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CHAPTER – 2
ACCESSING OF e-RESOURCES

2. Introduction:

Accessing of library collection means to find out the require documents/information of library. But there is a hell and haven difference between printed collection and electronic collection. Because more time is needed to access the print version rather than e-resources which need only fraction of a second to search the matter. In academic institution there are rare number of users are comfortable with print version but the huge no. of users prefer to access their required information through electronic media. To overcome the lacuna in e-resource collection and to develop a comprehensive e-resource collection, this will reasonably meet the core information resource access requirements of the users of the university library.

Over the past few years, there has been a visible trend towards using information technology to enhance services to end users. Issues involved here include increased speed of access and delivery, access by the end-users. The enabling technologies are documents in electronic form and electronic networks for the distribution of such documents/information.

There are so many media available to access the e-resources through different ways like Digital Collection, OPAC, Databases, collection from various Consortia and Internet Collection those are discussing bellow.

2.1 Digital Divide

Digital Divide is the gap in opportunities experience by those with limited accessibility to technology especially, the Internet. This digital divide can be
bridged by facilitating access to scholarly e-Resources to the people of developing and underdeveloped countries. Apart from the fact that most of the print journals are expensive, there is rise in the subscription price of journals and databases on an exponential rate.

Financial constraints because of static / shrinking grants available to higher education institutions have forced them to cut their subscriptions drastically. One important aspect that must be taken care of while bridging the digital divide is to ensure that all parts of the country get the access to e-Resources irrespective of their geographic location in it. This will be a significant step towards bridging the “Intra-Digital Divide”.

In India several initiatives have been taken / are being taken to provide access to online journals and databases. This access is not limited to certain states or metropolitan cities but all parts of the country is being benefited from these initiatives. Among those initiatives, two are proving to be a boon for the academia.

2.1.1 UGC-Infonet

UGC-INFONET is an innovative project launched by UGC to facilitate scholarly e-Resources to Indian academies through joint partnership of UGC, INFLIBNET and ERNET. This includes interlinking Universities and Colleges in the country electronically with a view to achieving maximum efficiency through Internet enabled teaching, learning and governance. The UGC–Infonet is overlaid on ERNET Infrastructure in a manner so as to provide assured quality of service and optimum utilization of bandwidth resources. The network will be run and managed by ERNET India. The project is funded by UGC with 100% capital investment and up to 90% of recurring costs.

UGC and ERNET India have signed the necessary MoU for this purpose. A joint technical and tariff committee, has been setup to guide and monitor the
design, implementation and operations of UGC-Infonet. Information for Library Network (INFLIBNET), an autonomous Inter-University Centre of UGC, is the nodal agency for coordination and facilitation of the linkage between ERNET and the Universities.

Indian Universities constitute one of the largest higher education systems in the world. With 294 universities / institutions, 13150 affiliated colleges, 88.21 lakh students and 4.27 lakh teachers, it is a great challenge to ensure effective coordination and communication. Fast changing curricula and frequent introducing of new subjects impose a great demand on the system in general. Indian Universities need to be given the required thrust to enter the third millennium with a leading edge.

Technology is a driving force in the contemporary education systems. University Grant Commission has launched an ambitious programme to bring about a qualitative change in the academic infrastructure, especially for higher education. Under this initiative UGC is modernizing the University Campuses with state-of-the campus wide networks and setting up its own nationwide communication network named UGC-Infonet.

**Main Features**

1. Scaleable Architecture to grow from Universities to affiliated Colleges;
2. Nation-wide Terrestrial Backbone using Fiber Optic links;
3. Integrated Satellite WAN supporting broadband and SCPC VSAT technology;
4. Comprehensive Network Management Systems for overall monitoring of the network, down to each and every device;
5. Linkage with other Academic and Research Networks all over the world;
6. Data security and virus protection using firewalls and Intrusion Detection Systems;
Dedicated Data Center for Web hosting, e-Journals and Mail Boxes; Mirror sites spread all over the country for content hosting; and Broadband Multimedia and Video Channels for Distance Learning.

**UGC-Infonet aims to serve as:**

1. Vehicle for distance learning to facilitate spread of quality education all over the country;
2. Tool to distribute education material and journals to the remotest areas;
3. Resources for researches and scholars for tapping the most up-to-date information;
4. An Intranet for University automation;
5. Encompass entire university systems for efficient utilization of network resources.
6. Channel of globalization of education and facilitation of the universities in marketing their services.

**2.2 OPAC**

The OPAC (Online Public Access Catalogue) have recently proliferated world wide, especially in North America, Australia, UK and other European countries. Over the period of a decade OPAC’s have developed into a rather crude finding list, often with only one or two access points, into a sophisticated retrieval system, perhaps providing a mix of techniques, including multiple access points. Most librarians working in these countries today are involved in the installation, introduction, training and use of OPAC. But in India, it is slowly emerging in the major R&D and special libraries. 1

Since the introduction of OPAC in the early 1980’s numerous ‘users survey’ and ‘use studies’ have been conducted, principal among these have been the federated studies conducted under the aegis of the Council on Library
Resources (CLR) using questionnaire, transaction log analysis, and focus group interviews to determine patterns of catalog use. Substantial research work is being carried on both concerning the implementation of OPAC and in assessing their impact on libraries and their users in the European countries.

Borgman’s (1986) finding says IR users are more experienced searchers. End user of OPAC’s lack familiarity with the latest technology, Boolean logic, search techniques etc. Hence the measurement parameters such as recall and precision may be used to examine the OPAC, however it should be measured under the larger umbrella of information seeking behaviour, which as to include psychological motivation of end users.

