Chapter 1
Introduction

1.1 Preamble

Library is a heart of any academic libraries because of its role is very important in teaching, learning, education and distance education so without libraries their no academic institution. Libraries are as repository of knowledge and essential parts of education, society and research. Libraries is a social organization effectively planned and organized for information transmitting of society to industrial members of society through books, charts, e-resources, graphic materials, map, charts and patents. The role of library is to collect materials required by the various sections of society and education and disseminate information to them through various methods as like books, internet, e-resources, print materials, patents and reports.

The meaning of library has changed in modern times. Before the digital era library is used for not only collection of books but also documents and non-books materials as like floppies, e-books, e-journals, e-databases, pictures, CD and magnetic tape. Public, academic and national libraries objectives and function are same to collect the information, organization and dissemination of information to provide its users effectively. The application of information communication and technology has changed library and its functions in last two decade throughout the world and India. Technology has provided very vital role in collecting of knowledge, knowledge organization, storing, processing, packaging and transmission of information to their users. Librarians should be update with knowledge and skill in information technology as like information sources, tools, access models, technology, management and research and through this skill librarian can provide better services to the users. The use information technology in various library function as like store information in electronic formats where we can access and retrieve information through the World Wide Web, Local Area Network and national level network via internet. Library has faced many challenges during the last thirty years as like information expositions, advanced technology, telecommunications, and electronics pressure. The effects of advanced information Technology University and college libraries changed their infrastructural and another facility for provide better services to their users. The information resources of University and college libraries generally consists printed and non-printed documents, graphic information, archival,
abstracts, state of the reports, patents, numerical data, cassettes, microfilms, magnetic tape, tables of information and internet based information.

The explosion of information technology has affected all aspects of human life as like education, communication, economical aspects, medical and also library. Huge amount of information is being generated in every movement with the help of application of technologies in various media. In the present day is characterized by reducing distance, time zone, digitized storing information, information processing and other work change due to the internet. Web access has become very essential in the modern digital world because of lot of pages are available on the internet so majority science teachers using internet for accessing information. Advances in computer technology have brought most of the people as close as mouse click to the wealth of information. It is no longer necessary to go go printed materials to information. In the digital era computer based facilities provided by library to their users as like CD, DVD, Video, Cassette and transfer information via electronic mail to the users.

1.2 Role of ICT in libraries-

Libraries are mainly created with multi task work like acquiring, organizing, persevering of information, retrieving information and dissemination of information to their users form ancient period to modern digital era. The way achieving purpose of library is changed drastically. In the modern era information technology has effect on nature of business and management of libraries like accruing, storage, processing, and organization of knowledge, function of services, methods of technique, and dissemination of information to their users. With the advancements of technology direct application in libraries, business and completed function of libraries. The emergence of information communication and technology and its applications in library and information science have forced. The library professionals are worked in changing period in digital era. The use of electronic resources is continuously increased by users for their teaching, learning and research process so majority users of library attract to use of e-resources for their study, homework and research purpose. In the ICT are users can access the information on desktop, mobile, computer and self laptop for getting information and transformation information to colleagues. ICT have tremendously changed the management of resources, storing information, preservation of information and
delivery of information to their users. Information technology application tools and integrated library management system are huge used in housekeeping operation of library like acquisition of information, cataloguing, circulation and serial control etc. Internet has been used as sources of information and tools of delivery of information to their users for getting required information.

1.3 ICT and Library and information science-

The terms of information and communication technology has very huge use in library and information science education for provide better services to their users. ICT is a very essential tool for LIS professionals for acquiring information, storage, circulation, transmission of information and getting update information in their subjects. According to Rashid, ICT is used “not only to code and process of date, but also to manage information processes to achieve more efficient effecting results by optimizing the management resources, the flow of information and know how”

Information and communication technology compose of a diverse set of technological tool to identify of data, collection of data, organization of information, retrieval of information and dissemination of data to another person or place. The concept of information communication technology comprises of wide range of technology as like telephone, cable, satellite communication, Television radio and computer technology. In the modern era these technology is very useful for daily life. In the digital libraries various information communication technologies used such as computer mediating, conferencing, video conferencing, digital technologies, computer, information networks and World Wide Web technology.

1.4 Internet-

Internet is largest tools for acquiring update information and provides e-resources to their users so majority users attract to the internet for accessing update information. Internet is a world’s largest networks of computers that is global networks of computers networks and through the internet we can access information anywhere by remote accessing. This network makes it possible for millions of people to communicate information, to share information each other same interested persons and work on same materials in multi-media formats. Internet is very useful sources of information and mean of communication which we can get and send the information faster form anywhere in the world. The use of internet has been global and continuous in the society, researchers and students for getting update
information. The internet is a World Wide collection of computer networks, cooperating with each other to exchange information using a common software standard. Internet users can share the data or any information in various forms as like audio, video text, graphic with the help of satellite linked. The size, scope and design of the internet allow users to connect easily through personal computers and phone numbers, exchange electronic mail with friends and colleagues with accounts on the internet, access information with multimedia that include voice, video, text, photographic images and access diverse perspectives from around the world.

Internet is the shared global computing network. It is a network based on standards including Internet Protocol, Simple Mail Transfer protocol and the Domain Name System which enable global communication between connected computing devices.

1.4.1 History of internet-

Internet began in 1969, during the cold world war when the American department of Defense created the ARPANET (Advanced Research Projects Agency Networks). A few years ago mostly students and researchers knew of it and it has attained popularity among the general public in a very short span of time. ARPANET was a great success, every University in United State America wanted to become a part of ARPANET in 1969. The beginning of the internet considered only four high speed networked computers located in three reputed Universities and research institute in America. In 1970 there were emerged 23 nods of ARPANET. In the 1980 TCP and IP established for ARPANET. The protocol introduced in 1st January 1983. It is used for transferring of data back and forth and the name INTERNET was first used. In the 1990 HTML (Hypertext Markup Language) was introduced for creating web pages. With the help of this language programmer create current web pages for linking data. The use of HTML language to make pages more graphical than normal documents so majority users give the preference to the web pages because they are very attracted. After some days WWW (World Wide Web) was created and this was a huge network of web pages. On the WWW millions of web pages are available on the internet. In the July 1998 3600,000 computers connected throughout the world connected to internet so internet is a network of networks.

In brief internet began as ARPANET, U.S. Department of defense project to create a nation wide computer network that would continuous to function even if a large portion of it were destroyed in a nuclear war are natural disaster.
1957- USSR launches sputnik into space. In response the USA creates the Advanced Research Project Agency with the mission of becoming the leading force in science and new technologies.  

1962- J.C.R. Licklider of MIT purposes the concept of a ‘Galactic Network’ for the first time ideas introduced a global network of computer and J.C.R. Licklider is a later chosen to head ARPA search efforts. 

1968- ARPA Contacts out work to BBN. BBN is called upon to built the first switch. 

1968- First switched network introduced by BBN for linking four different node in California and Utah. One at the University of Utah, University of California at Santa Barbara, One at Stanford and One at the University of California at Los Angeles. 

1973- In the internet TCO/IP introduced by Vinton Cafe working from Stanford and Bob Kahn from DARPA for allow computers on different networks to communicate each other.  

1976- Elizabeth II, is the Queen of United Kingdom, send out email from the Royal Signals and Radar Establishment in Malvern on 26 March.  

1983-TCP and IP released by Internet Activity Board become the standard for internet protocol and domain name system developed for automatically be assigned an IP number. 

1990- Forms to search new ways to make internet speed even faster by the Advance Network and Services Agency. The group develops the T3 line and installs in on a number of networks. 

1990- In the internet era the first search engine developed by Mcgill University, called the Archie Search Engine and CERN releases the World Widw Web publicy on August 1991. 

1993- NCSA developed first web browser, Mosaic and later become the Netscape browser which was the most popular browser in the mid 1990. 

1996- The WWW browser wars are waged mainly between Microsoft and Netscape. New version is released quarterly with the aid of internet users eager to test new version. 

1999- A wireless technology called 802.11b, more commonly referred to as Wi-Fi, is a standardize. 

2008-The first deep space communication network modeled on the internet successfully tests by NASA. In this process using software called Disruption-
Tolerant Networking, dozens of space images are transmitted to and from a NASA Science spacecraft located about more than 32 millions kilometers from earth.

**Domain Name System** - User name of the person holding the account. The use of Domain to the name of computer that holds the users account. Top Domain refers to the top domain name system, indicating the nature of the computer system containing the account. The following are the top domain name system in the United States:

Com- Its domain name refers to Business and commercial interests  
Edu- Universities and other educational institutions  
Gov- This domain is used for state and federal government  
Mil- Military system  
Net-Special internet systems  
Org- not profit and other organizations

**1.4.2 Meaning of Computer Networking** -
A computer network is an interconnection of various computer systems located at various spot. In the computer network two or more computers are connected together with the medium of data communication devices for communicating data and sharing resources. The computer that provides resources to other computers via network is known as server. In the network the individual computers, which access shared network resources, are known as workstation or nodes. Have you ever found yourself rushing from one computer another in your office or home, attending to several different jobs at various locations do you often find yourself moving files that need printing, from a computer that you are working on, to another computer connected to the printer. All of these situations can be made easier by allowing the various machines to communicate with each other, by networking the PC. Networking is the concept where two or more that two computers connected each other for the sharing information. These computers can be in one office or in a small building of the office or in same city or even across the city. The distance between the computers is narrowed down by the telephone line or various wirelesses inter communicating devices. In the networking process can not only share program but also share various devices as like printer, scanner, information, file etc.
In the above picture 5 computers connected to each other with the help of internet so internet is a very back bone tools in information communication tools and any person can access any computer file, printer, scanner etc.

1.4.3 Classified computer network on the basic on geographical area-

Local Area Network- Networks used to interconnect in a single room or within a building or institution on one site are called Local Area Network (LAN). Through the LAN transmits of data with the speed of several megabits per second. IN the Local Area Network coaxial cables is used for transmission of data and other information.

In generally through LAN links computer within a limited geographical area because they must be connected by a cable, which is quit expensive. People working in LAN get more capabilities in data processing, work processing and other information exchange compared to stand alone computers.

In Local Area Network process every computer has the potential to communicate with any other computers of network. Very high degree of interconnected between computers and user can connect the computer very easy in the connection of computer network. Users can share data to another computer via Local Area Network as like video, text and multimedia files.

Use of Local Area Network for various forms like file transfer and access information, users done word processing and text processing, electronic messaging
handling, remote database access via LAN and digital vice transmission and storage information.

**1.4.4 Internet and World Wide Web**

Wide Area Network term is used to describe a computer network spanning a regional, national or global area. For example for a large company the head quarter might be at Mumbai and regional centers at Delhi, Chennai, Kolcatta, Bhuvaneshwar and Pune. Here with the help of WAN all regional centers connected with each other for transmission of data and other purpose.

In the information communication technology many people use the term internet and World Wide Web interchangeably but in fact the two terms are not same. These concepts are related to each other. The internet is a massive networks of networks and its connects million of computer together in globally. In the computer network any computer can communicate to each other computer as long they are both connected with internet. Information can transfer to each other via internet with the help of Protocol.

The World Wide Web is a way of accessing information over the internet through internet. It is an information sharing model that is built on top of the internet. The web pages create using hyper text transfer protocol language only. HTTP is a one of the languages used over the internet to transfer the data. The web utilizes various browsers as like, Internet Explorer, Fire fox. Various web pages are linked to each other with the help of hyperlinks. In the web documents include graphical information, sound, text and audio video information. So web is the small part of internet.

For the large company spanning over different parts of the country the employ can save the long distance phone calls and its overcomes the time lag in overseas communications. The use of WAN for conducting video conferencing calls and employee can share ideas with each other. Through the WAN remote data entry is possible it means sitting at any location users can enter data, update data and query and other information of any computer attached to the WAN. Create centralized data storage in the modern computerized environment.
1.4.5 Advantages of Web

In the process of integration of information from various servers, the web addresses several issues and offers the following advantages stated as follows:

Non Linear Information (Hypertext Information System). WWW allows the users access any information in a non sequential manner or through any path of his own choice. The text, music, sound any other information can be linked together in a non sequential way and allow the user to browse through related topics.

Multimedia. Web has the capability to display multimedia information such as images, graphics, text, sounds, music, animation, video and many other multimedia data types.

Hyperlinks. It is also called as a web navigation element that allows the user to move or navigate between the pages. It is possible to download audio, video and other types of multimedia files. There are three types of hyperlinks: text, image and image maps (containing multiple hyperlinks).

Global Reach. The information over the internet is widely dispersed all over the web that can be easily accessed by anyone at anytime because web has a global reach. By using hyperlinks one can move from one site to another site that may be located in different parts of the world.

Cross Platform. One needs to have a browser (Internet Explorer or any other) to access an internet and once on the internet by suing any platform that may be windows, Macintosh o any workstation, it is easy to retrieve any information. WWW is independent of the platform being used by the machine and not limited to any kind of machine. That’s why the Web is entirely cross platform. The data comes to the web from a browser in client’s computer. Web has a capability to accept data from variety operation systems whether windows, Macintosh etc. It offers the same interface. The web is not linked to any limited single platform or machine and similarly, to different machines connected to the web, It offers the data with the same look and feel interface.

Interactivity. It is the ability of the web to allow the client to converse back to the server. Unlike T.V which is non-interactive. In case of web one can talk back to the server by way of using hyperlink (navigating from page to page) and other is video conferencing by using internet audio phones and video communication, a digital
camera and video digitizer thus allowing people sitting in the different parts of the world to conduct the conference.

Web pages are compound documents that can hold text, individual objects like picture, sounds, video, java applets and Active X controls, An E-mail message with attachments such as graphic is a compound document. It serves a purpose of providing a single place where users could store all the elements related to a document and if necessary, send the document to someone else.

Web is the Constellation of resources that can be accessed using tools such as FTP, HTTP, and TELNET; an organization of files designed around a group of servers on the internet, programmed to handle requests from browser software that resides on users PC.

1.4.6 Terms in Network-

Router-

In computer router is a very important device it determines the next network pints to which a pocket should be send to its destination point. The router should be connected minimum two networks and decides which way to send each information pocket. This information pocket is based on its latest understanding of the state of the networks it is connected to. A router is located at any gateway, including each point of presence on the internet. A router is always includes as part of a network switch. A router may create or maintain a table of the available roots and their condition and use this information along with distance and cost algorithms to
determine the best root for a given pocket. A pocket may transfer with the help of networks points and through routers before them coming at its destination. Router is a function and it is connected with the network layer in the OSI model.

**Switch-**
A switch is a device that channels incoming data from various input ports to the specific output port that will take the data towards its intended destination. In the conventional the use of circuit switched telephone network, one or more switches are used to set up a dedicated through temporary connection for an exchange information between more than two parties. In the internet a switched determines from the IP address in each pocket which output port to use for the next part of its trip to the intended destination.

**Client Server Architecture-**
In a client server architecture individual computers act as clients are connected to a central computer which is known as server. In the computer server are very powerful computers more that other client computer and they dedicated to managing disc drives, printer and network traffic. Client server architecture can be also considered as a network environment that transfers information between server and client machine. With the use of server many resources shared by different client server.

