2.0 Review of the Literature

The exponential development of medical information and the user’s community, necessitated to access the user’s habits, their information seeking behavior, information needs and intercommunication with information and communication channels. In the past, most of the user studies were based on the identification on general needs and preferences of the users but now the time has changed and the researches are conducting in many different areas.

The present study is concern with, “The Impact of Information Communication Technology (ICT) on Medical College Libraries of M.P.”. ICT is being a recent technological concept of modern libraries. Consequently, there is a good number of studies have been conducted in foreign countries, especially in the USA, Germany, Russia, Japan, Canada, Britain and other developed countries of the world. In the field of ICT and medical college libraries there are some studies also have been conducted in India. A brief review is being presented below of some of the selected studies.

Idowu (2003) wrote in his article on the impact of ICTs like- Mobile-phones, Internet, AV/VD etc. in the Health-care sector of Nigeria entitled “Information and Communication Technology in Nigeria: The Health-Sector Experience”. The researcher described that the commercial use of Internet access is very slower than personal use in Nigeria. Medical experts use mobile phones, but only for their personal use. Nigerian medical schools are not connected to the Internet. Only 32% medical expert goes to Cyber Cafes to access the Internet. The study also showed that due to the lack of Internet connections Nigerian hospitals are suffering with the quality of health-care they provide to the people.

Spacey et al. (2003) conducted a study entitled “ICT and change in UK public libraries: Does training matter?” to find the importance of various training programs in UK public libraries. Technological development made this world global. ICTs have the value to make and change these developments.
ICTs are making to the libraries valuable and changing the thinking of society that library is not a growing organism. The importance of training program of ICT in automated libraries could not be ignored. The introductions of ICT in the UK public libraries have changed the atmosphere of libraries. Automation has been increased the work capacity of library professionals and made them able to work fast and fulfil the user’s need faster. To implement the ICT resources in the libraries well, library professionals have to update themselves with the latest technologies. Sometimes human fears about the adoption of technology due the lack of knowledge and it could be a big reason to introduce the technology. Conducting regular training programs can remove this fear. In this research they found that in UK public libraries with the help of regular training programs, library professionals and management using ICT very well and providing services to the users.

Talvitie (2003) explained needs and possibilities to develop special ICT applications in urban and regional areas. Planning and practices emergence the knowledge and network of the society and explain the impact of the ICT, on spatial change. Researcher found that ICT and its applications would affect library developments most of the time and should be taken into account in library planning. Development of the ICT and its applications are growing with time, it develops the knowledge world, influences advancement of the society and should therefore be taken step in urban and regional planning.

Cholin (2005) found the information about the implementation of IT in library services in the Indian University Libraries and how users are satisfied with the implementation of applications and tools of information technology. User needs the IT resources to take print of information, download the files, attach a soft copy of a file with their mail-id, etc and researcher got the conclusion that the Indian Universities are doing a good job by providing authentic IT services to the users.
Lee (2005) wrote an article on “Impact of ICT on Library Services for Visually Impaired”. In the study researcher examined the impact of ICT for visually impaired people in main streams libraries. According to the research, mainstream libraries are facing several problems to provide Information to the visually impaired peoples due to the lack of funds, ignorance of management, unavailability of hardware/software. But now the new technology is providing opportunities for them. The study is basically based on National Library of Korea, which is providing the print version of reading material to the disabled peoples.

Moursand (2005) threw the light on the “Introduction of Information Communication Technology in Education”. A huge number of problems are faced by educational professionals in the field of education- like infrastructure, digitalization, lack of qualified teachers, costly education-system etc. ICT shows the solutions for these problems. With ICT they can decide that what students should have to learn to move in their lives.

Akir (2006) found in his study entitled “Impact of Information Communication Technology on Teaching and Training: A Qualitative Systematic Review” that the framework of the use of ICT is very essential to produce an open and scalable classification system in libraries for teaching, learning and training. He has taken data from the period of year 1995-2005. Researcher classified different ICT applications/resources and systems on the basis of their educational/organizational usages in teaching and training in universities and corporate houses. Researcher investigated the result from the point of view of educators and trainers. Researcher suggested that faculty and trainers from various organizations have been supported to incorporate their efforts of technology in teaching and training.