2.3 CD-ROM

Today CD-ROMs are one of the largest data memories available for a commercial PC application. They are unlike ‘hard disks’ very light, small in size, and easy to transport. Previously all the PCs were restricted to only one medium, that is text, whereas the latest ones are able to handle other media elements such as sound, graphics, pictures, colours etc. Presently, most of the CD-ROMs are available, as large size textual databases such as reference books, trade directories, catalogues, bibliographies, indexing and abstracting periodicals, full text journals, bibliographical databases etc. Moreover, the present version CD-ROMs, have integrated the text with graphics, sound and pictures; with the result they become more interactive information systems than the earlier ones. Networks allow people to share resources throughout an organization. When CD-ROM marry with networks, the resulting CD-ROM networking would be much more effective, than working on them individually. The basic task of CD-ROMs networking is to share the existing information resources with the users of that network. CD-ROM networking offers an opportunity to make vast amounts of data/information available simultaneously and provides greater speed and independence. The technology is increasingly popular with more and more people, having to make
decisions about how best to go about the task. This paper will provide some help and guidance in deciding, on how to implement the CD-ROM networking task, and addressed to the planning and management stages, and issues involved.

CD-ROM was introduced in 1985. It is the one of the derivatives of compact audio disk. According to the Optical Publishing Association report, in 1988 the CD-ROM application’s revenue was gone up to $280 millions. But in the next year it self, the revenue growth went up to approximately 237% i.e. $665 millions. The disk is normally made out of polycarbonate, in between two layers there will be a metallic film on which the actual data will be recorded in a ‘pitted language’. For the present, all the CD-ROMs are single side recorded disks and the efforts for both sides recording are still going on. Reading is done by a non-contact method which is free of wear.

It is important to note that non-contact allows the fast random access in data storage and retrieval. These CD-ROM has become one of the best, powerful tools for storing and retrieving of huge amount of information in libraries and information centers. CD-ROM is an inexpensive medium but this could distribute a large very easily in addition it supplements other medias.

**Special Features**

(a) High storage capacity,
(b) Fast and random access of information,
(c) Very low publishing cost,
(d) Easy to distribute,
(e) High data integrity,
(f) More durability,
(g) High archival life,
(h) More reliable,
(i) Effective standardization,
(j) More resistance to damage, and
(k) Easy to use.

**Disadvantages**
(a) Since it is Read only memory, one cannot write, store or alter the data after mastering.
(b) A CD-ROM workstation could run only one application at a time.
(c) The equipment and production is too expensive.
(d) Careless use of disks causes, not only damage to disks, but also incorrect reading of data,
(e) It is user-friendly but a minimum basic training or knowledge is required to use, and
(f) Lack of market stability.

**Suitable to libraries**
(a) It saves high cost building and shelf storage space.
(b) Unlike online databases, the users themselves can do their information search, which gives more satisfaction.
(c) Least if compared to hard copies.

**Applications of CD-ROMs**
CD-ROM provides instantaneous reference service to their users. All the prominent libraries in the developed countries had already started using them effectively, in providing various types of services to their users.

2.3.1 **Peer-to-peer CD-ROM Drives Networking**
In peer-to-peer networking CD-ROM drives are connected to one of the computers on the network (Figure 1). After connecting, the CD-ROM drive will be given a letter (e.g., E: or F :) through which the other computers can be used to scan all the attached drives. One this has been done, the user can access the CD-ROM drive, as if that drive is directly connected to their computer.
Advantages
The advantages of peer-to-peer Networking CD-ROM Drives are:
(a) Inexpensive and easy to install the drives,
(b) One CD-ROM drive will serve the requirements of several users.

Disadvantages
(a) Access to the CD-ROM is slower.
(b) 10 users is the maximum limit to get satisfactory results in this network.

2.3.2 Client-server-networking
The CD-ROM drive can be attached to the network in two ways: (i) to the file server, and (ii) dedicated CD-ROM server. First approach is simplest as the drive is attached to the server with a SCSI host adaptor. Second way is to create a totally dedicated CD-ROM server (Figure 2) with attached CD-ROM drive(s). For example, Online System’s OPTI-NET, Merdian Data’s CD Net, CBIS’s CD Connection and Lotus’s CD Networker (discontinued now) are some of the client-server-networking environments. All these systems work with Novell Netware, MS Lan Manager, Banayan Vines, DEC Path Works and Artisoft’s LANtastic networking software. 3

The advantages of client-server-networking CD-ROM drives are:
(a) Allows the users to connect to CD-ROM at the same time,
(b) Allows to combine CD-ROM ‘Juke box’ servers
(c) File server is dedicated to the function of sharing data.
(d) Individual system need to have the CD-ROM device drivers to access the CD-ROM.
(e) It is expensive, sometimes not justifiable, if resources are limited.

2.3.3 Operating System-based Networking
Many of the operating systems (OS) include DOS, Windows and LAN OS were not written with CD-ROM drives. However, several companies such as
Microsoft has written an extension to DOS users, a super set of commands to enable a CD-ROM unit to be arrested as another hard disk. Microsoft also introduced Windows NT (New Technology) which has the ability to read CD-ROMs directly if they are attached to the computer via a drive. After the introduction of Novell’s Netware 4.0, the Netware users were able to access CD-ROM drives. Now the new Netware has got Netware Loadable Modules (NLMs) which allows a CD-ROM drive to work successfully. Some of the other successful NLMs are CD Net and OPTI-Net.