**Gateway-**
The use of gateway system for connecting two networks, in order to serve as an interface between different network protocols. When a remote user contacts the gateway, it examines his request; if the request corresponds to the rules that the network administrator has set, the gateways creates a link between the two networks.

**Hub-**
A hub is an a part of computer hardware and its use for centralizing network traffic coming from multiple hosts, and to propagate the signal. The hub has a certain number of parts usually 4,8,16,32. It recovers binary data coming into a part and send it to all the other parts. In the computer field active and passive are the types of hub.

**Bridges-**
The use of bridges hardware devices for linking two networks that work with the same protocol. It work at the logical level of the OSI model and can filter frames so that it only lets past data whose destination address corresponds to a machine located on the other side of the bridges. Bridge is connected to various local
networks called segments. The bridge makes a function table with machine, addresses and segments and listens to the data running with the help segments. The bridges checks the function table when the data is transmitted, the function table checks by bridge for the segments sending and receiving computer belong to (Using their physical address call the MAC and not their IP address).

**Repeaters**

On a transmission line, the signal suffers from distortion, and become weaker as the distance is between the two active elements become longer. The use of repeater to improve the signals and repeater is installed between two network and a repeater is a simple devices for refreshing signals between two networks nodes. The repeater is works only on the basic of physical layer model of OSI and cannot interpret the pockets. A repeater can be used as an interface between physical media of two different type, for example, link a length of twisted-pair wire to a fiber optic line.

**1.4.7 Internet Protocols (IP)**

IP allows précis data transmission by laying down the procedures that identify each machine on the internet by imparting each machine a unit IP address. Each IP address is made up of a set of numbers. The internet protocol is a network layer that contains addressing information and some control information that enable packets to be routed. IP is a primary network layer in the internet protocol suite. Along with the Transmission Control Protocol (TCP), IP represent the heart of internet protocol. IP address has two primary responsibilities as like providing connection in network and best effort delivery of data through an internet work and providing fragmentation and assembly of data to support data links with difference maximum transmission unit size. Every computer connected to internet network has an IP address through which a computer can be identified at which place it is. So IP is the address of PC which is connected to internet.

**1.4.8 Transmission Control Protocol (TCP)**

TCP and IP address both of sets of rules that allow to computer in network for effectively working so internet working very fast due to the strong connectivity. TCP and IP address working with coordinately and TCP attaches a header of the data pocket, which contains information like the address its original and length of the pocket. TCP working that a message divided into pockets that the internet protocol manages reassembles back in to the complete message at the receivers end.
In the technological language the basic work of TCP is divided the data in small pockets and reassemble them in their same form when the data riches the destination. The use of TCP protocol which is enables a computer to send data to a remote computer. TCP is a very reliable protocol that sets to pockets of message reach their place safely in without computer error. For example, a HTML file is sent from a web server, the program layer in that server divided file into the various pockets and then pockets forwards them individually to the IP program layer. TCP is also as a connection oriented protocol means connection is established and maintained until such time of the message to be exchanged by the application programs at each end have been exchanged.

1.4.9 Hypertext Transfer Protocol (HTPP)

Hypertext Transfer Protocol appears at the beginning of the web page address. It also knows as universal mechanism for exchange application level of message between web devices. All web pages run with the help of Hypertext Transfer Protocol. The use of Hypertext Transfer Protocol for transport hypertext document over the internet and HTPP is a method used to make hypertext documents readable on the WWW. Web server and client speak to each other with the help of Hypertext transfer Protocol. HTPP is a stateless protocol, meaning that the client and the server program send a signal request to the web server for information and the web server responds with a signal reply.

1.4.10 Hypertext Markup Language (HTML)

A website is a link of one or more pages and the information on the web pages is put in the form of Hypertext Markup Language. Hypertext is use to ordinary text that a client can communicate easily on the web pages and with the help of this language users can access images and go to multimedia and other link of documents. Markup is the set of symbol, each of which comprises a command which instructs a browser about the manner in which the text is to be displayed. In general word HTML is a computer language it has its own syntax and rules that makes powerful communication tool to be used in create attract web pages for client. With the help of HTML Language client can go to the other links and access information in multimedia formats as like images, sound, graphical, video, picture and other advanced formats. HTML is a language of internet and through the language one can
create the website and it has all features of basic word processing programme and its capable of handling graphics too.

1.4.11 Major terms in internet-

Internet is an networks of computer spread across the world which is made possible by reliable communication links. In the modern digital library internet is a very powerful source of information and users can access information, download information and transfer information to each other via internet.

**Web browser** – It is a computer program that dose two things, first a web browser knows how to go to the web server on the internet and request a pages so that the browser can pull the lot of pages via networking on your computer. Second a web browser knows how to interpret set of HTML tags within the page to display the page on your screen.

**ISDN- (Integrated Service Digital Network )**

ISDN Has emerged as powerful tool worldwide for providing of different services as like voice data, data and image processing transfer over the internet. ISDN is being viewed as a logical extension of the digitalization of the telecommunication network and most of the developed countries are in different states of implementing ISDN.

**Electronic Mail-**

Electronic mail service enables an internet user send a message to other internet users via internet any part of the world in a real time manager. An electronic mail message take a few second to several minutes to reach its place because of message travels form one network to another network. All internet users have e-mail address and each internet users has a logical mailbox and when sending a mail to another user a sender specifies the e-mail address of a receiver. E-mail service delivers an already sent mail in to receiver’s mailbox. The receiver extracts the mail from his mail box and reads it her own time and after reading the message, the receiver can save the mail, delete the mail, old mail delete and forward it to another person. The use of mail service for sending not only text message but also send various types of information as like images of information, audio, video data and multimedia formats. Internet has provide electronic mail service for communication of users as compare to paper mail so majority of the science teachers have a mail account. E-mail service is a very essential service provide by internet to the users so many advantages are their
• Electronic service is very faster more than paper mail because of paper mail has human made so they are delay.
• The communicating person need not be available at the same time.
• The receiver of an electronic mail document and message can store in computer and they can edit when needed with the help of editing program.

**File Transfer Protocol (FTP)**

FTP is an part of internet and its use not only for people building website but also for people downloading various files. FTP stand for File Transfer Protocol and its best way of sending various files from one computer to another computer with the help of internet. The use of FTP to download files and its much faster than standard HTPP downloads. The two ways to download via FTP are quite easy. One is to find the file you want on the internet and then copy the shortcut to the file. After doing this open your FTP program and paste it into the Quick connect dialog box. Click OK and the program will connect to the file and being download it. The second way to download a file via FTP is to connect to a download website with the help of software and then navigate through it to find the files you want. A majority use of FTP is to upload the files on the server and its mainly used when creating websites.

Internet provides FTP service to the users and with the help of file transfer service user can move a file from one computer to another computer via internet. File Transfer Protocol not only transfer text document but also transfer various formats file such as image file, artwork, movies, sound and software etc.

**Telnet-**

Internet provides telnet service to the internet users and with the help of telnet service user can log in to another computer via internet from his local computer. That is a user can execute the telnet command on his/ her local computer to start a login session on a remote computer.

In this process user start remote login session and use telnet command and give address of the remote computer on his local computer then remote computer asking his user ID and password. If the users enter correct login ID and password the remote computer log in local computer

• Using some advanced software on a remote computer which is not available on local computer.
• Local computer users can access information on the remote computer through the telnet command.

• Through the telnet process local computer user use remote computer for completed their purpose.

Internet search engine –

An internet search engine is an application, which helps users locate website containing useful information on the WWW. Through the internet search engine users can search proper information on the World Wide Web. Search engine searches the requested information and result given to the user.

Search engine provide to users description of desired information and search engine allows to users to search information depending on the various aspects as like simple keywords, phrase, combination of keywords and phrases using Boolean operators (AND, OR, NOT) and title and URL limiters.

Some popular internet search engine-

HotBot (www.hotbot.com)
Yahoo (www.yahoo.com)
Lycos (www.lycos.com)
Infoseek (www.infoseek.com)
Google (www.google.com)
Inference Find (www.infind.com)
Ixquick (www.ixquick.com)

Types of search Engines

There are various types of search engines. There are all described here as under.

1. Directories

Directory services perform the job of listing the websites in alphabetical order and links it with the URL of the website. (Explained above in detail)

2. Simple search Engines

A simple search engines is a service that index, organize rate and review of website. With the help of simple search engines users can easily retrieval the information via internet and computer networking. The simple search engines provide various options for searching relevant information as like Google and yahoo is a examples of simple search engines

3. Advanced searching –
Advanced searching helps to the users wants to search for something specific and more than one word is to be used for retrieval the information. Advanced searching provided most search engines and directories. Phrase searching and Boolean operator are the two types of advance searching methods. With the help of Boolean operators users can search the information on the three elements as like AND, OR, NOT. Phrase searching techniques allows users to search on multiple words for one topic for ex. Digital library we can search on the basic of component of digital library.

4. Meta search engines

A web meta searchers is a tool that helps users locate information available via world wide web. Meta search engines provide only a single interface that along users to search many different search engines, index and databases.

1.4.12 Present and future of internet –

In the present day the growth of internet has been continuous and it is growing at a rapid place. Internet has a become tools and dramatically change in every aspects as like social, economical, educational, medical and telecommunication fields. With the help of internet users can access information in very fastest and acquire update knowledge on every field. Internet has emerged as today’s greatest medium of progress and has gradually become a part of the vital infrastructure of global, economic, social and political life. Over the past decade emerging electronic mail and web and blogs have become part of the daily routine so increased billion users of internet in the world. In the modern digital era continuously increased internet users due to the growth of awareness regarding features of internet. Internet users increased double after only two years due to the its easy to access and other benefits of internet.

Internet is being used for publishing for ideas and it is effective tool for storage and retrieval of information so majority users attract to internet for any work. Internet has provide various services to the users as like creating information, browse of information, access needed information, search needed information and communicate information to each other via internet so in very short time internet become a popular tool in modern era. Internet is a source of information and provides various information to the users such as electronic journals, electronic
books, e-databases, technical reports, preprints, library catalogue, e-mail based information service, scientific data sets, patents, standards, current pages of electronic journals, online educational materials for study etc.

Now a day’s internet has become a part of library because librarian should provide all information to the users via internet and electronic mail. Internet role is very vital in transforming the library resources and services to the users so in the digital library all educational materials provide to the users via internet with multimedia formats. Internet provides links to various library site, specializing in all most every topic and they can be directly accessed from part of the world.

1.4.13 Use of the Internet-

Internet is a network of computers, which connected different types of computers all over the world. It is network of networks sharing a common mechanism for addressing computers and use common set of communication protocol for proper and same working.

1. **Online communication**-

Computer users around the world make huge use of electronic mail service for communication to each other with the help of internet. Many internet users also used chat facility for communicate to each other in real time. face.com provide to the users chat facility for communication to each other so internet is tool of communication with the help of internet users can chatting via social networking and electronic mail services.

2. **Software sharing**-

In the modern period internet provides to a large number of sharing software, developed advanced tools. Now a day internet provides various free and online software for users and users can download this software free of cost. For example internet sites filehippo.com is free software for users any internet user download the software.

3. **Electronic resources**-

Now a day internet has provided lot of electronic subscriptions found free and low cost so majority of the teachers students and researchers used electronic resource for complete their purpose. There are many sites are available on the internet they provide electronic version of journals and periodicals. On the
internet various websites provide electronic resources for the users such as www.shodhganga.com, www.timesofindia.com, Wikipedia.org and other websites provides various electronic resources. A vast number of electronic resources are available on the internet for users as like electronic books, electronic journals, e-databases, technical reports, content pages of journals, library catalogue, directories, educational materials etc.

4. Online shopping-
The internet has introduced new market system that is virtual market. With the help of internet users can purchases various goods and he can pay online through Net banking. Any internet users purchase various goods in all over the world and these shops remain open 24 hours all the year round. Shops provide information about products and services to the consumers via WWW service.

5. Video conferencing-
Internet provide video conferencing to the users for communication to each other as like person to person, person to group and group to group share the view regarding any topic via internet. The parties interacting can see each other talking on their computer screens and can hear each other’s voice via internet video conferencing.

6. Upload of information on general interest-
Majority of the users used internet as large electronic bulletin board and they upload their own opinion on various aspects and same interest people create a group for communication of thoughts and ideas about interested topics. For example Blog.

7. Explosion of information-
Information has been continuously increased in every day by day due to the development of information technology as like internet, computer, CD and other technology. In the age of science and technology explosion is the very big problem and effective research can not be completed without current information and now this problem is solve through the internet services as like File Transfer Protocol, Electronic mail Usenet etc.

8. Resource sharing-
Internet has been a boost in resource sharing and libraries collection various materials and they used collectively for users demand based given to users so majority libraries agree with resource sharing. Due to the internet libraries can
sharing various library materials via internet as like CD ROM, magnetic tape, hard disk, text information, graphic information, audio and video materials etc. In the modern era majority libraries agree with resources sharing for provide better service to their users.

**9. Users need-**

The main aim of library is to provide better service to the users and also provide latest information for research and this is possible only by using electronic resources and users can access electronic resources via internet. Full text documents and all information is also available on the internet so majority users need completed due to the internet. Through the internet libraries can deliver information to the users via electronic mail so in the digital era users continuously attracts on internet and electronic resources.

**10. Access unlimited electronic resources-**

Internet provides unlimited information to the users about regarding topic but these information sources are not conveniently obtainable with the help of internet. Any users search information on the internet because of internet provides various electronic resources. In the modern era majority science teachers used internet and electronic resources for their research and academic purpose.

**1.5 History of electronic information-**

Electronic information is a not old its origins is before only 20 years and first electronic book was published in 1985 at Germany then the growth of electronic book has continuous from 1985 to modern digital era. Electronic information is very high quality because of in this books information are available in various formats such as texts, graphics, pictures, tables, equations and audio video. Use of electronic resources is very essential for teaching; learning and research process because of these information sources provide update knowledge to their users. Electronics information is associated with computer technology, communication technology and publishing.

Now a day use of electronic information sources as recognized sources with their products. The use of technology for various accepts such as accessing information, manipulating, retrieving, storage and dissemination of information to their users so majority users satisfactory about use of e-resources for study and research.
1.5.1 Need of internet in electronic information-

In modern age many challenges arise in front of the modern library like as increasing value of information, decreasing ability of libraries for acquisition of libraries and users demand has increased so internet is a very important task in modern age. In the age of information and communication technology information explosion is the biggest problems face by users so effective research cannot be done without current information. Now we can solve these problems through the using internet services. In the digital era electronic resources and services are increased such as e-journals, e-books, e- technical reports, abstracts of journals, library catalogue, directories and other online education materials and so users are attracted to e-resources more than print resources. The internet is vastly used for resource sharing. In the digital libraries new material collection is increased as like CD ROM, magnetic tape, graphic, audio, video and multimedia. Through the use of internet various materials we can share with each other. In the old libraries print media materials was used which was very difficulties to handle, manually problem, high costly so in the modern libraries internet services are provides to users. We can provide latest information to the users with the help of internet that’s why majority users used internet in their teaching, learning, and research process. E-resources provides to the users with the medium of e-mail, internet, whatsapp, face book etc.