Chisenga (2006) in his research investigated simply that many years ago libraries were the place or building at where users can access information resources and services in physical form. ICT has transformed the way to get information from libraries. Now libraries are keeping information resources in the form of E-books, Periodicals, Videos and Films etc.
These resources are managed by the librarians and information service providers in libraries. These resources are always available in 24*7 days in the year for users when their computers are connected to the Internet.

**Collste (2006)** studied the rapid growth of technology in Information and Communication Technologies (ICT) environment. The artificial intelligence of computers and the Internet are increasing the use of advanced technologies in the implementation of Medicine and Medical-care with other ambient devices. In the research a series of different viewpoints from various fields of proficiency on some of the ways in which ICT has been changed the social image in regards of the practice of medicine was discussed. The study focused on the various circumstances in the form of a Panel Session, where any other question of human choice and related computing can be discussed in a specific outline. The research represented an immerge variety of disciplines like Philosophy, Law, Psychology, Ethics, Medical-care, and Computer science which brought a vast perspective of the discussions for the further researchers.

**Islam and Islam (2006)** have thrown the light on the new dimensions of librarian-ship in the global ICT era where ICT provides new technologies and services to disseminate information and knowledge. The study focused on that how libraries are replacing their old technologies with advanced new technologies and growing with the time. The researchers also investigated the services, impact and problems faced by library professionals and users while implementing ICTs in the various library departments and services. The researchers described the components and terminology used for ICTs. Use of computers and automation makes the library professionals techno-literate. Now the libraries, research centers, information centers can’t move ahead without using ICTs and it satisfies the demand of user’s information.

**Ghosh (2007)** explained the importance of ICT in the area of AIDS/HIV epidemic. This is a big challenge for our country. Libraries and information centres are involving their contribution to overcome this challenge through ICT. ICTs can make available the library and information services directly to the end users.
About this disease, lots of wrong concepts are scattered in the society. So library and information centres are organizing many literacy programs for spreading awareness regarding missed-concepts in the societies.

There are a lot of ICT tools, such as- E-mail, Websites, CD ROMs, Appropriate databases, Documentation-list, On-line discussion, On-line questions and Answer forum, Chat rooms, Video-conferencing and Distance education programs are using to aware peoples by Indian Government and other organizations. Aids-India Organization, Aids India E-Forum, Mobile games on HIV/AIDS awareness, Heroes-project, Saadhan HIV/AIDS Helpline are some international initiatives trying to aware the people of the country.

Mahmood and Khan (2007) described in their study about the needs of ICT recourses in library science education for library professionals in Pakistan. Continuing education (CE) was the theme of this research. Like the professionals of other fields, library professionals should also have to be the expertise of ICT resources. They have to be capable of using ICT resources, in all departments of the library. The researcher concluded that LIS schools and Professional Library Science Associations should organize the short-term & long-term training programs/workshops/Seminars for professionals and the employer should provide fund for it. LIS schools can arrange evening and free time classes for them.

Webb (2007) examined in his thesis entitled “Key factors in the use of ICT in primary school classroom” that the primary schools of Tasmania are using ICT applications over the past three decades. The Tasmanian government has been providing computer, computer based Information and Communication Technology for supporting their teachers for teaching and learning process. The major objectives of these efforts were to enhance the educational qualifications of teachers at the national level to teach the students for participating in the emerging knowledge world, information based and paperless society.
Antherjanam and Sheeja (2008) found in their study entitled “Impact of ICT on Library and Information Science: Major Shifts and Practices in CUSAT Central Library” that’s how modern education system depends upon the Information Communication Technology and how it provides information to the users rapidly, accurately and efficiently? There are a large number of ICT enabled services available in the central library of CUSAT including OPAC, e- resources, etc. Researchers studied the various lifelong impacts of ICT in different departments of CUSAT library. They observed the different types of working procedure/activities of different sections of CUSAT, discussed it with colleagues, users/visitors and analyzed the available library records for collecting data. The findings from this research are given below-

1. Users are doing very well with ICT resources.

2. Mobiles & E-mail are becoming most important message conveying tools for the staff and users.

3. Library facilities like CAS, SDI etc are also going faster than before.

4. The circulation procedure of books has become very easy by the use of software.

5. Approx 90% users use the OPAC for getting their information about the books.

6. 65% of the users search their information, on-line journals etc. on the Internet.