Advantages
The advantages and disadvantages of Operating System-based CD-ROM Drives in Networking are:
(a) Very fast and better performance over the peer-to-peer method,
(b) Does not require any additional software, other than networking software,
(c) Most effective way of attaching CD-ROM to a network.

Disadvantage
Due to extra burden of on the file server, the time spent on core function, may be reduced.

2.3.4 CD-ROM Networking Systems
There are five systems for running a CD-ROM network: (i) CD Net, (ii) LAN stastic, (iii) Opti-Net, (iv) Multi-Platter, and (v) Novell Netware.

2.3.4.1 CD Net System
Meridian Data, Inc USA introduced the first CD-ROM networking systems for standard Local Area Networks (LANs) in 1987. CD Net is primarily developed for a small to medium sized LANs which will provide a lot of facilities such as
duplicate disk capabilities, making use of CD-ROMs on a network, as fast as, or even faster than, if they have their own CD-ROM disk drive. This system can be configured for Token Ring, Ethernet, Novell Netware, NetBios LANs, WANs. Each CE Net accommodates up to 28 CD-ROM drives (16 gigabytes) per system and there is no limit of CD Net units to be placed on a single network.

2.3.4.2 Lanstastic System

Artisoft’s LANTastic is cheaper, easy-to-install and use, CD-ROM LAN system. It hardly took 20 minutes for installation. It is an ideal network solution for a small library and a small CD-ROM network. It is advantageous because of ability to share Microsoft MS-DOS Extensions. The extension need not be installed on each workstation. However, only on ‘the server’ the extension will work and allows a maximum of 120 users and is available for $ 300-500.

2.3.4.3 OPTI-NET System

It was introduced by Online Computer Systems Inc’s’ OPTI-Net is another CD-ROM LAN system which provides software and hardware options. It give high performance access to CD-ROM database over any NetBIOS compatible network. There are three options (i) attaching dumb terminals to a host PC via Multi-DOS, (ii) adding CD-ROM to an existing network via OPTI-Net, and (iii) setting an independent and dedicated CD-ROM network such as CD Net. OPTI-Net can be configured for Novell’s IPX/SPX and NFS (Network File System) users. This system comes as a package which includes a four drive CD-ROM Jukebox unit, the OPTI-Net drive sharing software, adaptor card and cable. This system was rated by server reviewers of the magazines.

2.3.4.4 EZ-NET

EZ-Net offers total CD-ROM Network solutions. EZ-Net is a turnkey CD-ROM Network that can be installed and operated by the average person. It can be straight away plugged in and install the CDs. The access time to any CD file
ranges from 6-15 seconds. EZ-Net software provides fast access to CDs library, simultaneously by multiple users. Its operating system support DOS, OS/2, Windows NT, Novell Netware, SCO UNIX, PowerLAN, SunSoft Solaries, UNIX DEC Pathworks, Banyan, IBM LAN server. It is an inexpensive system. It includes EZ-Station 1 (comprising of 486DX-33 Processor, 4 MB RAM, 128K cache, 245 MB HDD, 3½” FDD, 2 Serial and parallel ports, 16 Bit 1 MB Video Windows Accelator, Ethernet 10 Base-T, 16 Bit PIO SCSI Interface, 16 Bit Sound Blaster Card, 14” rate, 29/80W Stereo speakers, MS DOS 6.2 and EZ-MENU 4.5 SW, LAN drivers for multiple networks and Video drivers). However, the same with 6 disc Jukebox with 614 KB/Sec transfer rate is $ 3,295; 18 disk jukebox is $ 4,295. A CD server is costing about $ 11,995.

2.3.4.5 Multi-Platter Systems

Silver Platter a database vendor has developed the multi-user system called ‘Multi-Platter’ which can allow maximum 20 terminals within a distance of 600 feet distance from the workstation. It was installed at Boston College (USA) in Sept 1989. It has got the facility of searching the same disk simultaneously by different users and also eliminates the waiting time in a LAN. Presently it is having a dial-in capability for remote users and a bridging module which links Multi-Platter to a campus wide or other general network.

Advantages

(a) Since it is a modular system, one can add more drive towers to increase the storage capacity according to their requirement.

(b) It provides statistics package, to help the management for monitoring which CD-ROM and workstation is used how long etc. Usage statistical reports can be made daily, weekly, monthly or any block of time, for finding out the usage of CD-ROMs and workstation also.
(c) One can save lot of budget, because one disk is shared by so many users.

(d) More user satisfaction.

2.3.4.6 Novel Netware Systems

It was introduced by Phillips Interactive Media Systems. By adding a Networking Interface Card (NIC) and a driver software to the working station, all the work-stations in the network will function as dedicated CD-ROM system. The server software not only requests but also identifies the drive to be accessed and retrieves the information and passes back. A server can support a maximum of 100 concurrent users and eight CD-ROM drives. The data/information can be stored on the server’s hard disk. By using with Ethernet, this system will accept the users within a distance of 2.5 Kms. It also allows access by telephone/modem link within a distance of few hundred kms from the server.

2.3.5 Other CD-ROM Sharing Products

(a) NLM-Based Products

Novel Netware is the commonest networking Operating System for networking CD-ROM drives. There are a number of third party vendors who have designed a lot of products for networking CD drives on Netware such as SCSI Express, Corel Driver, NLM versions of OPTI-NET and CD-Net. Now Novell brought out Netware 4.0 and 3.12 versions, with built-in support to CD-ROM networking.