1.5.2 Electronic Libraries-

In the digital libraries many types of materials are available in digital formats such as e-journals, e-books, patents, newspapers, standards, photographic, pictures motion pictures and music. Digital resources are very advantages for users like save the time, no required place, timeliness and ability to search directly on text, ability to link for further materials, ability to share and dissemination of information to each other. Electronic library is a global library of thousand networked and they provide various services to their users without boundaries and time so majority users use electronic libraries for research. Electronic libraries are dynamic store house of digitized information and provide better service to their users.
1.5.3 Need of electronic library-
Use of electronic library technology is to manage large amount of digital information, more than thousands of images and audio-video clips and they quickly provide to the users. In the electronic libraries users can search information through advanced search facility e.g. AND, OR, NOT. Host amount of information add in electronic library in every day and users can get more information and update information.

1.5.4 Components of electronic library-
LAN facility in our institutions
CD ROM and multimedia facility to the users
E-mail facility
Remote access to services for information and databases
Network of computer with internet facility
Professional library staff for assistant to users
Use software for manage, storage coordinate of information.

1.5.5 Various information services provided by users through digital libraries-
Online Public Catalogue for remote access
CD ROM
Through use of computer online circulation services
Internet services for getting new information
Bulletin Board Services
Current Information Services and Selective Dissemination Services
Indexing
Abstracting services to their users
Bibliographic and database services
Users of Digital Libraries-

1.6 Major use of e-resources by users-
In the modern era there are many electronic resources of information are available in digital library so majority users use these resources for their academic purpose and these resources are available in only digital format as like books, paper,newspapers, patents, reports, pictures and music. Electronic information are very important to their users and many advantages of electronic information like as time
and space connivance, ability of search directly to search, ability to link for furtherer reading materials, ability to disseminate and share information to each other. Users are faced many difficulties while using electronic resources like as social and technological problems, reading on the screen is very difficult, lack of internet speed, connectivity problems, poor infrastructure and lack of necessary skill to use electronic resources. Some types of e-resources discuss here like e-books, e-journals etc.

1.6.1 E-journals-

A journal is an important source for up to date information on all discipline as like science, social science, language, engineering, medical and humanities but they are very useful for science faculty compare to other faculty because of in science faculty continuously new concepts are arise in every day. With the emergence of information technology applications and use of internet there has been shift from print journal to electronic journals. Scholarly journals have provided high quality of information with the help of peer review journals. Journals quality is depend on learned editors and society.

An electronic journal as its name implies is a serial research papers, review article, scholarly communication, issued periodically in electronic forms and they read on the computer via internet. Electronic journals definition is very broad include any journal, magazine, newsletters and any type of serial publication they are available and access via internet. In the digital environmental teaching, learning and research process are being supported by electronic journals as new powerful tools so majority science teachers used electronic journals for completed their research. The impact of electronic journals not only on libraries but also on authors, publications and change users attitude towards teaching and research process. Library and information centers need accessibility to a variety of information sources. Majority of science teachers use electronic journals due to they can easy to access, quickly available, pinpointedly, and users can access without walls.

Libraries have exploring solve the problems while using e-journals as like increasing price of print journals, space requirement and decreasing level use of print journals. The help of electronic journals library solve the maintains of back issue problems so library have work without effecting services. Electronic journals are users can access via internet form any on the networked personal computer.
depend on the types of subscription, more users can access the service at a time directly on the independent PC via web. These journals users can also use on Local Networked Computer via LAN. Electronic journals also provide searching and downloading facility to the users. Majority publisher offer their journals through consortia of libraries at less price so many libraries are member of consortia for getting e-resources. In INDIA there are major tow consortia give the service to users as like INDEST (Indian Digital Libraries and Science and Technology) and INFLIBNET. Through this consortia users can access e-journals form various publishers e.g. N-List provide various e-journals by various publishers and users can access 3 more than 3000 e-journals for their purpose. Users can access journals, searching; downloading of e-journals son use of e-journals has been continuously increased in modern digital libraries.

1.6.2 Definition of e-journal-

In the modern era changed each and every aspect of the world evens due to the radically change and development of information and communication technology. The format of scholarly publication has changed from print media to electronic media in the day. Today’s digital libraries provide wide variety of electronic resources including indexes of information, full text article, full journals. E-journals are often referred to electronic serials, online journals and electronic periodical. According to University of Glasgow library ‘Any journal that is available over the internet can be called an electronic journal’. A electronic serial is a continuing resources that is accessed via internet; it’s easy to access, keywords search ability, advanced search facility, accessibility just at publication time and independent of space and time access etc. E-journals are a serial publication available in electronic formats with advanced features as like advanced searching facility, browsing and linking to other related information. These journals accessible through compact disk or online. In the digital libraries these very widely used resources because of they are available on internet and internet is a part of human life. In the recent decade thousands of electronic journals are available on internet by commercial publications, academic institutions and various promoting agencies provide electronic journals to the users.
1.6.3 Features of electronic journals

**Multiple users’ access**-

It is possible to access electronic journals for 24 hours and 365 days the needed information by various users of library and any person those who have not a member of any academic institution. In one time lot of users can access electronic journals via internet and computer networks.

**Well in functionality**-

Electronic journals are very easy to use and retrieve the information. Special training is not required for accessing and using electronic journals because of any users can browse, use and download information on the internet via computer networking.

**Content**-

Electronic journals contain vast information about any topic in various formats as like text, audio information, video information, graphical formats and animation formats. Users can see last ten or more than ten year issue online without wasting time with the help of index and Boolean operators search and users can download back issue for references before the expiry of registrations.

**High Speed**-

Electronic journals can access, quicker to search with the help advanced search engine as like AND, OR, NOT and other search method. Any users keep the storage of journal in electronic formats and transfer to each other via internet and other means of information and communication technology.

**Full text**-

Electronic journals where complete article are available on internet more than summaries or abstracts and majority of the publishers provide full text of articles and journals. Some commercial websites are provided full text of article and INFLIBNET, Gandhinagar provide thousand of electronic journals to the users with the help of N-List program.

1.6.4 Benefits of electronic journals-

Electronic journals are the most widely used digital resources and thousand of electronic journals are made available by the commercial websites. In the modern digital era continuously electronic journals has been increased due to the development of information and communication technology. Electronic journals
provide very update information to the users so majority of the teachers, researcher and academician used internet and electronic journals for completed their purpose.

- The speed of publication and diversity of each issue of electronic journal much faster than print journal because of the print journal published very delay due to the human error. Electronic journals are available on the internet so in this process author and users make direct communication via internet.

- The main advantages of electronic journals are they distribute globally on one time with the help of internet and any users can access within the second after the upload journal on the internet. Use of hypertext links increased ability to access from different sites.

- In the information technological age good number of search engine are available to access and retrieve the appropriate article so majority users search article on internet within second but search skill is required. Most of the publishers provides various aspects of search fields as like author search, second author search, keywords search, publication search and ISSN No. search

- E-journals provide the facilities of downloading and printing the appropriate articles. Majority users use this facility for the accessing electronic journals so electronic journals are easy to access.

- With the emergence of electronic journals libraries will be solved various problems such as reduce space of library, shelving, missing issue, missing article and particular pages etc.

- Most of the book publishers of electronic journals coming up with license from author, providing multimedia formats as like video, audio, graphical, animation and access through the Local Area Network.

- Reducing cost due to the emergence of electronic journals because print journals are very expansive due to the maintained but online and electronic journals are without print so its reduce cost of publication.

- The particular article of electronic journals can be browsed by more then one users and without wall any users can access the electronic journals because of these journals are available on the internet. So in one time lot of users can access same electronic journal via internet and required infrastructure.
1.6.5 Disadvantages of electronic journals-

- Electronic journals and journal article are not physically present in the library because they are available on the internet and users can access only on the computer.
- Difficulty arise to users while reading of electronic journals because e-journals are available only electronic formats and users can access e-resources only on the computer so it is very problematic.
- In the electronic era many publishers provide electronic journals to the users but they change their terms and condition day by day and so some users do not faith on electronic journals and private publishers.
- Majority commercial publishers are do not provide back files of journals.

1.6.6 E-books-

E-books as described as a text to books in digital form to be display on computer screen and just read like paper of books using digital technology. Users can use advanced search method for searching books as like keywords, title, author and AND OR NOT these boolean operator. Use of electronic books from users some required technology as like personal computer, internet connection for searching and downloading, skill about access the e-books, sound for mp3 books and various new technology. Many advantages are for use of e-books by the users as like portability, 24 hour access, text such, annotation, linking and multimedia.

1.6.7 Electronic thesis and dissertation-

Dissertations and thesis are very important parts of any Universities for sources of information and knowledge for future researcher. Majority universities have converted thesis and dissertations in electronic format and they have made available on the internet so any researcher can access the information to his/her research. The large number of universities have also all researcher compulsory submit ion of thesis in electronic formats so the use of e-resources are continuously increasing.

1.6.8 Patents-

Many patents have available made their complete version text and record online. Ex. United State patent documents any person they download and searched on the website (www.uspto.gov/patft/index.html). Some of the commercial organizations they provide full text of patents for users as like Derwent and Dialog.
1.6.9 Course materials-
A lot of web based course materials and teaching aids are developed for open teaching, learning process by many universities and commercial organizations. Majority educational institution has adopted course material for their curricula and extra curricula activities. In the digital era library professional can provide material for teaching, learning and research process. Librarian can provide link to the course through subject gateway.

1.6.10 Subject Gateway-
In the modern era internet is a very popular information source, but it is inefficient use of bandwidth and time. In the digital era one of the best useful ways to discover quality resources in particular subject area for use internet based gateway. A subject gateway has provided web based resources in the defined subject area, subject gateway is provided through library website for searching effective information on the particular subject.

1.6.11 Internet Service Providers:-
Internet service provider (ISP) is a company or enterprise that provides internet access. Customers can be business, individuals and organizations. In addition to internet connection, ISPs may also provide related services like web site hosting and development, email hosting, domain name registration etc. ISPs can be both regional, confined to a geographic area, or national, servicing the entire country and they are connected with each other through Network Access Points (NAPs). ISPs are also referred to as internet Access Providers.

Serveral types of internet access are offer by ISP which differs in terms of connection speed, i.e. the time taken for upload and download. Not only this but many ISPs offer different packages comprising of varying download limits, numbers of e-mail account on offer, on different charges etc.

Choosing an ISP :- while choosing an ISP, one need to consider certain factors and also check the ISP rating, and recent trends and also the ISP requirement for online marketing. These parameters are explained below:

A) Factors to consider in choosing an internet service Provider
The following factors must be considered while choosing an ISP:
Price the price vires from ISP to ISP. There are various ISPs available in India. Some internet service providers offer free services. Many services offer different
monthly subscriptions, including ultimate access for a flat monthly fee. One should look for special features and content that the online service provider offers and the online service provider prices.

Technical support ISP working has to be 24*7. User may come across a problem anytime and to overcome this, technical support at any hour of the day is of importance through customer service people.

Reliability It means finding out what percent time do your costumer get a connection when they dial in? They may fail to get connection either all the modems are tired up, resulting in a busy signal; or the server is down and nobody can get a connection. Network capacity and relationship with other ISP also need to be checked.

Performance it is to check the service, how quickly your e-mail is answered? How much time does it take in downloading the web page? Check the network performance and connection availability and the speed of data transmission. ISP supports connection such as ISDN and ADSL.

Phone lines does the ISP provide nationwide dial-up acess or just local or regional access? Does the service support your modem speed? Check the compatibility of your systems modern with an ISDN connection.

Storage space signing up with an ISP also need to know a specific amount of file storage space on their server for their site.

Email Does ISPs web hosting services include e-mail boxes so you can accept e-mail messages form customer, clients and others? How many E-mail boxes do you receive? Is there any extra fee for e-mail boxes.

Tracking it means whether the ISP offer traffic reports or others information you can use to keep track of who, when is visiting your site? Which page of the site is visited by the customer?

Bandwidth to accommodate traffic, does the ISP has sufficient bandwidth?

Web page can you post a website on the ISPs server? How much space can you get for your page and at what cost?

Requirement if user is planning to access internet for few hours then dial-up connection would be sufficient but if user wants to download movies, music etc, then go for broadband connection.

Extra services Multiple email account and extra web storage space is probably going to cost you more but does your ISP provide these extra services?
B) Rating of the ISP
ISPs are also rated various agencies and on that basis results are published for ISPs from grade (A) excellent to D (poor). E.g. calls are made by visual networks every month to major ISPs to access how often connections to the first web page are made quickly.

C) Recent Trends
ISPs are following three recent trends to lower customer rates and these are:
Building a brand identity;
Provide broadband service;
Focusing more on business users,

D) ISP requirement for online marketing
It requires fulfilling the following factors:
Register domain name legally;
Capture and forward e-mail through ISP;
Host your website by taking into consideration the factors such as basic rates, disc space charges, fee for reporting statistical data etc.
Give technical and managerial support for upgrading, enhancing or improving your presence on the internet.
Give on the road support i.e. accessing information or e-mail regardless of location or time of the day;

Names of the few ISPs in India
Sify Ltd.
Aircel
BSNL
MTNL
Tata communication Ltd.
ERNET India
HCL infinet Ltd.
N informatics center
1.7 Major Electronic Resources providers-

**Shodh Sindhu**-

Shodh Sindhu is based on the recommendation of an expert committee and Ministry of Human Resources Development formed e-shodhsindhu merging three consortia include UGC-INFONET Digital Library Consortium, N-LIST and INDEST-AICTE Consortium. E-shodhsindhu will provide current and archival information through electronic resources. With the help of this project users can access more than 15000 core peer-reviewed journal and huge bibliographic databases and large numbers of publishers are member of these projects. Universities and colleges that are covered under 12 (B) and 2 (F) section of the University Grant Commission Act and e-shodhsindhu consortium for higher education for the provide electronic resources. E-shodhsindhu establishment for the develop a collection of electronic journal archives and electronic books on perpetual access basic. Guidance and promote use of electronic resources in member universities, colleges and technical institutions entire the country and increase awareness about e-resources. Provide subscription based scholarly information to all educational institutions. Agency provides scholarly content and open access via portal and subject gateways.

Its main objective is developing a National Electronic Library with electronic journals and electronic books as its major building blocks. Provide access to selected electronic resources to additional institutions including open universities in India.

The role of this agency as a bridge for digital divide and move towards an information rich society.

**UGC- Infonet**-

The University Grant Commission –Infonet digital library consortium was founded in 2003 by the President of India Hon.Dr.A.P.J.Abdul Kalam. The consortium provide to be a recap to university libraries which have been discontinuing subscription of scholarly journals . With the help of this consortium users can access to more than 75000+ core and peer-reviewed journals and 10 bibliographic databases from 26 publishers in the different disciplines. Program has been launched with phase by phase. In the first phase began in 2004, provided access electronic resources to only 50 universities who had internet connectivity under the UGC-Infonet connectivity of the UGC. In 2005 more 50 universities were added and so far 209 universities including 14 National Level schools central universities that
come under the purview of UGC, have been provided different electronic resources. Theses electronic resources based on various subjects and disciplines as like arts, humanities, social sciences, physical sciences chemical sciences, life sciences, mathematics and computer science etc. UGC-Infonet consortium is wholly funded by UGC and maintain by the INFLIBNET (Information Library Network) Centre at Gandhinagar.