Birchall and Giambona (2008) explored in their study that how Service Managers use the ICT applications in their organizations and how ICT impacts the working capacity of managers and the business models. Researcher collected the data from 181 managers of different industries. Managers play an important role to build up an organization and adoption of ICT tools may be the key of success of any organization. Researcher found the positive response of respondents regarding the impact of ICTs. ICT developed the concept of the working from anytime, anywhere in the organization and increases the capacity of managers.
Ilomaki (2008) in his article studied “The effects of ICT on school: teachers’ and students’ perspectives”. The study found information about the National Education Policy of Finland which is very essential for the implementation ICT applications and its use in all educational institutions in the country.

The result shows that many schools are starting special ICT projects for the development of their student’s ICT skills. These developments have made the true changes in teaching practices in Finland. Therefore, so many educational institutions and organizations have chosen to take up the student-centred education techniques for the study, such as teamwork, knowledge-based teaching as well as practices is must for the students.

Siddike (2008) in his research entitled “Use of Information and Communication Technology (ICT) for Automated Networking and Resource Sharing in the Selected Public and Private University Libraries in Bangladesh: A Study” investigated that analogue collections can’t replace by the Digital resources but it can be an accompaniment and build up analogue originals. It would be beneficial for the entire student community of Bangladesh when library applies ICT applications and it increases the value of library professionals and collections.

Singh and Nazim (2008) investigated the impact of ICT on this global information age. How Information Communication Technology replaces old technologies with recent technologies per day and makes the world global? ICTs are a powerful tool for getting information in the modern world and libraries are playing an important role to transform the human society into a knowledge society.

Modern libraries do not keep only the books in the stakes or other printed materials, they provide authentic information to the users in which form they need by using ICT resources. In this research, researcher discussed the issues and problems facing by Indian libraries and opportunities they got to transform themselves into information and research centres because knowledge is the power and power makes the man wealthy, so the libraries are making people wealthy as they are the powerhouse of the knowledge.
Abdelrahman (2009) found in his research entitled “The State of ICT Implementation and Training at the University of Khartoum Library System (UKLIS)” about the existing state of affairs for the implementation of ICTs in the University of Khartoum Library System and training programs/workshops conducted for the library professionals to enhance their computer knowledge and work capacity. The Researcher studied that there is not any particular policy for ICTs implementation and staff training programs at the UKLIS and suggested that there should be a relevant policy for the development of ICT infrastructure and training programs to aware library staff about ICTs. The management should provide sufficient fund also.

Agarwal (2009) made a study of consortium of E-journals in the medical college libraries of M.P. The researcher has implored the feasibility of E-journal consortium by asserting that electronic publication has resulted in an easy access to a large number of electronic resources in the medical college libraries in M.P. In the research there are 9 medical colleges from M.P. are selected for the study. The researcher defined library consortium and its usefulness in the medical college libraries and observed that the concept of library consortium is still in early stage in the state.

The researcher found that in the nearest future the medical college library consortium headquarters will function as a resource centre as well as coordinating centres with an aim to cater the need of its participants. Madhya Pradesh Medical College Library Consortium may trigger is not a worthy development of medical college library services for researchers. The researcher concluded that the consortium of E-journals are indispensable in this electronic age to satisfy the information needs of the users which is “quite feasible” in case of the Medical College Libraries of Madhya Pradesh.

Ghosh and Ghosh (2009) explained the effects of ICT on the knowledge economy. At the present, knowledge based society is developing very fast. India is the leading country in information technology (IT) age and a large exporter of knowledge workers in the whole world. Indian government support its state governments to settle the knowledge-based industries and promote the software technology parks, biotechnology parks, and export-processing zones apart from the metropolitan cities.
Now ICT has become the powerful tool for certain social groups by which important information circulates between persons/groups of different places through using the Internet. Educated and skilled population, information infrastructure, economic motivation and institutional administration etc. are needed to create, share and use knowledge to make knowledge society. Indian government runs lots of projects e.g. National Informatics Centre Network (NICNET)- National Information Centres, National Health Informatics Centre (NHIC), Health Science Library and Information Network-Department of Information Technology, Village Knowledge Centres-Indian Institutes of Technology (IITs), M.S. Swaminathan Research Foundation, Knowledge parks (KPs), Digital Library of India (DLI), Traditional Knowledge Digital Library (TKDL), Centre for Development of Digital Libraries (CDDL) etc. and provide funds to developed knowledge society and disseminate information through ICT.