(b) Server-Independent Attachment Hardware

i) Microtest Discport: Technocom has brought out a plug-in-and-play print CD-ROM print servers for Netware (3.11 and above) users. Discport is supported with Windows and DOS-based software, for installing and managing from a PC on the network. It supports both Netware 3.11/3.12 and 4.0, and does
not require any redirector or TSR to load it at the client workstation and is available for $595.

ii) **Digital Solutions CD Share**: CD-Share is a very inexpensive software tool for sharing CD-ROM drive access on any NetBIOS LAN. It works with any mainstream peer-to-peer networks, as well as LAN Manager and Netware (under NetBIOS not IPX). Up to 32 MP of EMS Cache memory is supported on each server running CD-Share, and up to CD-ROM drives are supported on a single server, with unlimited servers on a single network. It’s LAN-Wide license is $350.

iii) **Corel SCSI Network Manager**: Corel’s SCSI is an inexpensive software used for providing CD-ROM access across a network. It works under Netware 386 as an NLM program at the server, and supports all the usual SCSI controllers. Up to 28 CD-ROM drives per server are supported with an unlimited number of servers. Up to 100 concurrent users can attach to the CD-ROM drive. For DOS or NetBIOS users, Corel has provided its own CDEX extension software. It is available for $595.

iv) **Map Assist**: Microtest’s Map Assist is a software for sharing CD-ROM drives on a Netware or NetBIOS LAN. Under Novell operating systems, OS/2 LAN Manager, and DOS-based peer-to-peer networks alike, Map Assist works providing workstation-based TSRs, which allow an attached CD-ROM drive to be accessed as across the network. For Novell users, this is like using R Printer and capture to send a print job to a workstation-based printer. It supports up to 26 attached drives and 99 users available for $395.

(c) **LAN Software**

(i) **CD Net LAN Software**: Meridian Data’s CD-Net supports a variety of CD-ROM devices on LANs including Netware 3.11 (using a NLM) and on most NetBIOS LANs using a dedicated CD-ROM server. CD Net is licensed on a concurrent user basis to grow with application needs. NLM Version for Netware
3.11 is $1160 (100 concurrent users), NetBIOS version for dedicated CD-ROM server is available for $ 1161 for 100 concurrent users.

ii) **CD Connection**: CD connection is a software that allows CD-ROM users to access multiple drives simultaneously over a LAN. It runs on Ethernet, ARCNET, Token Ring and other networking systems and provides networking capabilities to CD-ROM drives.

iii) **SCSI Express 600 CDX**: SCSI Express is a software-based CD-ROM, searching solutions which enables multiple devices to be integrated on a single SCSI host adopter. It runs on a shared file server but performs better from a dedicated system. It consists of several modules including support for WORM and CD-ROM. The latest module support ISO 9660 standard CD-ROM formats. The most popular version of SCSI Express is, the one that runs as an NLM on Netware 3.11 or 3.12 file server. Up to 28 CD-ROMs are supported on a single server. This is available for $ 259 (DOS version); $599 (Netware 286 version) and $ 795 (Netware 3.11/4.9 version).

2.4 **Optical Disk Libraries**

Optical disk technology solved some of the problems of storing and retrieving of huge amounts of data on a very small optical disk, but they are meant for single user only. CD-ROM system allows the user could manipulate a vast amount of data according to his needs. Nowadays a few CD-ROM systems could be networked and shared by several users in the network, with the result the cost of information searches have gone down. The users in that network, are able to keep vast amounts of information at their fingertips which is very much cost-effective to any organization. It is one of the amazing developments in the field of CD-ROM technology, which is economical than online systems. By connecting all the optical disk systems together, the retrieving time can also be reduced
enormously, say to a fraction of a second. But here we need to connect a disk drive for each disk, and then all of them should be connected in a network, which is again an expensive process where lot of hardware and software is required. Moreover all the disks may not be used by the users all the time in that network. Eventually Jukebox concept of optical disk library came into the market and solved most of these problems. In this, lot of disks, say few hundreds, will be stacked in the disk library and for retrieving of information, a few disk drives will also be there. The number of disks and disk drives depend upon the requirement of the user, loading and unloading of disks will be done by a picker (robot) automatically within a few seconds.

**Basic structure of Optical Disk Library**

Normally all the optical disk libraries will have four basic units:

(a) **Storage matrix**: in which all the optical disks will be stacked in rows either horizontally or vertically, the number of stacks and the disks in a stack, will depend upon the size of the library which is a variable,

(b) **Disk drives domain**: in which all the disk drives will be fitted at one place,

(c) **Robotic Picker**: which will be used to pick up the disk according to the computer instructions, through the controller, from the stack and puts into the drive; after searching is over, automatically it will put the disk back in the stack from where it was picked. By and large it resembles a human hand, in which a clipper will be used for holding the disk, and will be moving on the rails, and

(d) **The Controller**: the main unit which will accept the commands from the computer and user, and gets the searching done in the library. It is the central controlling unit which will be controlling rest of the three units in the library.
2.5 Indian Networks

India’s first data communications and computer network (INDONET) was commissioned in 1986 by CMC Ltd. In the first phase, mainly they have networked Bombay, Calcutta and Madras; after some time New Delhi and Hyderabad was also linked as additional stations. INDONET is presently having an International Gateway which is providing access to worldwide packet switched networks like USA’s Global Network Systems (GNS), TELNET and INTERNET Singapore’s TELEPAC and Germany’s DATEX-P (ROY, A. 1989). With the present network one can access the information from the world major databases such as NTIS, INSPEC, ERIC, COMPENDEX, MEDLINE and CLAMS. It is costly affair. CD-ROM Lan System has solved this problem. Once the system is installed and connected to a network, such as INDONET or ERNET, any user of this network will access the information easily and saves lot of their budget. Several organizations have joined networks such as BTISNET, CALIBNET, SIRNET, DESINET, ERNET, INFLIBNET, VIDYANNET, etc., it is better to develop the CD-ROM collections in their own fields first, afterwards install a CD-ROM LAN system, so that all the users of these networks will access other’s database. This encourages sharing others resources, and saves lot of budget of many participating libraries. Perhaps this is the right time for INDIA to think seriously about this problem and go foreword to choose the appropriate and latest technology, which suits its requirements, CD-ROM networks not only save money, but also have influence on education, research and industrial output which is required in India right now.