The benefits of this projects also extended to college, to begin with the College for Potential with Excellence and autonomous colleges and these colleges has access e-resources provided by UGC-Infonet. The UGC provides funds through INFLIBNET required for provide various electronic resources to the members and the member of core group of institutions are as follows:

University covered under phase I -50
University Covered under phase II -50
University covered under phase III-90
Associate Members-2014
Other institutions -6
National Law and Universities -14

**J-Gate**

J-Gate is an electronic gateway to provide electronic journal literature to the global and its launched by Informatics India Limited in 2001. J-Gate provides seamless access to millions of journals article online offered by 12288 Publishers. J-Gate plan to support online subscription of journals, electronic document delivery, archiving of electronic journals and other related services. J Gate consortium ace as a search platform plus provide resource sharing facility to the member. The product is customized for journal coverage limited to the consortium subscribed journals. J-Gate is very useful for higher education and academic library because of J-gate provide e-journal portal, provide 6353 online only journal, captures and indexes article from more than 23173 open access journals and maintains various links, provide link to users over 7020438 open access journals, provide presently link to electronic journals from 12,288 publishers and j-Gate website is updated in every day.

**Scifinder**

Scifinder provides 1907+ chemistry abstracts and Medline service to the users. Scifinder is a research discovery applications that provides access to the world most
comprehensive and authoritative sources of references, abstracts, reactions in chemistry and provide e-resources to related to other sciences. Scifinder is the only chemistry information sources that provides various services as like easily find relevant substances, reactions in the chemistry, references in the world most trusted and comprehensive collection of related to chemical science and scientific information about science. With the help of this project users can search substance, reactions in chemistry, patents and references produced. According to the Dr. Erik Villmena from the Ohio State University, “You are not doing research without scifinder”.

**Statistical Databases: Socioeconomic Data of All Indian States**

www.indiastat.com is a first website was launched in November 2000 inaugurated by Minister of State, Department of Static, Planning and Public Government, Government of India Shri. Arun Shourie at New Delhi. This website provide authentic and perhaps the most comprehensive complication of secondary level social and economical tactical information about India and its difference states. This websites continuous provide information on various subjects as like general information, Demographical information, Indian economy, Indian Agricultural information, Consumer Affairs, Environmental related information, Industrial information In India, Infrastructure, Education, Health, Housing, Labor Workforce, Polity, Media, Insurance, Tourism, Crime, Law ,Social Welfare and Developmental Information about India etc. As its core activity is data collect and complies in redy to use socio-economic statically data about India, Its various accepts like religion, states and districts to make its available on the online form. Indiastat.com provide socio-economic statistical information about India, its various states, religions and various sectors.

In the January 2010 the company founded www.Districtsofindia.com with is store house of authentic social and economical district level information for the country. In all over India 642 District according to the census of India 2011, the statically data from 620 district for the entire major sector have been presented on the website.

**Wiley**

Wiley is the international publishing business of John Wiley and his son publish electronic resources on the various field as like scientific knowledge, technical, medical and scholarly journals. Wiley is Online Library hosts in the worlds multidisciplinary of online collection and provide online information to the users on
life science, health science, social science and humanities. With the help of this
online library user can access to over 6 million article from over 1500 journals, more
that 20,000 online books, and hundreds of reference books, laboratory protocol and
databases.

This online library is easy to use so any user can access article, chapter in book,
references and supplementary documents. In the Wiley library compressive search
engine optimization ensures easy discoverability of content, deliver related
information and users get immediate results. Wiley online library provide more
ways to stay up-to-date information with the help of RSS Feeds to keep your update
with the latest publishing research including journal tables of contents and Wiley
online library brochure available in 13 various languages.

Wiley online library provide largest journals back files by a single publisher
includes more than 18 million pages across more than 9000 titles. Our content is
deep with coverage extending to volume 1, issue 1 issue dating back to the
eighteenth century and content is based on scientific, technical, medical, business,
humanities and social science disciplines. With the help of Wiley online library
users can access online books, 20,000 monographs, handbooks, dictionaries,
companions and landmark book series.

**Science Direct-**

Science Direct is a website they provides subscription based access to a large
databases of scientific and medical research. Science direct provides 12 million
pieces of content from 3500 academic journals and more than 34000 electronic
books on science discipline to the users. Science direct is the world’s leading
sources for scientific, technical, and medical science and provide electronic books,
electronic journals and article to the users. Currently more than 250,000 articles on
science direct are open access. Science direct published article in our open access
journals are peer-reviewed and made free of cost any users can access and download
for complete purpose. The journals are grouped in four categories as like Physical
science, Engineering, Life Sciences, Health Sciences, Social Sciences and
Humanities. Article abstract are freely provide to the users but access full text in
PDF format and for newly publication are also available in HTML format.

**JSTOR-**

JSTOR is a digital library founded in 1965 for the provide digitized back issue and
academic journals but its also include books and primary sources of information,
current issue of journals. With the help of JSTOR users can access full text searches more than 2000 journals. JSTOR (Scholarly Journal Archival) is an online archival of scholarly journal in a wide variety of disciplines and its provides full text article and back issue of journal for the current publications. JSTOR provides to the users various search facility as like users can search on the basic of journal title, journal discipline and search full text and abstracts.

**N-List**

N-List is a library consortium in India for provides electronic resources among colleges. A consortium is a group of institutions of organizations they come together for fulfill objectives and aims and cooperate them and the sharing of resources and have a clear mutual goal in order to institute their success. Its consortium established for complete their various objectives and mission as like to provide scholarly information to the all educational institutions, bridging digital divide and among towards a information rich society, provide subscription based scholarly information (Electronic books, E-journals, E-databases and other information), provide scholarly content available in open access through subject gateways and gateways.

In the N-List project there are four components they are i) To subscribe and provide access to selected electronic resources for the technical institutions as like IIT, IISER and NIT and monitor its usages. II) To provide access to selected INDEST electronic resources to selected universities and monitor its usages. III) To provide electronic resources to various government and semi government colleges within 6000 rupees. IV)To act as a monitoring agency for colleges and evaluate, promote, arrange training for staff and monitor all activities involved in the process of providing effective and efficient access to electronic resources to colleges.

**Library Genesis**

Library Genesis is a search engine for searching books and articles on various topics as like life science, social science, chemical science, mathematical science, physical science and literature. With the help of these websites users can access content free of cost that is otherwise pay walled? Among others it carries PDF of content from Elsevier and science direct portal. The website becomes involved in a legal case when Elsevier accused it of providing pirate access to books and articles from 2015. This website is reported to be registered in both Russia and Amsterdam. This website beside in Russia this is the longest and various resources are openly available on websites as like more than 1.5 millions files of non-fictional electronic
books, more than 1.5 millions fictional books provide to the users and provide more than 20 millions papers from journals of science.

Library Gen is a movement of sorts and they are given by true intention to liberate access to knowledge rather than just go on DRMrip binges. The high point of their ingenious survivals is www.science.hub.org which roots Jstor sage and other journal publishing websites.

**BookFi-**

BookFi is one of the more popular libraries in the world and its non profit project, makes available 2230000 books freely for the users. The aim of this project to increase the number of books and quality of service and its exist due your support. With the help of this project is completely free with uninterrupted access to literature on various topics as like human science, social science, pure science and other knowledge on the various disciplines.

**PDF Drive-**

PDF Drive is a free search engine which use for searching information on internet, preview of materials and users can download millions of PDF books on your devices so majority science teachers are use this drive for downloading books, journals and other information. PDF Drive team continuously scans and adds information the web PDF files upload on the PDF Drive. When the Portable Document Format files are withdrawn from the web and these file are also withdrawn form PDF Drive search engine instantly. In this way PDF Drive library has continuously grows, stays up to date and offers you a huge database. In additional PDF Drive has provided extra features more that traditional search engine. PDF Drive provide various services with free of cost and always provide up date information to the users. With the help of PDF Drive users can search any file, users can access 280.161,029 electronic books with free of cost and no download limits for any users so majority science teachers use PDF Drive for downloading books and other materials.

**BASE (Belefeld Academic Search Engine) –**

BASE is one of the world’s most value search engine especially for academic web resources and provides more than 100 millions documents from more than 5000 sources. With the help of BASE users can access full texts of about 60% of the indexed documents for free. BASE makes indexing the all kind of metadata of academically related documents as like journals, institutional repositories, digital collections etc. BASE is a registered enhanced by integrating further sources and its
are working on several new features like calming service of authors within the ORCID DE project.

BASE is the powerful search engine including special features as like to provide intellectually selected resources, only document services that comply with specific requirement of academic quality of resources, provide data resources with transparency in the searches, the correction of metadata by means of automated, the display of search results with precise of bibliographic data. Display of access and term of re-use for a document, provide several option of sorting the result list and browsing material on the basic of DDC (Dewey Decimal Classification).

BASE provide various service to the users such as on the BASE website user can create personal profile, add favorites and save his search history permanently, find document without searching term and user can choose different kind of browsing facility, Smartphone will be automatically redirected to our mobile website and BASE support all kind of mobile operating system and search result very fast compare to another search engine.

**DOAJ-**

Directory of Open Access Journals is a online directory that indexes and provide to high quality, open access journals and peer-reviewed journals. DOJA was launched at Lund University Sweden in 2003 with only 300 open access journals but few years project provide 9000 open access journals including all area of disciplines such as pure science, social science, medicine, and humanities. This project is membership organization and membership is available for publisher, ordinary member and sponsor. Those who are interested to become a member of DOJA then required some condition from the users they are principle of transparency and best practice in scholarly publishing. DOJA assets libraries and indexers keep their lists up to dates, we make a list of journals that have been accepted or removed from DOJA. DOJA is non profit organization managed by Infrastructure Service for Open Access based in the United Kingdom. DOJA project launched with complete various aims and objectives as like increase the visibility and easy to use open access journals, peer-reviewed journals and promoting their impact and increased usages quality. DOJA is a independent not depending on any institutions and all funding collecting through donation. The funding of DOJA 50% of which come from sponsors and 50% collected form members and publishers and DOJA provide various services with free of cost. In latest news get about DOJA gets first sponsor
from Mexico and DOJA has excellent connections and representation throughout Latin America of many years.

**Academic Index-**

Academic Index was created by Dr. Michael Bell its former chair, Taxes Associations of School Librarians and maintained by Bell. The academic search engine is a meta search tools include result from big information databases and index is only research quality information and information sources selected by library professional. On this website 145 unique visitors visit to the website for getting and accessing electronic resources.

**Sci. Central –**

Science Central is a gateway to the best science news sources and Science Central introduced in 1997 for the aggregating breaking research news from the popular and reliable information sources. The quality of this service is very better so received various over the 30 web awards for popular science publishers as like Science Magazine, The lancet and The New Scientist. Science Central use other 700 websites point as the trusted source of information. SiCtntral editors select news on the based of 7 criteria as like Reliability of the information sources, timelines of the information sources, extend of daily coverage information, news collect on multidisciplinary topic, lads to fallow up information and presentation and general information on the science faculty. With the help of science central user can access information on the various topics on the base of science field like Biosciences, Health Sciences, Physical and Chemical sciences, earth and space sciences and technology and engineering sciences. Through SciCentral provide better service to the users as like provide indexing services, deemed more extensive and take their place.

**Google Scholar-**

Google scholar is a search engine that user can access free of cost that’s provide indexed and full text information of scholarly literature across an array of publishing formats ad disciplines. Google scholar has launched in November 2004, in the Google scholar includes various index these are peer-reviewed, online academic journals, electronic books, conference papers, thesis and dissertations, preprints, abstracts, technical reports, court opinion and patents. Google Scholar provide to users to search facility for search digital information, physical copies of article.
With the help of Google scholar users can search for scholarly literature via simple ways. Users can search across many disciplines and sources as like article, thesis, books, abstracts and other essential information from various agencies such as academic publishers, professional societies, online repositories, universities and other websites. Google scholar is very useful for researcher because researcher can get information about his research work.

Google scholar is very essential in academic and other purpose because they provide various features to the users such as users can search all scholarly literature on required discipline from one convenient place; explore related works, citations, authors, and publications. Google scholar keep up with recent documents in any area of research as like social science, life science, chemical science, computer science and other literature.

Google scholar aims is create rank of the documents the way researchers do, weighing the full text of each documents, where these literature published, who it was written by and how often and how recently it has been cited in other scholarly literature.

**Microsoft Academic Search**-

Microsoft Academic Search was a research project and academic search engine launched by Microsoft in 2006 to directly compete with Google Scholar and it was renamed after first year Live Search Academic then discontinued two year later. In July 2014 Microsoft Research declare that Microsoft Academic was evolving from a research project to a production service.

**PubMed**-

PubMed first released in 1996 usheard in the era of private, free, home and office based MEDLINE searching and its service offered to ferr pf cost to public in 1997. PubMed Central is a free archive collection of biomedical and life sciences journal literature from United State National Institute of Health’s And National Library of Medicine. With the help of PubMed users can access and comprises more than 27 million citation of biomedical literature fro various tools as like MEDLINE, life science journals, other online books and journals. In the citation include links to full text from PubMed centrals and other reputed publishers. It is a free search engine for provide MEDLINE database, references and abstracts on life science and biomedical topics for the users. Databases maintained by the United State National Library of
Medicine at the National Institute of Health for provide informational retrieval facility to the users.

PubMed provide information to the users such as older references from print edition of Index Medicus from 1951 to earlier, references to some journals before they were indexed in MEDLINE, very recent information provide with the help of Medical Subjects Headings and added MEDLINE and provide collection of books available in full text and other NLM records.

**IndMed**

The purpose of IndMed is to index selected peer reviewed journals published from Indian publishers. It is a databases covering important peer reviewed Indian biomedical journals and database designed for provide medical information on various topics to the medical professionals, researchers, students and the medical library professional. With the help of this database users can access easy information and Indian literature on the topics of medical and other biomedical sciences. With the help of these projects users can access 100 Indian medical journals and other databases.

**Internet Archive**

The internet archive is a non-profit library established in 1996 for the provide universal knowledge to the users so the project collect published work and make them available in digital form. Internet archives provide web archives service to the users and users can access various tools for access the knowledge via internet archive as like 279 billion web pages are available on the internet, provide 11 million books and texts for references, 4 million audia recording books, 3 million videos on various formats including television and news program, 1 million images and one lack software programs to the users.

**Project Gutenberg**

Project Gutenberg is a non profit organization effort to digitize and archive cultural works to increase awareness and distribution about electronic books and it was founded in 1971 by the Michael S.Hart and it’s the oldest digital library. In this project majority of the collection are full text of public domain books as like open journals and open books. The materials are available in plain text but due to the development of information and communication technology materials is available in various formats as like HTML (Hyper Text Markup Language), PDF, EPUB and other formats. Majority of books are available in the English language but in the
modern period non English books are also available in the Gutenberg project. The project Gutenberg provide various materials to the users as like more than 54000 free electronic books, free epub books, free kindle books and downloading and reading them online on the project Gutenberg. With the help of Gutenberg project users can search worlds grate literature especially older books from which copyright has been expired?