Kaul (2009) has studied the NACLIN report and found that according to the network director of DELNET in Goa convention librarians have to focused on the new ICT related management techniques and implement them into their libraries. Like the other fields, libraries also have to compete with the other part of the global world in which digital web resources, tools and technique are used by the organizations, employees and users of the organization. The management of institutions should have to encourage the librarians for using web 2.0 and other technologies in their daily library works. They have to know the ICT resources and implement them in the various departments in the library and if they find it to be difficult, can take the help of ICT experts.

Mohsenzadeh and Moghaddam (2009) found the usage of information technology applications in the academic institution's libraries located in Kerman, Iran. In the study, it is found that due to the lack of qualified librarians, proper fund investment and suitable planning; there are many problems behind the implementation of IT in academics. Most of the librarians are not familiar with applications of information technologies. So to fulfil the need of trained staff, various types of training programs should be organized.
These trained professionals can help to the library users for using different type of electronic resources in the form of CDs, On-line journal, On-line E-books etc. To develop a strong information technology infrastructure, special funds should be granted to the libraries.

Nicolas and Merono (2009) Studied “The impact of organizational culture on the use of ICT for knowledge management” that the execution of ICT in Knowledge management improves the quality of professionals and the impact would be seen with the success of the organization. The reason behind this study was to find out the effect of implementation of ICT applications for knowledge management. The researcher recommended providing adjustable and smooth environment for the professionals which would increase the success rate of any organization. ICT is being a useful tool for KM strategy to refine the excellent quality of the organization and its professionals.

Rudowski (2009) found in his research on “Impact of ICT on Health-care” that the new era of medical profession is shifting from medical services to health promotion activities. Consequently, prevention and promotion activities of E-health care observe in the advanced world. ICT applications in the health-care sector should adapt to the new environment. The better access to health-care services, better quality and safer care, possibilities of E-learning activities for UG and PG medical educators are most effective advantages of E-health care applications implementation accordingly.

Sharma et al. (2009) in the study stated about the importance of ICT in library services and explained how traditional libraries are going to change, due to the implementation of ICT applications into the information centres. Information and Communications Technology includes all the technologies for the manipulations and communications of information. After defining the ICT they described the hardware, software requirements for libraries. Due to ICT, newly concepts of digital library, virtual libraries, etc. were emerging in the field of libraries. Libraries are getting various advantages by adopting ICTs in the library services.
Shrivastava (2009) focused on to the automated Information system in medical college libraries in M.P., which contribute to the promotion and dissemination of medical information. Medical library has a vital role in health science. The thesis discovered the information seeking behaviour of medical libraries, its objectives, its types and needs well. The study was conducted in 5 top medical colleges of M.P. The Questionnaire, Observation, Interview, Sample, Citation analysis Methods were used for data collection. 940 users were selected for the random sampling method. The major findings of this study are presented herewith-

1. 76.91% respondents used library frequently, whereas, 18.9% used occasionally and 5% used seldom.

2. 67.55% users were not satisfied with the collection of information sources in college libraries.

3. Most of the students (46.28%) used their own personal collection, Followed by other Sources of information like Internet-36.17%, National medical library-10.85% and AIIMS-4.57%.

4. Out of 940 respondents, only 310 (32.98%) of the users were found access to the Internet.

Trung et al. (2009) examined the impact of trade liberalization on ICT and household welfare in Vietnam. The researcher had taken the period of the year 1993-2004. Positive impacts of ICT increase the GDP growth of the country. After the year 1980, ICT sector has gained a big boom in the country. Since 2004 technological services are not sufficient for the country to achieve a good rate of GDP. The Telecom Sector Development Policy (PTDS) and Internet Development Plan 2005 & 2010 states that all economic growth encouraged financier’s investment in the ICT sector. Consequently the Vietnam government allowed the foreign companies; especially US based companies invest their capital in the country.
Chapter -2

Review of the Literature

After the year 2010 government made a lot of policies to attract foreign investment to grow the ICT sector and households. Till the end of year 2004, country gain a rapid growth of 22% in household wafare. There are a number of local ICT service providers along with the foreign investors working together and attracting to more investors for more investment in the country.

Venturini (2009) studied the effects of ICT capital on the GDP growth of US and EU (European Union). The leading objective of this research was to analyze the long term effects of ICT in the US GDP and compare it with EU’s GDP growth. However ICT made an easy adoption of computers, software and other communication peripherals by the organizations in various ways. Through the rapid growth accounts the impact of ICT capital could be identified. Organizations require complimentary investment into the hardware, software and other communication equipments to improve the GDP growth. Researcher found that ICT capital plays a vital role to increase long-run GDP growth in the advanced knowledge-based society.