2.6 On-Line Shopping

In Financial Times of June 23, 1994, there was a feature by Louise Kehoe entitled “On-Line for speedy Sale-Sales of goods through on-line services in the US”. In developed countries this feature will be of routine news item, but in developing countries like India, it is a topic of great interest. According to this
feature, the largest US Publishers and retailers are rushing to offer their products on-line, as the demand for online shopping is increasing. On-line shopping in USA is becoming popular not because of its fantasy but because of its various advantages over routine shopping. Economically on-line shopping is cheaper than off-line retail sale, and also it is more convenient to the customer, as one need not to go to market for shopping. Just switch on your computer and place an order for the required items. By the way, on-line shopping has its own problems, such as bargain, you cannot see products physically etc. On the basis of study of trends in information technological developments, such as Multimedia Technology, we may see a bright future for on-line shopping.

“Remote Working One Step Nearer” is the title of an article by Richard Shephard, published in December 1993 issue of “Telematics India”. According to Mr. Richard Shephard, Teleworking is a system, by which a person can work at home, away from a fixed office environment, and avoid the cost, inconvenience and loss of time involved in commuting to work. British Telecom is doing a 12 months experiment in telecommunity, to find out feasibility to teleworking or telecommuting.

Subscription of Journals

With globalization of education and competitive research, demand for journals has increased over the years. Due to insufficient funds, libraries have been forced to cut subscriptions of journals. UGC has turned towards the Internet to cover the gap between demand and supply by way of e-journals that can be subscribed online. Most of the journals are available in electronic form. UGC has entered into alliances with publishers for adapting a consortia-based approach for subscription of journals. These journals are available over UGC-INFONET to all the universities, thereby, making quality information accessible to a wider academic scholar base spread across the country at an affordable price.
Implementation and operation of UGC-INFONET will be coordinated by INFLIBNET, an autonomous Inter-University Center of the University Grants Commission of India. INFLIBNET is providing a variety of services to the academic community of the country and is helping libraries in their automation efforts. About 142 University libraries are on the way to computerization.

ERNET India, scientific society under the Ministry of communications and Information Technology, in partnership with the University Grants Commission has setup infrastructure for UGC-INFONET. Under this programme it is proposed to use Information and Communication Technology (ICT) and Internet to transform learning environment from a mono-dimensional one to a multidimensional one.

(1) **JSTOR**

JSTOR is a not-for-profit organization with a dual mission to create and maintain a trusted archive of important scholarly journals, and to provide access to these journals as widely as possible. JSTOR offers researchers the ability to retrieve high-resolution, scanned images of journal issues and pages as they were originally designed, printed, and illustrated. Content in JSTOR spans many disciplines. [http://www.jstor.org/](http://www.jstor.org/)

(2) **Nature**

Nature Publishing Group (NPG) aims to provide the world’s premier information resource for the basic biological and physical sciences. The Nature journals includes Nature Biotechnology, Nature Cell Biology, Nature Genetics, Nature Immunology, Nature Materials, Nature Medicine, Nature Neuroscience and Nature Structural and Molecular Biology are published monthly. NPG aims to communicate the latest ground-breaking and original scientific discoveries across all disciplines of science. [URL:http://npg.nature.com].
(3) **Project Muse Journals**

Currently, Project MUSE® offers nearly 250 quality journal titles from 40 scholarly publishers. As one of the academic community’s primary electronic journals resources, Project MUSE covers the fields of literature and criticism, history, the visual and performing arts, cultural studies, education, political science, gender studies, economics, and many others. Project MUSE is setting the standard for scholarly electronic journals in the humanities and social sciences. At the time, Project MUSE subscriptions are available only to institutions. URL:http://muse.jhu.edu/journals/

(4) **Royal Society of Chemistry**

The Royal Society of Chemistry (RSC) is the Professional Body for chemists and the Learned Society for chemistry. It is one of the most prominent and influential independent scientific organizations in Britain. Through its 46,000 members, including academics, teachers and industrialists, the RSC promotes the interests of chemists and the benefits of chemical science. URL:http://www.rsc.org/is/journals/j1.htm.

(5) **Science Online**

The Collection feature groups all research papers and news stories published in Science from 1995 to the present by broad subject categories. Select a subject category from those listed below to view a citation list of all content published in Science in the selected area. Let us know by email if you find this new feature useful. http://www.sciencemag.org.

(6) **SciFinder Scholar**

SciFinder Scholar is a Z39.50 Windows-based interface that provides easy access to the rich and diverse scientific information contained in the CAS databases including Chemical Abstracts from 1907 onwards. The SciFinder
Scholar offers a variety of pathways to explore CAS databases as well as MEDILINE. SciFinder Scholar interface provides the most accurate and comprehensive chemical and related scientific information including: journal articles and patents together in one source, substance data, chemical reactions, chemical regulatory data, chemical suppliers, biomedical literature. SciFinder Scholar covers Chemistry and also Agriculture, Biology and Life Sciences, Engineering, Food, Geology, Medicine, Physics, Polymer and Material Sciences.