**Directory of Open Access Books-**

Directory of open access books is a project to provide electronic books with free of cost to the users because increasing awareness and usages of free electronic books and to invited academic publishers for providing open access books to DOAB. Directory of Open Access books receive various awards for its role in the modern society and provide free of cost books to the users as like Brila Open Access awards by the International Federation of Library Association in 2015. DOAB provides open access scholarly monographs in the humanities and other social sciences as like history, geography, economics, archeology and anthropology. Another award is Best Free References Web Site Awards in 2013 by MARS. Directory of Open Access Books received Best New Products Awards in 2012 for the best and worst electronic collections of interest to libraries sponsored by the Charleston Advisor.

**Shodh Ganga-**

Shodhganga is a reservoir of Indian thesis is a digital repository of thesis and dissertations submitted by entire Indian Universities and its maintained by INFLIBNET (Information Library Network) Centre Gandhinagar which is autonomous inter university center of the University Grant Commission Located in Gujrat University Campus. The full text of all thesis and dissertations submitted by researchers is available to read and download and open access to the academic community in the world. Any can download, copy, paste, view the full text via shodhganga so it is a open platform to the researcher. The repository has collection 161116 theses, 3900 synopses from 295 Universities.

Shodhganga repository was created by the University Grant Commission making it mandatory through UGC regulations 2009 for M.Phil. And Ph.D. thesis submits to soft copy to the shodhganga.

**E-LIS –**

Eprints is a international digital repository in Library and Information Science is established in 2003. With the help of this project users can access information on the
library and information science with 22 languages. The development of library and information science network due to the extension of open access concept in Library and information science. This project main purpose is materials of library and information science dissemination within library professionals. In the recent year e-library and information science has been established as the largest open repository to provide detail information of library and information science to the library professionals.

With the help of this project users can search information on the library and information science as like multilingual, multicultural experience and through open access archives to bring the people of the world together. This project is very necessary to the librarian and library professionals because of librarians are also involved in open access advocacy, encourage to open access repository, by giving the experience they need to speak with researchers with confidence and experience provide to best possible assistance.

E-LIS philosophy and principles is based on the open sources software and cooperate library professionals in all over the world for access all information in library and information science.

**DLIST (Digital Library and Information Science and Technology)**-

Digital Library and Information Science and Technology is a cross- institutional, subject based open access digital archive for the library and information science established in 2002 for the management of archives and records, information systems, Museum Informatics and other critical information on library and information science. The archives can be used new materials on library and information science and also use very classic materials about library and information science as like Five laws of library and information science by S.R.Ranganathan and also include material on multicultural and cultural competency aspects of the Digital Library and information science technology subject domain. Library professionals, researchers create a wealth of content that include various works as like published papers, tutorials for software and databases, instructional materials, bibliographies, dissertations and other materials and information. The main aims of this project to capture all wealth of library and information science that is openly available for re-use by library professionals in entire the world.
National Centre for Biotechnology Information (NCNL)-

The National centre for Biotechnology Information was founded in 1988 through legislation sponsored by Senator by Claude Pepper and it is the part of the United State National Library of Medicine and branch of the National institute of Health science. With the help of this project users can access a series of databases related to biotechnology and biomedicine and is an important sources of bioinformatics such as GenBank, DNA sequences and PubMed and a bibliographic databases of biomedical literature. All databases are available in online form so majority biotechnological professional, researchers and other interested people they access all databases. This projects provide various online resources to the users as like some popular resources PubMed, Bookshelf, PubMed Central, PubMed health, BLAST, Necleotide, Genome, SNP, Gene, Proteins and PubChem. With the help of this project any users can access various information sources on various subjects as like chemical and Bioassays, data and software, DNA/RNA, Domains and structure, Genes and expression, Genetic Medicine, Genomes and Maps, Homology, Literature, Proteins, sequence Analysis, Taxonomy, training and Tutorials.

Bookshelf-

Bookshelf provide electronic books in online formats on various life science topics related as like scholarly literature on biology, medicine and different branches of life sciences. On this website users can search books on life science and health care disciplines.

1.7.1 Advantages of e-resources-

In the digital technology era information is the power in any fields because of all fields are depend on information as like cultural development, intellectual development and society and nation its become necessary information for its development. In the 21 century rapid development of information in every field such as social sciences, medical sciences, engineering sciences, pure sciences, humanities and applied sciences. In the technological era out dated the existing tradition of information accessing and retrieve to the write users in remote area so electronic resources role is very important in teaching, learning and research process.

1. Provide necessary information to the users through online and web based resources.
2. Providing networking facility to the users for accessing information in local level, regional, national and global level.

3. Information retrieves from web based on anytime and anywhere.

4. We can provide resource sharing service via use of internet and networking for sharing information to each other.

5. Eradication space and information centers in the use of electronic information so majority users use e-resources for their educational purpose.

6. Through use of automation system we can provide quickly and instant service to their users so automation of library is a very important task in modern era.

7. The use of electronic resources we can provide users friendly service to their users so majority libraries have increasing e-resources for educational purpose.

8. Lot of collection and information may be stored in small place and resources can provide to users without binderies for academic purpose.

1.7.2 Disadvantages of electronic resources-

The electronic resources many advantages in library and teaching, learning and research process but some users face various problems while using electronic resources as like constraint of electronic equipment, lack of peer review materials, limited access to back issue, difficulty in finding relevant information, internet reliability, fragment reading, compatibility of software and the initial cost. Other difficulties are navigation, implication on an e-resources devices. When electricity has cut and do not have any computer back up then users can not read electronic resources. Archiving and site authorization are very most issue in electronic resources. Majority of the electronic resources as like electronic books, electronic journals, e-patents and e-databases are not archives so library have face various problems regarding back issue.

1.8 Some storage devices-

In the modern technological era storage devices capacity has been continuously increased due to the development of information technology so majority users use storage devices for store the data. With the help of storage devices large amount of data we can we can replace data from one place to another place.
**CD (Compact Disk)**- CD stand for Compact Disk is also known as CD-ROM. Because once a CD is recorded we cannot change information present on that CD. SD is one of the types of optical disk for storing various data as like video data, text data and audio data. CD is available with 12 cm diameter. Any Compact Disk can store 700 MB to one gigabyte data. For playing CD we need CD ROM player and the player can be external and internal. Internal player is very difficult to install than external player to rotate the CD. A thin layer of Aluminum is used for storage data and poly carbonates material is use to store the data and poly carbonates material is used to protect the data on CD.

**Hard Disk**- Hard Disk is a magnetic disk on which data can be stored. The term hard disk is use to distinguish from soft or floppy disk. Hard disk can store very huge amount of data ranging from several megabytes to terabytes. Hard Disk is consisting of several platters to store more data. One read write head is placed between two platters. All the read write heads are connected to a single arm each platters has same number of tracks. Hard disk is not a portable device. With the help of Hard Disk to store data it uses metal coated with magnetic material and hard disk is more expensive to floppy disk. A Hard Disk consists of a set of stacked platters, each of which has data stored electromagnetically in electronic circles of tracks. Each platters has two heads, one on each side of the platter that’s read or writes data as the disk spine. A Hard Disk controls the positioning, reading and writing of the hard disk

**Pen Drive**- A USB flash drive consists of flash memory data storage devices integrated with a USB. USB flash devices are typically removable and rewritable and much smaller than the floppy disk. USB flash devices are often used for the same purposes as floppy disks and the main role of USB is store the data and replace the data from one place to another place so majority science teachers use USB for storage data as like electronic books, e-journals, audio and video data. Pen Drive are smaller, faster, have thousands of times more capacity and more durable and reliable because of their lack of moving parts. A flash drive consists of a small printed circuit board carrying the circuit elements and a USB connector, insulated electrically and protected inside a plastic, metal, rubberized case which can be carried in a pocket or on a key chain. The USB connector may be protected by a removable cap or by retracting into the body of the drive, although it is not likely to be damaged if unprotected.
**DVD (Digital Versatile Disc)**- Digital Versatile Disc is an optical digital disc for data storage which is mainly used for storing huge amount of high resolution audio-visual data as like full length movies, interactive games and various software. DVD was introduced in the U.S.A. in 1997 by both computer and film industries from countries such as America and Japan. Majority DVD look same regular compact disc but DVD can store up to 17 Gigabyte information where CD can hold up to only 700 Megabyte data. Formats of DVD available in stores include DVD Video, DVD Audio, DVD ROM (Read Only Memory) DVD -E (erasable), DVD- R (Recordable), DVD- RAM (Random Access Memory) and DVD- RW (Rewritable). DVD is to be the next thing after Compact Disk.

**Disc**- As a disc, DVD look must like CD and both are shiny disc that are 12.0 cm in diameter. Both are optical formats containing digital information this means a laser pickup is used to read the digital data encoded on the disc. DVD is actually a family of physical and application formats. As far as the physical format, DVD can hold anywhere from seven times to over 25 times the digital data on a CD depending on the discs construction. In the other words DVD may be used for video, audio, are data storage applications as a DVD video, DVD Audio, DVD- ROM application format respectively.

**Blu Ray Disc**- Blu- Ray Disc is as optical disc storage medium designed to supersede the DVD format. The standard physical medium is a 12 cm plastic optical disc, the same size as DVD and Cds. In the Blu Ray Disc contains 25 Megabyte data on per layer, with dual layer discs 50 GB data store. The first Blu Ray introduced in October 2000 and the first prototype player was released in April 2003 in Japan.

**Memory Card**- A memory card or flash card is an electronic data storage devices used for storing digital information as like electronic books, e-journals, e-databases, e-thesis and other text and video information. Due to the development of information communication technology use of electronic devices has been continuously increased very fast including digital cameras, smart mobile phones, laptops, micro computer, MP3 players and video game consoles. Memory card is a very popular storage device for storage data in various formats as like video, audio, text and other information. Today majority consumers use various electronic devices for storage data and transfer data to each other as like digital camera and cell phones.
1.8.1 LIBRARY MANAGEMENT PRACTICES EDUCATION

Library and information science experts will now have to play an important role especially when they are subjected to handle all the work associated with the changes from manual to a digital/electronic environment. This will help the librarians not only have access to the data within the premises but also to promote and disseminate their library features and transactions outside of the premises. The rapid transformation from manual management and retrieval of information has to digitally or by electronic methods, skills in information organization be more necessary.

Due to the changes occurring in the education system and modern methods being implemented, it is now imperative for the librarians and professionals associated with library management to manage information, sources of information in a very skilled and efficient manner. They will over a period of time tested by the Researchers, Students as well as the Faculty Members as to how fast and quickly they can help them to organize the wanted data, storage of the retrieved data and help them to disseminate the same within and outside the circles wherever it is wanted or desired. This will display the skills of the librarians as well as the support staff in managing a good library in the best possible manner. Libraries has been recognized by all nations of the world. India has indeed recognized the importance of electronic libraries and lots of initiatives have been taken by various libraries / institutes / organizations.

There are some difficulties faced even by the electronic methods of publication. Some of them are listed as under and may be infrastructure related or their academic acceptance, their norms of publication, their series of publication, their authenticity, methods of copyrighting etc. Even if these issues are taking a back seat.

Here we shall see the differences in the operational part from the manual to the digital era.

The way referencing is done, information gathering techniques as well as the utilization of the journals [physical] versus electronic forms are applied and used in practical aspects.

The e-libraries require less space for storage especially the electronic formats. These formats can either be stored in CDs, DVDs, Portable Hard disks, or any such forms and ways as decided by the managements of the institutions.
The basic objective is to provide the required information in the most easy manner and keeping user convenience in mind. These resource allocations and procurements should be planned and be in place while establishing the ‘e’ environment in the premises. These are called as electronic infrastructure and information superhighways etc. The establishment of the e-libraries were basically to counter the negative aspects of manually operated libraries and to provide a sea change in such practices by using new and modern concepts of library management. In order to provide such services the hardware components were readily available in the market.

But for the software applications in library management, there were specialized software available at a cost which required budgetary sanctions and allocations from the management. Software applications such as Greenstone, e-prints Fedora were and are available from specific vendors. That is why institutions prefer to use freeware or applications which are free for use and convenience of cost such as D-Space for economic operations.

Some occasions may arise where there are doubts raised by the users or those against the change, that information provided, or information obtained on a particular topic or subject may not be true/ accurate or authenticated.

In such cases doubts may be raised on the usage of such material as well as casting aspirations on the establishment for providing false or mis-leading information.

To have a well established e-library, the institution heads and authorities should be in a position to provide the right kind of equipment and infrastructure so as to enable the users to conveniently use the same and draw optimum benefits.

The faculty members as well as the research scholars are expected to be increasing their efficiency in their works by using multi-tasking means and computer based programs.

The educational institutions should be in a position to follow the initiatives taken by the government in terms of literacy in computer education and see that every student enrolled in the educational institution is computer literate and capable of using the available IT resources and practice the same in their academic activities.

Academic libraries should be developed accordingly so as to be used in the best of their capacities and the resources available should be utilized giving value to the institutional expenses incurred for the development of the premises.
Due to the advent of information technology and its acceptance globally, access to the Internet as well as the search engines and updated information has gained popularity in terms of its usage. The demands will always be on the rise and now never decrease. Therefore now it will be on the institutions to have a proper plan in place when they go in for the digitization of their premises. Basically the electronically collected information comprises of all such information in different available and acceptable electronic formats meeting the needs of the users. These format selections as well as segregation is handled by information handling specialists or the librarians in general. The subject of Information Technology / computers have been introduced in the schools from lower levels and extend even in higher education levels. The government also has initiated projects as well as incentives to the institutions which are promoting literacy in computer education. The onus is now on the Institutional heads to modernize their infrastructure and meet the growing demands of its community comprising of students, staff and the faculty including research personnel.

**Managerial Skills in Modern Librarianship**

**Communication Skills:**

Communication is exchange of information. The communication skills involve effective verbal and nonverbal communication in both national an English language in various contexts and with different cultural and social backgrounds. Good communication skills also require understanding people, and self-confidence. Effective oral communication involves the appropriate voice, tone, modulation, body language and response. Spoken communication is different from written communication with respect to vocabulary, style, level of sentence formation and grammar. The communication skills are a central part of over lives.
Technical Skills:
Librarians are working in the libraries should capable to do the work by using HTML and other languages. In addition, they should have the ability to work in the Web-OPAC and emerging technological facilities available in the library.
A few worth mentioning technologies which should be developed among the LIS professionals are:
1. Web hosting and its administration skills
2. Online presentation and communication skills
3. Evaluation of online library services etc.

The role of Librarian as a Team Player:
Due to the changes in the scenario and the emerging electronic age, librarians have also been subjected to these changes and have been instructed to adapt to the changes as per the requirements of the management. The librarians have now been subjected to upgrade their skills in terms of computer literacy as the institutions are moving towards the implementation of Digital/Electronic libraries.
By these upgraded skills the librarians are expected to provide services that are required by the users/library subscribers in the current digital/electronic environment of the institution. Therefore the staff appointed by the institutions especially skilled librarians as well as the support staff are required to support the Research Scholars as well as the Students as well as the Faculty members and help them to achieve their objectives by helping them search the information that they seek as quickly as possible.
One of the tasks that come with technology is training people to use it. Librarians can play very important role by imparting training to users may be in the form of teaching computer basics, introducing to them various devises, tools and techniques used on internet etc.

