each time a site is visited. But many times commercial sites require you to reveal your name with some personal or financial information and collect by accessing the original information stored in cookies; here the cookies create problems. Similarly, if anybody clicks a particular advertisement, it will be stored by cookie and may be very next day you will get lot of unnecessary mail from that advertisement site or one may visit several times any site like `problem of heart and solution' it will automatically store in cookie file which may later create problems to the users (Hatua, 2001).

8. The other problem is the authoritativeness of the information available on the net; most of the information available online has been supplied by volunteers and while we can often trust them they can also occasionally contain inaccurate and misleading information.

The other threats include social threats such as your credit card pin number sometimes may get stolen by the hackers from your computer or library server; and by using this confidential information, obtain goods and services of huge amount by the time you find out the solution. Another problem is of the digital signature. You may use PGP program with a highly secure key to sign an important document with your digital signature. This signature guarantees mathematically that the document has not been altered since it was signed. There are always the chances of getting your password stolen and your associate can sign your signature, which may create problems in future by the time its solution is found.

## 3.    Conclusion

It is very clear from the above discussion that INTERNET is a wonderful resource. Although, we cannot find out some useful, alternate and supplementary sources of information not on the INTERNET, in addition to what we might find at our library or from learned people, yet it has become a part of our life. Certainly, there are some lacunae and problems in using INTERNET, but if some steps could be taken to overcome these hurdles, it will definitely be a best resource-sharing medium in the digital environment.

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