(7) Indian National Digital Library in the branch of Engineering and Technology (INDEST-Consortium)

The Ministry of Human Resource Development (MHRD) set up the “Indian National Digital Library in Engineering Science and Technology (INDEST) Consortium”. The Ministry provides funds required for providing differential access to electronic resources subscribed for the consortium to the core members through the consortia headquarters set-up at the IIT Delhi. The total number of members in the consortia has now grown to 125 including few university libraries. The INDEST Consortia subscribes to over 5000 electronic journals from a number of publishers and aggregators.

Self-supported Universities, Engineering Colleges and Institutions

The consortium, being an open-ended proposition, invites AICTE-accredited and UGC-affiliated institutions to join hands with the leading engineering and technological institutions in India and share the benefits it offers in term of lower subscription rates and better terms of agreement with the publishers. 17 engineering colleges and institutions and few university libraries have already joined the consortium under this proposition.

2.7 Electronic Resources Subscribed by the Consortium

Electronic resources subscribed by the INDEST consortium can broadly be divided into the following two categories:
2.7.1 Full-text e-Resources

2.7.1.1 ABI/Inform Complete

The ABI/Inform is one of the world’s first electronic databases. It has been a premier source of business information for more than 30 years. The database contains content from thousands of journals that help researchers track business strategies, and industry specific topics worldwide. It consists of 1800 full-text journals and 2000 journals that are indexed and abstracted. The resource is offered on Web with CD-ROM backup.

2.7.1.2 ACM Digital Library

The ACM Digital Library incorporates digital versions of works published by ACM since its inception. The major components of the resource is an enhanced version of the ACM Digital Library plus an extended bibliographic database, consisting of more than a quarter-million citations of core works in computing. The ACM Digital Library hosts over 103,000 full-text articles from ACM journals, magazines, and conference proceedings and half million bibliographic information and 70,000 further links to full text resources.

2.7.1.3 ASCE Journals

The American Society of Civil Engineers (ASCE) is recognized globally for their significant contribution and dedication to the advancement of science and education in the civil engineering profession. The ASCE publishes 29 journals, periodicals and transactions that cover a comprehensive range of the civil engineering profession. ASCE journals are highly cited and are most relevant to the civil engineers for exchanging technical and professional knowledge. Information published in the journals of ASCE forms archival records not only of the technical advances of the ASCE but of the civil engineering profession as a whole.
2.7.1.4 ASME Journals (+ A M R)

The American Society of Mechanical Engineers is a non-profit educational and technical organization serving a worldwide community of mechanical engineers. The ASME conducts one of the world’s largest technical publishing operations.

The society holds more than 30 technical conferences and 200 professional development courses each year. The ASME promote and enhance the technical competency and professional well-being through quality programs and activities in mechanical engineering, better enable its practitioners to contribute to the well-being of humankind through its publications that include 19 journals.

2.7.1.5 Capitalize

Capitalize 2000 is a corporate database covering more than 10,000 listed and unlisted Indian companies. Capitalize is the foremost Indian corporate database, being used by all leading financial institutions, security firms, commercial banks and educational institutions. Being marketed for the last 18 years, Capitalize has the USP of covering the largest number of data points for every company – as many as 1400.

2.7.1.6 CRIS INFAC Ind. Information

CRISIL Business Information products and services comprises of accurate and reliable news, information, analysis and forecasts on the Indian economy, industries, companies and financial markets. CRIS INFAC Industry Information Service presents a detailed and comprehensive analysis of the current trends and the long-term performance outlook on 41 industries in India. It includes the evolution of an industry, the regulatory environment, cost structures, nature and extent of competition, global trends along with statistical information on capacities, production, imports-exports, domestic and international prices, and
consumption patterns. This information is updated on a regular basis and the 3-5 years long term outlook is updated on an annual basis.

2.7.1.7 EBSCO Databases

Business Source Premier, designed specifically for business schools and libraries, is the world’s most comprehensive index of business journals, magazines and other sources. This file contains indexing and abstracts for more than 3,800 business-related periodicals with coverage back as far as the first half of the 20th century for many leading scholarly journals. It also includes the research community’s foremost business thesaurus as well as searchable citations for more than 1,100 academic journals.

In addition, this database provides full text for more than 3,000 periodicals, including nearly 1,000 full text peer-reviewed journals, the most found in any business database. Business Source Premier is the most comprehensive archive available for business journals, offering hundreds of thousands of peer reviewed business articles in PDF prior to 1985. Post-1985 coverage is also unparalleled with current full text from leading journals in every area of business, including marketing, management, MIS, POM, accounting, finance, econometrics, economics, international business, and more.

2.7.1.8 Elsevier’s Science Direct

ScienceDirect is the web-based interface to the full-text database of Elsevier Science journals and Academic Press (Ideal), one of the world’s largest providers of scientific, technical and medical (STM) literature. The ScienceDirect offers a rich electronic environment for research journals, bibliographic databases and reference works. The database offers more than 1500 scientific, technical and medical peer-reviewed journals, over 59 millions abstracts, over two million full text scientific journal articles, an expanding suite of bibliographic databases and
linking to another one million full-text articles via CrossRef to other publishers’ platforms.