Effective Interaction:
Librarians and Library and Information professionals must have highly presentation and effective interaction skills.
Teaching / Training Skills:
This is essential for new users as well as new staff. Library orientation / literacy programmers should be conducted by the librarian at regular interval for the users or in case of new service is introduced in a training programme such as online database searching should be conducted for users. The imparting of training sessions for the administrative staff now has relevancy as they go on to add to the personality of the member and reflected in their appraisals.
This part has not been included in any standard curriculum introduced in educational institutions. Here are some of the ways in which such skills can be acquired:
1. Team player and Team Building.
2. Talent Search and Talent acquisition.
3. Time Management practice.
4. Feedback Mechanism should be in place.
5. Healthy standards of living.

Other Skills:
a. Design Making
b. Critical Thinking
c. Emotional Management
d. Managing Tasks
e. Project Management Skills
f. Negotiation
g. Positive Attitude
h. Self Development
i. Self Marketing: Speaking with confidence.
j. Knowledge Management Skills
k. Marketing and Promotion of Library Services
n. Stress Management
o. Problem Solving Skills
p. Digital Rights Management
q. Winning Commitment.
Role of Managerial Skills in Modern Librarianship:
In the digital environment the library will be defined more by its roles than by its building. The roles performed by library staff in providing authentic information to the users / subscribers of the services should be in line with the mission, vision of the management of the institution.
These expanded and transformed roles of libraries in digital environment, the librarians play a multiple role as a hypertext engineer, organizer and information manager and having knowledge about copyright issues and latest ICT technologies. Librarian being basically a knowledge manager, he has to have LIS subject contribution. He plays role of Academician, Research catalyser, Digital Treasure, IPR watcher, e-Literacy Agents, Bridges between different cultures, knowing more on digital world and legal aspects, IPR; RTI; Cyber law etc.
Library is one of the important organizations in every educational institute. It provides services to the uses to satisfy their needs. Today all traditional libraries are changing to modern libraries. Therefore it becomes essential for them to adopt modern management techniques.
The implementation of Total Quality Management in library services requires qualitative change of the employs as well as the authority of the library. This paper describes concept of Total Quality Management and Re-engineering in libraries.
Library Management Process:
Quality-
The word Quality is familiar word. Quality means Degree of excellence. Betz Dearborn has defined Quality as ‘that which gives complete customer or user satisfaction’. According to Rank Xerox (UK) Quality has been defined as ‘Providing our customers/uses, internal & external with products and services that fully satisfy their negotiated requirements’.
However expectations have been changing over the change in time due to availability of better of library services is based on facilities, speed of response, dependability, control and satisfaction of users.

Pillars of TQM:
John Jay Boastingly in his article, “The Quality revolution in education “outlined four pillars of TQM.
**Synergistic relationship:** The very application of the first pillar of TQM emphasizes the synergistic relationship between the library and its clientele, which suggest that performance of the organization is evaluated on the basis of its staff, their experience and the talent they carry with them.

**Conditions improvement:** In this case while applying TQM standards, the focus is mainly on the people of the organization, their professional and personal improvement and their dedication to the organization.

**Ongoing process:** This phase is mainly for evaluation of the quality of the product/service at the end/result of the product and its performance.

**Leadership:** This is one of the main parameters on which lies the success of the implementation TQM standards. The complete onus of evaluation and implementation depends on the decision making of the Executive. Their skill and vision in decision making process, their ability to handle critical situations which involve difficult situation and solutions, and building co-operation inter-departmentally.

**Benefits of TQM in Library:**
Application of TQM in a library will bring following benefits:

a. It results in better quality of service.
b. It creates a loyal user base.
c. It develops a satisfied user base.
d. It attracts persons with high caliber to the organization.
e. It increases staff morale.

**Implementation of TQM:**
Implementation of TQM is rewarding for staff and the institutions, improvement of TQM is work and more opportunity of staff to influence the element of TQM.

**Service Quality:** Service quality is connected in terms of customer’s context, typical measures might related to the speed of response to request, some of the approaches for measuring quality are through complaints, customer surveys, and employs surveys.

**Internal and External Customers:** Employees should identify those to whom they provide service to internal and external customers.

**Employee Involvement:** It means that each individual must take the initiative and not rely upon someone else. Here everyone must understand that they contribute equally to quality.
**Error Free Processes**: The main emphasis of TQM is on prevention to eliminate waste. Reduce cost and achieves error free processes.

**Performance measurement**: This is one of the main attributes related to the feedback mechanism and due corrections made in time supported mainly by the Executive Decisions of the organization.

**Continual Improvement Standards**: These practices are basically concerned with the overall work processes which are carried out throughout the year and are measured on a time bound or on a periodical basis.

If there are lacunas observed in the processes the organization focuses either on the Refresher program for its employees, or conduct quarterly Training schedules for its employees.

**Induction Program for New Employees**: Some of the organizations also undertake special programs which focus on Team Building as well as improvement in the Internal as well as External Communication Channels of the organization as part of continual Education Programs.

**Practices In Library Management**

**TQM and Re-engineering**: Some people have said that TQM and Re-engineering both are the same, while others have argued that they are different. Michael Hammer says that the two concepts are suitable and actually complement each other. Both concepts have the same focus customer satisfaction.

**The Relationship**: According to Johnson, a prominent proponent of Re-engineering, the focus on service base of the company in accordance with the product line of the organization, the Human Capital involvement in the process, overcoming the barriers associated either with communication, culture, education, understanding customer needs as well as the services offered by the organization.

The term “Re-engineering was introduced in the Service Sector by Michael Hammer who is from the US of A. According to his study and findings, the process of Re-engineering involves reworking on the entire processes of the product range of the organization, the services rendered by the organization and the main contributors to the processes having direct impact on the cost of the product, the improvement in the quality of the product/products offered, improvement in the quality of services offered by the organization to meet the customer demands and needs as well as
increase in the delivery of the products and services in the market matching the competitors and leaving them behind.

**Re-engineering and its Importance:**
The process of “Re-engineering” is mainly to look into the factors associated with the quality of the product/products offered by the organization and a drastic cost reduction exercise by changing/modifying or altering the processes involved. In addition to the above increase in the work speed and matching to the tune of the competitors and altering the rules of competition. The basic concepts to begin with the process of re-engineering depend upon some factors which are listed for reader reference.

The longevity of period right from the inception of the product/product range to move from the organization to its right market segment. This parameter also could be compared with the same as to what is the time frame of the competitors.

The decision making process of the organization is a very complex one when it comes to the question of budgeting for the product/product range and services offered.

It may also be possible that the services rendered by the company may not be in tune with the demand of the customers and their level of satisfaction.

The process of Re-engineering is a new approach to do business. Success in Re-engineering requires fundamentals understanding of processes, creative thinking to break away from old tradition and assumption and effective use of technology.

**Three ‘Rs’ Of Re-engineering:**
According to one of the authors of re-engineering, Janson has introduced the concept and has shown that this process can be completed in three phases which are stated as under:

**Rethink-**
This phase requires examining the correlation between the objectives set by the organization and its commitments towards satisfaction of its customers.

**Redesign-**
This phase is basically requiring how the organization functions, the study of the products as well as the services it renders to its customers. The detailed study and analysis of the people working in the organization, their roles and responsibilities, whether they are adhering to their job functions as well as the role they play The weaknesses of the departments are carefully re-structured and re-designed so that the
organization functions smoothly in achieving its goals and objectives. More specifically this phase is also focused towards customers, their needs and whether the demands are satisfied by the organization.

**Retool**

Those phases which have require to study whether the organization is optimally utilizing its resources by implementing the use of advanced methods and technologies which promote its services and improvisation towards satisfying its customers.

**Re-engineering and its Benefits:**

The following are the benefits offered in the implementation:

1. In the process of re-engineering, the concerned organization can focus directly on the changes it requires to achieve better performance as compared to the current situation.

2. The areas of focus is performance which mainly depend on the parameters such as the range of products offered by the company, the services and the quality of the services rendered by the company as well as the costs involved in such transactions to the company.

3. Re-engineering to one that accepts change and knows how to deal with it.

4. Re-engineering has helped create more challenging and more rewarding jobs with broader responsibilities for employees (job redesign).

5. Over the past decade computer and other communication technologies have revolutionized human society. Academic Library as a social institution and librarianship as a service – oriented profession are now at the focal point of rapid social, cultural and technological changes.

6. The academic library environment is completely different from that of a century ago. It is making drastic change in Libraries. Libraries are changing due to the increased use of information Technology in the works and services. 7. Since the libraries are largely using computers and related technologies there should be corresponding changes in the information technologies skills, soft skills & knowledge of library professionals. Librarians are expected with all these changing skills & qualities to render effective library services. These skills qualities are as follows:
Qualities of Librarians:
A Librarian is higher authorized of library administration. He is the creed of professions. Each letter of the word librarian itself has carried a meaning in the light of the future of professions.

L - Leadership     I - Intelligent
B - Brilliant      R - Responsibilities
A - Alertness / Accountability   R - Respect for users
I - Ingenuity                                  N – Nice manager.

Apart from these qualities librarian should have:

Self – awareness-
This requires a capacity to correct judge the mood of different students & take decisions which are fair & reasonable.

Self – Control-
This implies that the librarian should not take any decision in haste, but examines all the things calming & methodical.

Social Responsibilities-
The perspective librarian in the modern society is required to be trained and equipped with the techniques of coping with the problems of illiteracy, poverty, social inequality, unemployment, explosion of population, casteism, communication, regionalism, gender race ethnicity, socio-economic status, exceptionality & others social hindrances impending national development.

Professionalism-
Professionalism in a global society demands librarian to be innovative in their attitude, flexible in their approach & reflective in their mind.

Global Vision & Strategy-
A quick sensing of future expectations, unforced seen events or changes as a master straight with sharp vision like eagle & determined efforts to be faster & fittest.

Leadership Quality-
Librarian should have the leadership qualities to develop suitable climate & cohesion in the user a social group.

Learner Centered Pedagogy-
In the information & communication age, librarian’s dominance will be replaced by knowledge & dominance. Therefore to handle the ever growing knowledge the in knowledge society requires to be trained to handle learner centered pedagogy.
Knowledge Management-
The communication revolution has raised the important of pooling the skills & workforce. Development of sophisticated database has made it impossible for the institution to build a reservoir of knowledge that can be drawn across the globe.

Good Communication-
The librarian in the modern age needs to be efficient & effective communication of knowledge skills & attitudes. Keeping abstract of latest development, the Librarian should be aware about the latest development of the world in term of demands of information. Massive influx of information due to information technology revolution needs a very meticulous systematic approach.

Motivation-
This auger has the ability to pursue goal and work with commitment without though of personal benefits.

Library Management and its Importance:

Special Software Packages:

Open Source Software Criteria-
Open source Initiative has identifies ten criteria for a software product to be called open source software. The OSI certifies a software license as an “OSI Certified License” on the basis of the following “Ten Commandments (Peter Vescuso, 2011).

1. Free redistribution.
2. Provide source code.
3. No discrimination against persons or groups.
4. No discrimination against fields of endeavor.
5. Distribution of license.

A,B,C,D.
This term according to the English language stands basically for ‘Automation of libraries and Centers of Documentation’. This was primarily developed by a Brazilian organization called ‘BIREME’ in association with another organization based in Belgium i.e. Flemish Inter-university Council, Belgium. These organizations have had access to the technology used by UNESCO program. The added advantage of this application is its flexibility of operation, and its vast usage over a period of time.
The basic and fundamental feature of this software is to integrate different tools available for library management and its functionality and give a broad base to important library functions such as MIS, terminologies used in lib-DBMS, User friendly transactions, books and periodical database management, internet as well as extranet delivery system by using search engines, as well as the institutional web portals. The details of this software application are available on its official website. The design philosophy of Avanti Library System emphasizes innovation, careful design and radical simplicity. Avanti is based on the implementation of neutral is purely abstract model that the Department should consider establishing design of library systems and the Library, to design avoids core for a very portable system and adaptability, it grows throughout the verbal for all types of library. The main advantage of this software application is that it is independent software and it does not require a specific platform to operate upon. This application software requires only one aspect that is the usage of Java Technology which can be installed onto any computer system and supporting Java technology. The usage of this application initially was restricted to libraries which were small or medium sized. But due to its features and broad based applications nowadays this software can be used mostly by all libraries of any size.

**Koha**

Koha is another fully featured integrated library system that was developed in 1999 but was used first time in January 2000. In 2001, Paul Poulain began adding many new & advance features in Koha, most significantly support for multiple languages. Koha is written in PERL language and requires a MySQL database, Apache web server and can work with Linux or Windows. Functional modules available in Koha are: Acquisition, cataloguing, Serial control, OPAC, and circulation. Its other features are MARC21, Barcode, Web interface and multi branch library support. The features of the software includes advanced features and these features can be used for by the users for sharing their comments, tagging purposes, social networking as well as media feeds. User support for Koha is available through documentation website, mailing lists and open source vendors. Latest version of Koha is 3.16.1 for Linux developed in June 2014 and for Windows operating system 3.2.0.
The program is well configured to meet the existing challenges and now can be used as multi-lingual software for users across the world. A separate web pressure, source code repository and community were established at Koha-community.org.

**Kuali Open Library Environment**

**Kuali** Open Library Environment (OLE) is the pioneer application specially designed and implemented in institutions of research and was found to be useful in managing and delivering intellectual information. This project came into existence because of the timely contributions made by its founder members. The grant for this project mainly came from the AMF in the year 2010. Initially the grant was given for a period of two years for development of the system. The final product as well as all the features came into the open market in the year 2014 for the benefit of the users.

Kuali Open Library Environment (OLE) has been organized functional modules like, each based on library workflows, Selection & Acquire supports, ordering and paying for library resources. Describe & Manage is comprised of the processes for records, authority control, cataloging and maintenance of holding and item information. It can be downloaded from http://www.kuali.org/download.

**NewGenLib**

NewGenLib is first open source software for library management developed in India. NewGenLib is also an integrated free/open library management system that is available under GNU General Public License (GNU GPL) - v3.

The first version was introduced in the year 2005 for the benefit of the users. The version which is now available to the users is configured as 3.0.4 and was introduced for the user benefit in 2012. NewGenLib can be downloaded for Windows as well as Linux operating system.

There as some advanced features in this software which can even be operated on mobile phone handsets with Android system and can also be used on tablet PCs. NewGenLib can be downloaded from its site source forge.net/projects/NewGenLib.

**OpenBiblio**

OpenBiblio is an open source Integrated Library System. The software is very popular with small, private collections and rural librarians worldwide due to its simplicity, extensive language support, runs on Windows & Linux and good documentation. Requires PHP, MySQL and a web server (Apache) for OpenBiblio.
OPAC, circulation, cataloging, reporting and staff administration functionality of this software. Latest version of OpenBiblio is 0.7.1.

**Open Book**

Open Book is a modification of KOHA software which has been specifically designed, developed and successfully implemented across the world by a company incorporated in the US of A called as the TRF Inc. and are located in Seattle.

Software in the same category is the Open Book which is easier to operate the software. This software has become very popular especially in the school libraries.

**PhpMyLibrary**

PhpMyLibrary is a software application which has been developed in the Philippines.

This is primarily a web based application and is generally applicable to medium/small libraries. It also follows the US-MARC standard for adding materials. It normally supports the MARC standard for data exchange and it can be downloaded from the official website.