2.7.1.9 Emerald Full-text

Emerald publishes the world’s widest arrange of management and library and information services journals, as well as a strong specialist range of engineering, applied science and technology journals. Our electronic databases allow instant access to the latest research and global thinking. We provide the information, ideas and the opportunity to gain insight into your key management topics. Emerald established in 1967 by a group of senior academics formed MCB University Press, a publishing house that focused on niche management disciplines including strategy, change management, and international marketing.

2.7.1.10 Euromonitor (GMID)

The Global Market Information Database (GMID) provides key business intelligence on countries, companies, markets and consumers. It is an integrated on-line information system covering over 350 markets and 207 countries. GMID integrates research across the following categories of information Statistics:

Consolidates information on consumer lifestyles, retailing, countries, consumer market sizes and forecasts. Analysis: Euromonitor’s in-depth market analysis reports, Major Market Profiles and journal articles covering consumer, industrial and service sectors. Also accessible are reports focusing on consumer lifestyles and the retailing industry. Companies: Profiles for leading FMCG companies along with financial, market share and brand information. Sources: All information sources stored on Euromonitor’s internal databases.

2.7.1.11 IEEE / IEE Electronic Library Online (IEL)

The IEEE/IEE Electronic Library (IEL) covers almost one third of the world’s current electrical engineering and computer science literature, providing
unparalleled access to publications from the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Electrical Engineers (IEE). The resource covers more than 950,000 documents from over 12,000 publications, including 120 journals, transactions, magazines, conference proceedings, IEEE Standards. More than 25,000 new pages are added per month. It provides access to more than two million full-page PDF images, including all original charts, graphs, diagrams, photographs, and illustrative material.

2.7.2 Indian Standards

The entire collection of 18,000 odd Indian Standards is included in this Database. The database is updated once in two months / six months, as per subscription order. The search engine allows you to identify, view and print Indian Standards by Standards Number, Standards Title, Text in the Scope of the Standards, and search-in-search (Nested search). You can also search for New and Revised standards. Segments of Indian Standards are Civil Engineering, Chemical Engineering, Electrotechnical, Food and Agriculture, Electronics and Telecommunication, Basic and Production Engineering, Medical Equipment and Hospital Planning, Management and System, Mechanical Engineering, Petroleum, Coal and Related Products, Metallurgical Engineering, Water resources, Transport Engineering and Textile.

2.7.3 Other Electronic Sources

2.7.3.1 Insight

The J-Gate is an Internet gateway and portal set up nearly two-years ago by Informatics (India) Ltd. It offers affordable access to global electronic journal literature. It provides seamless access to journal articles through database interface of 10,000 + e-journals. Currently J-Gate offers the following types of products/services:
- Directory of e-Journals’ that includes more than 10,000 journals listed with link to journal / publishers site.
- Table of Contents (TOC) for an equal number of journals.
- A comprehensive searchable database consisting of more than 10 Lakhs + articles added every year across all disciplines.
- More than 10,000 journals including 1200 + free journals and 22 Lakh articles across all subjects areas.
- Send e-mail to Authors requesting reprints of articles for journals not subscribed by your library.
- Locate a local library that has the journal
- Search Database – By Author, Title, Abstract, Keywords, Author Address, Broad Subject Categories.

2.7.3.2 Nature

Nature is a flagship magazine of Nature Publishing Group (NPG). Launched in 1865, it is the World’s most popular weekly scientific journal. Genetics was the first Nature research journal. Now, in 2004, NPG publishes nine Nature Research Journals.

2.7.3.3 ProQuest Science (formerly ASTP)

The Applied Science and Technology Plus (ASTP) is a CD-ROM database (with access to the Web). The database provides indices and full abstracts to more than 556 key science and engineering titles, plus full-image of 160 titles. All titles are indexed from 1994 onward; the database is updated monthly. The resource is offered on Web with CD-ROM backup. While IITs and IISc have online access to ASTP, the NITs, SLIET, ISM and NERIST get Web-based access as well as backup on CD-ROM.
2.7.3.4 **Springer Verlag’s Link**

The Springer’s Link is the online e-books and e-journals service from Springer Verlag, one of the world’s leading scientific publishers. Key subject areas include: Mathematics, Computer Science, Physics, Astronomy, Geosciences, Chemistry, Engineering and Medicine. The resource includes over 400 current journals of the highest quality, as well as more than 20 block series. Currently over 3,40,000 full text articles are available on Springer Link.

2.8 **Bibliographic Databases**

2.8.1 **Compendex on EI Village**

The Compendex is the most comprehensive bibliographic database of engineering research available today, containing almost seven million references and abstracts taken from over 5,000 engineering journals, conferences and technical reports. The broad subject areas of engineering and applied science are comprehensively represented. Coverage includes nuclear technology, bioengineering, transportation, chemical and process engineering, light and optical technology, agricultural engineering and food technology, computers and data processing, applied physics, electronics and communications, control, civil, mechanical, materials, petroleum, aerospace and automotive engineering as well as narrower subtopics within all these and other major engineering fields.

Approximately 250,000 new records are added to the database annually from over 175 disciplines and major specialists within engineering. Compendex is updated weekly to ensure access to critical developments in your field.

2.8.2 **INSPEC on EI Village**

The INSPEC, from the Institute of Electrical Engineers (IEE), is the world’s leading database in the fields of physics, electronics and electrical engineering, computers and control, and information technology. It contains
citations with abstracts of the worldwide literature in physics, electronics and electrical engineering, and computer fields. Primary coverage is of journal articles and papers presented at conferences, although significant books, technical reports, and dissertations are also included in the database’s 7.3 million records.