- Cost effectiveness
- Availability of Source Code
- Open Standard and Vendor independence
- Reduced Maintains Cost
- Better Quality Control
- Localization
- Legally Free
- Easy Evaluation
- Access to source code and ability and right to modify it.

- No License Fee.

Economical problem faced each and every library in all over the world. Here in this article mentioned some recommended improvements for betterment of the automation in library and information field. An agency / mechanism to continuously evaluate the software may be formed to meet this requirement.

**Conclusions:**

To keep a pace with all these aspects in e-governance and Knowledge centric society, the role of library and Information Science professional can be viewed in the purview of the above points, in this knowledge society.
1.8.2 DIGITIZATION AND ITS IMPORTANCE

Techniques of Digitization:
Digital information is preserved in an electronic format by the usage of special storage devices such as pen-drives, Hard Disks of variable capacities of data storage, formats in audio, video, as well as images can be stored in specific storage devices meant for each category of format. The storage is always superior as compared to the paper records. This is because as time goes by paper quality is likely to wither, moisture, care not taken adequately to store files and papers leading to lack of storage space for old files and records.

Thus with the change of times, introduction of new technologies and methods, Environment friendly norms, lessening of paper usage and ‘Go Green’ method, convenience is the name of the game.

Importance of Intellectual Property Rights [IPR]:

Intellectual Property Rights which include the term of Copyrights, Trademarks and Patents. Copyrights cover all the literary works, dramatic and musical works, copyright in computer software, Copyright in architectural design, Copyright in performances and neighboring rights of producers of phonograms, broadcasting organizations and satellite transmission have been improved the article discusses in great details about digitization activities and how copyright act is complimented in both the countries. Detailed applications of the Copyrights and their amendments have been discussed at length in the research carried out by the scholar. Copyright provisions and their applicability globally as well as different countries in the light of recent amendments have been described at length in the works presented by the scholar. In the last part of article presents the issues of future challenges to copyright.

In some cases, strict application of law in its current form can even result in severe restrictions that eliminate advantages brought by technology. Of course, it is possible to reinterpret existing law in its application to intellectual works in a digital networked environment. Organizations often lack the intellectual property rights and permissions to the materials they hold.

One of the serious problems in creating digital libraries is to acquire copyright permissions which is considered to be an important component of the IPR.
Digital Library – Advantages:

Acquisitions of Electronic Resources:
Various methods are now being adopted to access online databases with the help of applications like LISA, JSTOR, etc. Reference works provided in different subject encyclopedias such as science, management, law are also available. Different varieties of dictionaries such as difficult words, pictures, animals’ plants as well as scientific works have now been introduced in the market for simplicity purposes. Different convenient methods to carry data in the form of handbooks as well as ready reference materials have also been introduced. Various web based applications have and are being developed for user convenience such as maps, atlas, and search engines have had their presence as well as popular usage. These are all such value additions which a library can provide to its users and subscribers.

Application of Electronic Services in the Library:
The internet services when established in any premises now can provide round the clock service in information delivery. The users if provided the facility in their hostels through WI-FI techniques, the researchers as well as the students can have access to information throughout the day when they use this service. The introduction of such electronic resources can provide effective services in a digital environment. With such facilities the librarians as well as the support staff can easily provide services in the areas which include catalogues, reference material related to different areas of research, information gathering and it’s dissemination.

New Library Services:
The latest development in library with web technology provided various new services to the users.

Virtual Library Tours:
The introduction of use of modern electronic methods further facilitates the users / subscribers to have access not only to the internal functioning but also access to external resources. For example the users can very well know the capacity of their library, their methods of data collection, and the kind of infrastructure the management has provided them for use in the premises. 4.4.2 Library Websites:
According to the statutes laid down by the academic authorities, now it is has become mandatory for every academic institution to have its own operational as well as an updated website. The website shall feature all such facilities provided by the institution. So at a glance the prospective as well as the existing user community can
get update information including the library as a separate feature. On any home page of the website, such information can be provided per their feature and the constitution of the institution. Such facility gives the reflection about the quality of the institution. Normally the educational institutions have a common website with the library and infrastructure as an integral feature. These websites give comprehensive information which is valuable not only for the existing users but also the prospective students who would be interested to join the institution in the days to come.

**Use of Web based Technology in Education:**

By the introduction of the terminology ‘world wide web’ the users of internet services have been provided with the search engines and its optimization in information gathering and dissemination of their works. The library feature of the institution is a very valuable base by which interactions can take place at different levels. Even educational institutions which have introduced distance learning programs for the benefit of their students have introduced facilities like distant login and have been provided with passwords to access the portal from wherever they are operating from. These institutions have been successful in imparting not only their educational programs, but also successfully disseminating study material, receiving and hosting assignments over their site for the benefit of their distant users. This has been possible only by the vast and positive use of such new and modern web based technologies.

**Library Blog:**

A Free expression of the views and responses has from all section of the users such as the Research Scholars, Student Community as well as the Faculty Members. There are some libraries which still use the traditional methods of using Bulletin Boards in their premises. By the introduction of the digital/electronic concepts, the methodology to disseminate information is also undergoing a sea change. Many of the libraries which have adopted the electronic operations have also introduced web based technology and intra as well as extranet services. The Social Media barons such as Face book, Twitter etc. are very effective tools to provide information and communication among users.
Digital Library – Disadvantages:
Costing: While a Digital library concept is introduced for the first time in any institution, it is observed that the investment as well as the resources that the organization needs requires special attentions as well as a separate budget in terms of finances. This in the initial stages adds to the expenditure of the institution. Most of the managements of institutions are skeptical about such critical issues and expenses to be incurred. But if we see the real scenario, only the initial expense on setting up such libraries with specialized software is high. This is because the entire setup requires high end configured computer systems, Printers, Reprographic facilities, special Library Management Software, introduction to internet services, networking of computer systems by using a LAN/WAN technology, routers, switches, ports, cables etc.
Physical problems: One cannot read whole book with the help of computer. After reading lot of time in front of computer leads eye problem and mental stress.
Environment of Library: Digital libraries cannot reproduce environment of traditional libraries.

Challenges and Issues related with the Digital Libraries:
It is seen that with the advancement in the ICT, the digital libraries are growing up. At one hand, they are providing information just in a fraction of minutes; on the other hand, they are posing many problems in front of us. The following are some of the major problems which have to be stored out for further strengthening of digital libraries.

Quality Problem:
A serious doubt is raised at times with specific reference to the accuracy of the information provided by the source. If the information provided is of doubtful in nature it could seriously hamper the study program or the works being undertaken by the usage of such information and its source. In such cases the role of the librarian or the administrator of the library is of utmost importance. The resources provided by the establishment of a digital / electronic library are also of equal importance to the users as well as the subscribers in using authenticated and trustworthy information so as to draw logical conclusions. In this way the identity of the library is also established and a confidence building measure for the students, Faculty as well as the Researchers to come forward and use the resources from the library in the most effective ways. Similarly it will
become easy for the librarians as well as the custodians to store and preserve such valuable information in established electronic formats for further usage.

**Interoperability:**
The interoperability problems that librarians solve routinely for conventional collections are more difficult in the world of software enabled digital libraries. This research explains how the ICT has proved to be most influential technology of the century. Impact of IT on higher education and academic libraries is discussed with examples. At the background of the impact of ICT, the stakeholders such as government, governing bodies as well as users are expecting a definite response from the academic libraries. This paper discusses the response expected from the academic libraries which are working the digital environment. Now with the use of e-resources, even if the user is sitting at his residence or remotely located, he/she can have access to such information by seeking the help of search engines and knowledge shared by different authors on the same subject or same topic with its update.

This can add the factor of accuracy as well as authenticity to the information sought by the users.

The internet has emerged as the most powerful medium for storage and retrieval of information. Since past few years have increased considerably. The traditional library systems are going to transfer into digital library systems. In modern age books, journals and many other information materials are seen in electronic forms. For effective service delivering librarians are expected to be current with man and his varying demand for information and information resources.

The society has moving fast direction in the new millennium, the application of IT are also disciplined. The IT in the form of computers, micro electronics is same called as E-services.

**Major Problems in Library Automation:**
The major problems in library automation are discussed as below –

a. Technological Problems.
b. Attitudinal Problems.
c. Economic Problems.
d. Recommended Improvements.
Technological Problems-
Technological problems include both the hardware, i.e. the computer as an instruments information processing and the software, i.e. the methodology which is applied. The major problems faced today in terms of the hardware are due to the variety of computers being used in different types of research and business institutions.

The computers, manufactured by various firm are not compatible. Developing countries sometimes receive sophisticated technology like computers as gifts from more developed countries; these often become obsolete from the manufacturer’s point of view.

Attitudinal Problem-
Computers appear very awesome to developing countries. They are powerful machines which can perform many functions and therefore offer a solution to the many types of manual inefficiency which often plague the developing countries. Among librarians there are two groups often giving insufficient though to the real value of the computer to the organization /institution and make uneconomical, haphazard use of the facility.

The scheme failed, however, because labour unions opposed in fearing retrenchment of library staff. Among developing countries, the attitudes of India’s librarians are typical. They are not confident about automated services. Library staff should therefore be trained in programming and thus be made aware of the work involved in automation.

They will be then realizing that automation will not take away their jobs. They will also realize that computers are machines which have their limitations and the computer specialist is another major hindrance in establishing any effective automated system in a library.

Economic Problems-
In India, libraries and information centers are attached to government organizations or research institutions, so library services can not be calculated on a profit/loss basis. Long term benefits have to keep in mind while justifying such services. The libraries that have computerized some of their services or operations often have not taken such steps as a result of serious thought. Computerization has glamour of its own in the minds of many librarians.
Overly enthusiastic librarians often run uneconomical programmes, producing lengthy listening for instance in the name of computerized service.

Copyright:
The scope of these works earlier was limited only to the literary works in the form of Books, Journals, articles in the Newspapers and Magazines. But due to the amendments in the law as well as widening the scope of the intellectual properties now these works also cover all such areas in which the works need to be preserved as well. Now according to the amendments in this law, apart from literary works, musical compositions presented by artists, performances by actors in films as well as dramatics, introduction of certain special features in digital/electronic technologies such as special softwares’ which provide special services or meant for special purposes.

One of the leading authorities [K. Thiarani], related with issues on copyrights in his study has revealed that the term came to be of importance when printing technology gained cognizance and methods of document reproduction came to be highlighted. Copying of information was and became a very easy task for the users who wanted to have shortcuts in their works. It was but natural that original works got easily duplicated.

That is why in order to preserve the rights of those people who brought forward their original works such statutes were introduced. Over a period of time, not only the literary works, but such works such as works of art, musical compositions, and lyrics written by music composers were also within the ambit of the copyrights. In the current scenario, the publishers of original books, the authors, program broadcasting organizations, producers of programs, film industry personnel, dramatists, audio, video cassettes companies all have come under the umbrella of this important statute. These intellectuals have been granted legal protection under the law and serious penal actions are invited from the violators of the act which also have included the act of infringement of rights.

For the enactment of the copyright act, three main attributes were and are responsible. Let us see how: With the introduction of Digitization and use of electronic media, sources of information widened and information was readily available on the internet and channels of communication were made open globally. By using these techniques, downloading of information, arranging in proper format, and reproducing the same as original has been possible now without checking the
authenticity of the source. The second attribute was the Networking of resources. With the help of search engines, secondary data is available in the form of cached pages. They are open sources of information. Method of Cut, Copy and paste is often used in such cases to create documents and which can be turned into presentations which are as authentic as original ones.

Copyright: Defined
Different definitions and interpretations have been expressed by the authorities who coined this law. According to WIPO, the term copyright was applied to preserve the rights of the people who brought forward their original literary as well as artistic works. Later the law was extended to cover not only the literary aspects but also brought in to the ambit of all such works of art, musical compositions, musical lyrics, dramatics as well as all works related with the human intellect. Further it was also observed and extended to those works of the authors who had published their original works as well as drafted their manuscripts but not published as their works. Over a period of time legal binding was brought upon by the enactment as a law and suitable amendments were introduced so as to cover the intellectual properties within its ambit. Some authors have also described copyrights as a statute in which all the rights of the publishers are preserved by granting them legal status. Their right has also including the sales of their work whether it is in any form of either of art or of literary publications.

The Basis of System of Copyrights:
The basic purpose of introducing this Act was to provide value addition to the researched works. Initially when this law was introduced, the ambit was restricted only to the books where the provisions were strict for unlawful activities related to their reproduction and the law was enacted only for preventive purposes. Since the times have changed the law has been amended and now a two dimensional strategy has been applied in its implementation. The first part deals specifically with the issues directly related to copyright violations. The second aspect has specifically dealing with all the provisions relating directly with the infringement of copyrights. Earlier when printing technology was not in existence, copying by hand was the only way out. Now in the era of information technology, printings have become very common and pose a fresh challenge to copyright violations. Users have now started to use shortcut methods. Ready reference data is available on the internet through
the search engines. Topics of interest can easily be downloaded, information collated and properly formatted.

Conclusions:
Free expression of the views and responses from all section of the users such as the Research Scholars, Student Community as well as the Faculty Members. As we now know that the establishment of electronic libraries have its roles cut out in the digital age.

The convenience of its operations from any location has made it easier for any user to use the sources as per their choice.

Information gathered by the user can be stored in digital formats of their convenience and the same can be retrieved by installing the desired application at the user end.

Many of the Institution heads have and are facing difficulties in establishing digital libraries in their institution premises because of limitations.

These limitations also include reservations as well as apprehensions regarding acceptability as well as misuse of facilities by its staff for want of information security and data security reasons.

These institutions do not have such applications in place. They also have had the difficulty in allocation of funds and financial resources for the establishment of such facilities in their premises.

Though the establishment of e-libraries have been made compulsory by the statutory authorities, and has global acceptance, Indian educational institutions are now gearing up to use such facilities and competitive advantage.

Digital libraries are now being declared as institutions providing the right information as well as the establishment offering user convenient services in a cost effective manner.

By the use of e-libraries, information is available to the user on finger tips which is globally acceptable and authentic.

By the use of search engines and cross checking from different sites, can add and provide authentic information to its users and subscribers.

By the establishment of electronic library in the institution by using more number of computer terminals, can provide access to many users at the same time on different sources and sites.
With the help of the Internet, now it is possible for many users to access the information by using different search engines at the same time.
Statutory authorities also have insisted on having better speed of connectivity in their premises.
There are norms set for the establishment of electronic libraries as well as certain standards of its effective operations so as to maintain its reliability and authenticity. This in return can help the user to have ease of access to the desired websites and information sites.
An important aspect of the set-up of the e-libraries is to provide its users the ease of access, access at click of the mouse and the access to user friendly resources.
With the help of remote connectivity, and the access to the institutional portal with the help of a user name and valid password, services can be availed from the digital libraries on a round the clock basis to the authentic users.
With the help of electronic means, the originality of any document can be preserved and ensure the longevity of life to it.
It can be retrieved in the same form as and when required for use.
In order to establish an electronic library, little space to house computers and electronic resources is required. In this space large amount of information can be stored according to the configuration of the computers used to establish the same.
For operations of an electronic library, the connectivity by the Internet is essential.
High speed Internet connectivity ensures quicker access to the required sites, downloading of information as well as its proper storage.
Though the establishment cost of an e-library is high, the maintenance of the resources and equipment is lower and economical depending on the services offered.
By analyzing the advantages of an electronic library and its establishment, the importance can be known only after its effective use in the desired areas of interest.
E-libraries have now been established in the educational institutions in the urban areas and slowly being introduced in the semi-urban areas. It will take some period of time for the rural areas and the institutions for the want and meeting infrastructural needs for establishment.
Due to the modernization in the education system and the inputs coming in from the industry, there are changes expected in the society as well. The extensive use of information technology and its channels, are paving the way for information based society and are gaining importance.