Sources include more than 4,200 journals and more than 2,000 conference proceedings, books, and reports corresponding to the following publications: Physics Abstracts, Electrical and Electronics Abstracts, and Computer and Control Abstracts, as well as to the Online INSPEC database. The INSPEC would be accessible from the EI Village. The EI Village, besides providing access to Compendex Plus and INSPEC, also provides access to US patents, abstracts and links to Web sites, online reference services, standards, etc.

2.8.3 J-Gate Custom Content for Consortia (JCCC)

The J-Gate Custom Content for Consortium (JCCC) is a virtual library of journal literature created as customized e-journals access gateway and database solution for the INDEST consortium. It acts as one-point access to 4,000 + subscribed currently by all the IITs and IISc and available online. J-Gate Engineering and Technology is an Internet gateway setup by Informatics (India) Ltd. For integrating e-content and e-commerce for journal literature in engineering and technology. It envisages providing seamless access to journal articles at publisher’s site, local sites of the libraries, or at J-Gate archive, through table of content (TOC) and abstract database as the search and link interface. It will also support online subscription to journals, and other related services.

2.8.4 MathSciNet

MathSciNet is a comprehensive database covering the world’s mathematical literature since 1940. The MathSciNet has signed reviews, powerful search functionality, and timely updates. It fosters the navigation of mathematics literature by providing links to original articles and other original documents,
when available, and by encouraging links from journal article references to MathSciNet. The MathSciNet offers World-wide access to mathematical literature through multiple mirror sites. The MathSciNet offers free access to Featured Reviews, those reviews from the Mathematical Reviews database that were especially commissioned for some of the books and papers that are considered particularly important in the areas that they cover.

2.8.5 Web of Science

The ISI Web of Science provides access to information for all levels of academic, corporate, and government research. It offers a comprehensive, fully integrated platform that empowers researchers and accelerates discovery. It offers citations and cited reference searching. The ISI Web of Knowledge provides a single interface, enabling natural-language searches across multiple content sources: journal articles; proceedings papers; patents; chemical reactions and compounds; and content from preprint, funding information, and research activity Web sites.

2.9 U.P. State Universities

In U.P. State Universities, there is more traditional collection development. Some of the universities have made efforts for e-Resources. CD-ROM has been a part of collection development for storing information. MGKV and SSV have a large tradition collection but not used e-Resources. DBRAU and CSJMU have microfilms but that was discontinued due to lack of funds.

Table-13: Collection Development (Traditional)

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<td>42</td>
<td>31</td>
<td>10</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
U.P. State university libraries have limited staff and most of them are non-professional and non-technical. The staff is also not well educated. The present staff can be shown as above diagram.

Table-17: U.P. University Libraries: Staff at a Glance

<table>
<thead>
<tr>
<th>Staff Type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled / Professional Staff</td>
<td>36</td>
<td>16.40%</td>
</tr>
<tr>
<td>Semi-Skilled Staff</td>
<td>82</td>
<td>22.68%</td>
</tr>
<tr>
<td>Non-Skilled Staff</td>
<td>28</td>
<td>09.66%</td>
</tr>
<tr>
<td>Menial Staff</td>
<td>155</td>
<td>51.26%</td>
</tr>
<tr>
<td>Total</td>
<td>301</td>
<td>100%</td>
</tr>
</tbody>
</table>
The above diagram shown that in U.P. state university libraries have less no. only 12% skilled/professional staff, 27% semi-unskilled staff, 9% un skilled staff and 52% menial staff.

Table-18: Mode of Accessing: e-Resources

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>University</th>
<th>Internet via Website</th>
<th>CD-ROM Network</th>
<th>On-line Service Vendors</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BU</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>CCSU</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>CSJMU</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>DBRAU</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>DDUGU</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>DEI</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>LU</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>MGKV</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>MJPRU</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>RMLAU</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>SSV</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>VBSPU</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
</tbody>
</table>
Table-19: Mode of Accessing % Wise: e-Resources

<table>
<thead>
<tr>
<th>Mode of Accessing</th>
<th>% Wise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet via Website</td>
<td>67%</td>
</tr>
<tr>
<td>CD-ROM Network</td>
<td>16%</td>
</tr>
<tr>
<td>On-line Service Vendors</td>
<td>25%</td>
</tr>
<tr>
<td>Other Mode</td>
<td>0%</td>
</tr>
</tbody>
</table>

The above table shown that in U.P. state university libraries there are 8 (67%) university libraries using website for accessing e-Resources while 2 (16%) for CD-ROM network and 3 (25%) for online vendors services.

Conclusion:

The amazing growth of e-resources the role played by libraries to acquire these resources users foie access the same. Users are becoming techno savvy and libraries are facing the new challenges dew to the introduction of Information and Communication Technologies. So it must necessary to change the mode of developing the electronic collection along with old traditional print collection. For this purpose the budget plays a vital role. Trained staff is necessary to manage them and accept this new challenge. A new trend now appears which claims the library should be committed to provide access only. The meaning of access now revels not access to one’s collection but access to the entire world of materials i.e. entire data/ information/ knowledge world. In U.P. state university libraries, the situation is not so good. Because most of the libraries have VSAT connectivity under the project of UGC-Infonet programmed to access e-resources but till today they are waiting to access the e-resources. Some of the universes are subscribing e-resources from online service vendors. Some of the universities are developing their e-resources and providing this new service to their users through CD-ROM, Databases. Staff is one of the main factors to develop and access to their users community. But the libraries have limited staff to look after this section as well as they are non technical. Apart from those problems libraries are also facing which
is mainly attributed to the scarcity of funds. Hence, the library must decide the type of policies it should adopt to development of e-resource collection.

References