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In addition to this, more and more as well as new e-services are being introduced for the benefit of the users. The e-library is one of the best examples to exhibit such changes.

The utilization of all possible resources and retrieving the stored information for effective usage by the users and subscribers is possible from these information centres.

The management of the libraries need to gear up for their changes in their roles as better information providers and move according to the time.

The times have changed not only for the information use and resources, the publishing sector is also undergoing changes according to the different needs of the users.

There is a shift from the traditional methods to the use of modern methods in this sector as well by the use of e-resources and effective utilization of the channels.

The information in the form of literature provided in this sector also requires proper reviewing, then appropriate selections and peer reviewing by the specialists from the field of publishing.

As some of the educational institutional heads have apprehensions regarding the establishment of e-libraries, accuracy of information, its authenticity as well as the origin of the source of information is also an area of doubt and concern.

If the information, or its source is not found to be authentic and the same information has been used, it could cause damage to the works, the image of the author as well as loss of reputation to the institution.

Here the importance should be given to the administrators or the custodians of information for establishing the authenticity and provision of right information at the right time.

The authenticated information provided and retrieved from an established e-library can be used by the users for their research activities as well as academic purposes.

The advantages are many not only to the users, but to the credit of the information professionals and the institution.

Thus such institutions will establish their own identity and invite researchers to use their facilities in the best possible manner.

Since the concept of use of Information Technology channels gaining importance by the day, the extensive use of the services offered by ISPs and access becoming easier and cheaper, it is expected that the educational institution managements
should take cognizance of these factors and go ahead with the establishment of e-libraries in their premises.

Such libraries can be inspected and networked by the specialists and certified fit for operational purposes.

There are many such examples which can help us realize the importance of the impact of information technology especially in the education sector, the expectations from the academic libraries also have increased many fold.

Since the access to online journals is now becoming a common practice in at least the urban and semi-urban areas, the subscriptions to printed journals has decreased. Most of the educational institutions as well as the research oriented faculty members are getting their articles published in online journals which have gained popularity in the last couple of years.

These journals and publications now accessible online and information available round the clock, the users are having the convenience of updating themselves.

The onus is now on the establishments to provide services suitable to the users as well as the subscribers to meet their growing demands and their satisfaction.

Some of the popular softwares which are used for digital / electronic library management also include e-prints, Fedora and Greenstone

Library Management professionals keep looking for economic operations. Rather than the institutions spending on the establishment with licensed software, any such application which is available on the internet free of cost is always preferred.

In Library management, such softwares are also available. D-Space is one such software which can be installed and used freely.

Such softwares are categorized under open source software applications.

In the current digitized environment, information in any form on any topic that required is the need of the hour.

The librarians or so called custodians of institutional e-libraries get requests and demands from the students, faculty and users to provide information and updates on the specific topics or subjects as per their needs.

It becomes imperative for these skilled personnel to provide the same on a time bound basis so as to give relevancy and credence to the needs.

This is even more important for the students who are pursuing their education via distance mode.
The educational institutions are now required not only to provide the services on one hand but also upgrade the existing infrastructure by installing high end configured computer systems, as well as connected peripherals such as scanners, routers, LAN connectivity as well as sufficient bandwidth to handle more numbers of users who access the services at the same time. At the same time we also see in the Indian educations system that there are mainly three categories of libraries which are functioning today.

With the digital / e-libraries becoming more and more popular and accepted by the educational institutions, a new era will be in the offing for information provisions and effective use of e-resources in the operations consisting of data access, data management, creation of databases as well as storage of valuable data.

In the education sector and specifically targeting those institutions which require library facilities.

The institutions which offer higher education and professional courses have been covered in the area of the research activity.

In order to compete with other educational institutions as well as the facilities provided in the respective colleges, this factor and facility is proving to be an advantage and an important feature to be highlighted for drawing admissions to the institution.

In the last few years, the area of research and development has seen many positives and changes for the betterment.

The introduction of new norms, stress on copyrights and intellectual properties have increased the need and importance of e-libraries.

Online publications and availability of information, checking on the contents and controlling plagiarism and maintaining the rights of the authors also has gained popularity. Hence the move towards digitization.

The more the bandwidth, faster is the connectivity to the internet. Better the connectivity, faster is the access to the required sites. Better the access, faster is the download.

Better is the download quicker is the task completed. So all the aspects are interlinked.

The solutions to the challenges can be easily overcome by the installation of such resources.
Developing an e-library in any institution depends on the policies implemented by the statutory bodies controlling them.

These statutory bodies receive instructions according to the National Education Policy to be implemented by the Government of the day. In global scenario too, it is expected that there should be standardized norms in establishment of such institutions providing importance to its users world-wide.

For any institution to establish an e-library, there are certain norms as well as basic requirements to be fulfilled. They include the building, space, electrical, furniture and fixtures as part of the basic establishment. Then come the equipments such as the required number of computers, peripherals such as printers, reprography machines, LAN cabling, routers, switches etc.

And last but not the least, skilled personnel to handle and maintain the given infrastructure as well as handing over the responsibilities of the same to the Librarian who is expected to be qualified and experienced to deal with the challenges and provide effective solutions to the users of the premises and availing the services from the department.

1.9 North Maharashtra University-

North Maharashtra University Jalgaon was established in 1990 after separating it from the University of Pune but started its academic and administration functioning from 1991 to 1992. University is recognized under section 2 (f) and 12 (B). University is extended in three districts as like Jalgaon, Dhule and Nandurbar. The University has opened door to tribal area in khandesh region because of in khandesh region especially Nandurbar District majority people belong to tribal. Presently Prof. Dr.P.P.Patil is a vice chancellor of University from oct. 2016. There are 220 affiliated colleges and 04 universities recognize research centers.

The university is well equipped with infrastructure as like examination section, central library, separate building for each school, indoor stadium, guest house, shikshan bhavan, hostel for students, quarters for staff, central school, bank, laborites and other developed infrastructural. In this university there are eight faculty as like Arts and fine arts, Commerce and management, Science, engineering and technology, Pharmacy, Law, Education and Mental, Moral and Social Sciences. Currently during the third cycle re-accreditation by NAAC awarded ‘A’Grade with CGPA 3.11 under the guidance of Prof. Dr.Sudhir Meshram (Vice Chancellor of
North Maharashtra University Jalgaon). University central library is a very rich library and more than 50,000 collections and 500 magazine and various journals with online journals. The India Today in June 2013 has conducted a survey through Nelson research and Consultancy Company and give rank No. 40 in all over India out of 620 Universities.

1.9.1 Objectives of the study-

The purpose of research is to discover answer to question with the help of scientific research methodology. Scientific method is the very essential for any research area as like social sciences, medical sciences, physical sciences, chemical science and other discipline. The main aim of research is to search out the truth which is hidden and which has not been discovered as yet. Through each research study has its separate specific purpose, we may think of research objectives as falling into a number of benefits for society and other agencies.

The study presents use of internet and e-resources among science teachers affiliated to North Maharashtra University Jalgaon Region and in this study include assistant professor, Associate Professor and Professor in affiliated colleges also University. The main objectives of this study is find out the access to e-resource on internet such as e-books, e-journals, e-database, digital content, web publishing etc.

The study focuses on teachers of various colleges affiliated to North Maharashtra University, Jalgaon.

1. To search the purpose of using internet and e-resource by professor, associate professor and Assistant Professor in various colleges affiliated to North Maharashtra University Jalgaon.
2. To know which problems arise by science teachers while using electronic information, internet and e-resources.
3. To search the role of electronic resources and internet in teaching, learning and research process.
4. To evaluate the quality of information available on the internet and e-resource format.
5. To evaluate the use of methods, when use mostly which search engine use, how many spent on internet and access to e-resource.
6. To observed the use of internet and e-resources for their academic and research purpose.
1.9.2 Hypothesis-

Two important functions that hypotheses serve in scientific inquiry are the development of theory and the statements parts of an existing theory and tables form. According the Snow described the six levels of theory with the first level of being formulation of hypothesis. At this initial level, the theory developer has a hunch based on theory, past experience, observations and information gained from other sources. A hypothesis is formulated in such a way that this hunch can be tested. Based upon the findings on the subsequent research, the hypothesis is supported or rejected and more hypotheses are formulated to continue the process of building cohesive theory.

The most common of hypotheses is two test whether an existing theory can be used to solve the problem. In everyday situations, those who confront problems often propose informational hypothesis that can be tested directly.

The scientific hypothesis is formal affirmative statement predicting a single research outcome, a tentative analysis of the relationship between two or more than two variables. For the hypothesis to be testes statements in research, the variables must be operationally defined. That is the researcher specifies what and which operation has been conducted, or taste used to verify the hypothesis for the measurement of hypothesis. Researcher arranges planning for the measurements of each variable with relationship to other variables. The hypothesis focuses on the investigation of definite target and determines what observations and measurements are to be used.

A many year ago the hypothesis was formulated that there is a positive causal relationship between two or more than two diseases. The hypothesis proposed a tentative explanation that led to many studies comparing the incidence of heart disease among cigarette smokers and nonsmokers. As a result of these extensive studies, the medical professional now generally accepts that relationship has been established in two or more variables in research.

The variables may be abstractions that cannot be observed in the observational sciences as like sociology research, psychological research process, economical research, political sciences, library and information sciences and other behavioral sciences. In this sciences the variables essential be defined operationally for describe some samples of real behavior of human kind that are concrete enough to be observed the use of directly methods. The relationship between theses observational
incidents may be deducted as consistent with the consequences of the hypothesis. With the help of collected data and analysis data hypothesis may be judged to be probably true or false.

After the extensive literary survey researcher should state clear term working hypothesis and working hypothesis is a tentative assumption on the related research topics. Research hypothesis are developed is particularly important since the provide the main point for research. They also effect the manner in which test must be conducted in the analysis of data and analysis the quality of data which required for the analysis the data. In the many types of research the development of working hypothesis role is very essential. Hypothesis is a very specific on the research topics and limited to the related research because it is a testable in future research and after the analysis data that hypothesis may be true or false. In sharpens his thinking and focuses attention on the more important facts of the problem. It also indicates the types of data required and the types of methods of data analysis to be used.

The developing hypothesis depend on various topics as like Discussions with colleagues and experts about the related research topics, its origin and objectives in seeking a solution, analysis of data and collected records on concerning the research problems, review of similar studies in the area or the studies on present study and exploratory personal investigation which involves original field interviews on a limited scale with interested parties and individuals with the view of particular accept of the problems.

1. Internet and electronic resources are mostly used in teaching, learning, and research process by science teachers.
2. Various technological and other problems faced by science teachers while using internet and accessing electronic resources.
3. Huge information is easily available on the internet and it has high quality.
4. Majority science teachers adopt advanced search methods for accessing and searching information for their purpose.
5. Majority science teachers are depending on electronic resources for their teaching, learning and research process.
6. In modern era internet and social media are very big role in acquiring knowledge and using e-resources for their academic purpose.
1.9.3 Scope and limitation of the study-

The study helps to search the use of internet and electronic resources in the field of academics. In this study focus on what is the role of e-resources in science fields. The scope of the present study is limited to the only science teachers of various colleges affiliated to North Maharashtra University, Jalgaon.

Utility of the study- In the modern era lot of pages are available on the internet so majority users use electronic resources for their purpose. The result showed that majority users use e-resources for their study, research and academic purpose so we should provide better service to the science teachers about using e-resources. Present research useful for the making electronic information policies and provide better services to the science teachers. The study of this kind essential for librarians, digital libraries makers, Information Communication Technology experts and the fundamental institutions for their making policies about e-resources. Study very important for collection development policies because of we should get first preference to users demand.

1.9.4 Methodology-

Keeping in view the objectives of the present research and questionnaire was designated. The data will be collected through the medium of questionnaire by science teachers of various colleges affiliated North Maharashtra University Jalgaon. 270 questionnaires provided to the science teachers by hand and collect 209 questionnaires from science teachers. We arranged personal interview and observational visit for related data collection in various science colleges. Conducted a survey method and discuss about the role of internet and how to use e-resource by science teachers. The collected data and information analyze using statically method and techniques of research methodology and secondary data collected from various reference books, journals, e-resource, magazine, newspapers, articles and conference proceeding etc. The selection of the science teachers was based on the using internet and electronic resources for their academic purpose.

1.9.5 Questionnaire for users-

The search was limited only those colleges who affiliated to North Maharashtra University Jalgaon Region by the teachers of science faculty about the use of e-journals, e-books, e-databases, e-thesis and internet. Questionnaire developed for
search opinion of science teachers about use of internet and to search the role of electronic resources.

1.9.6 Statement of problems-

The quality of libraries depends on the use of e-resources by the library users so majority libraries are provides various e-resources on their particular subjects to users. Sciences teachers of North Maharashtra University Jalgaon used e-resources for collecting lot of information for their particular purpose. A lot of information of science subjects are available on the internet so majority science teachers use e-resources for their teaching, learning and research purpose. Science subjects are on international level and their use is also very huge in the modern era so majority e-resources are available on the internet.
1.9.7 Organization of Chapters

1. Introduction-
   Preamble, Role of ICT in libraries, ICT and Library and information science, Internet, History of Internet, Meaning of computer networking, Classified computer network on the basis of geographical area, Internet and World Wide Web, Advantages of Web, Terms in Network, Internet Protocol, Major Terms in Internet, Present and Future of Internet by users Through digital libraries, Major use of E-resources of users, Internet Service Providers, Major Electronic Resources Provider, References

2. Review of literature:
   The second chapter entitled ‘Review of literature’ covers the development of internet usages and its benefits for teaching learning and research process, use of electronic resources for users purpose, benefits of e-resources in academic purpose, information convert print to electronic resources, development of e-resources and its impact on users behavior among searching information.

3. Research Methodology - Development of research design, role of e-resources in education system, science teacher’s distribution various fields basic on the questionnaire, electronic resources are very useful for teaching learning process.

4. Data analysis - profile of science teachers, college wise distribution of response dance, graphical presentation of science teachers, tabulation of data provide by science teachers through questionnaire, compare all data provide by teachers about e-resources and internet, includes in brief use of internet and e-resources.

5. Recommendation and conclusions - Users recommendation about use of e-resources for future researcher, user’s opinion and perception about internet for future planning.

6. Bibliography
1.9.8 References


bağımlılığı. (2013). Analyzing the relationship between social networking addiction, interaction anxiousness and levels of loneliness of pre-service teachers. *Journal of Human Sciences*.


Maidul, I. U. (n.d.). Using Pattern of Internet and E-resources by the Students and Faculty Members of a Private University in Bangladesh. 122.


Sudhier, K. S. (2011). Use of E-resources by the Students and Researchers of Faculty of Arts, University Of Kerla. *International Journal of Information Dissemination and Technology; Ambala1.3*, 120-22.