Doh and Stough (2010) in their study entitled “Analysis of the Impact of the Perceived Usefulness of ICT on the Digital Divide between Disabled and Non-disabled people in South Korea” found that ICT plays an important role in the life of disabled and non-disabled persons in South Korea. The researcher divided people into two groups-disabled and non-disabled on the basis of the adequacy of ICT into the digital divide and found from this study that Korean Government should focus on to the making and implementing policy for disabled persons with supportive facilities of ICT tools and technologies.

Geoffrey (2010) in his thesis studied that how ICT affects the availability, accessibility and the user’s ability to learn an ICT resource in the student’s learning in Gulu University. The researcher found that the policy makers and University management of Gulu University is supporting their employees and appreciate the usefulness of ICT in learning and experimenting. The study is important for the Gulu University faculty and other members of higher institution.
Chapter 2

Review of the Literature

The researcher examined that the study is very useful to the future generations with an interest to find the further impact of ICT on student’s learning capabilities or not. This research would lead to the next generation of new ideas for the better utilization of ICT into learning process.

**Kumar and Biradar (2010)** explained the efficacy of ICT resources in college libraries of Karnataka state. All of these libraries grant funds by the University Grants Commission (UGC) of India. The researcher found that computers and Internet facilities are available in the colleges. Services like searching information in Databases, E-mails, download software, accessing E-journals are also providing to the users. These colleges are using software like LIBSIS, E-granthalaya, Library Manager, E-lib, SOUL for the automation of libraries. The digitization of library services helps to provide better services to the end users. Some library automation software’s are open source and available free of cost on the Web, but by the cause of lack of budget, manpower, skilled staff and training, some institutions are not able to maintain the automated library activities.

**Nwosu & Ogbomo (2010)** have shown the importance and effects of ICT resources in the library and information science education. A library should also have an ICT expert along with the library professionals and curriculum should be changed according to implementation of new ICT resources because various tools of ICT are using for getting help in the study. Library professionals should be familiar with Computers, PPT, Internet facility etc. The researcher explained in the paper that how schools of library and Information Science have been changed according to the new atmosphere in Nigeria after understanding the importance of ICT.

**Ranta (2010)** examined in his research about slower adoption of ICT in the health-care sector, it is facing productivity related problems. But now the scene is going to be changed, due the advanced ICTs the health-care system and its productivity is growing up. ICT applications in health-care sectors are constantly developing and new research comes frequently in Finland as well as Europe and US. Moreover, ICT might be the key factor in recognizing health-care and solving future challenges despite the limitations of advanced technology.
The adoption of ICT has been slower than other industries. It is very significant to adopt new ways of thinking, working and come to the aid of the latest technology applications. The researcher found out the ICT investment and size of ICT in health-care sector basically in Finland.

Aleke et al. (2011) studied in their research that ICT has a big impact on small-scale agribusiness in the south-east Nigeria. The researchers have taken the south-eastern Nigerian state of Ebonyi for the area of study. The researchers involved oil and petroleum industry and agriculture industry in his research also. In the research they found that both industries are contributing 31% of the country’s GDP and providing employment to the 60% of the Nigerian peoples. In the agribusiness adoption of ICT has increased the growth of the industry. State govt. has introduced the agricultural development programs for enhancing the productivity and providing information about market's up's and down's to the suppliers and customers. Govt. established the ICT centres and trying to provide basic ICT infrastructure, which includes ICT applications and tools.

Balaji and Kumar (2011) described the consequence of web technology, social media, and web 2.0 among technological university. The researchers have taken south Indian universities in the area of study. Today, most of the universities are going to maintained and develop websites for their libraries. This is possible only by adopting new web technology whereas the new technology, library staff needs training programs for up-dating. The library personnel can realize the usefulness of web-technology, when they are skilled and passionate to recreate the libraries’ mission.

Farahi (2011) investigated the difference between the current situation of information technology in Medical libraries of India and Iran. The researcher conducted a study to compare the status of utilization of information technologies in India and Iran as developing countries and recommended to promote library automation and effective application of information technology.
The study revealed that more Iranian medical libraries had bar-code printers than their Indian counterparts; more respondents from Iran used bar-code readers for circulation than respondents from India and the majority of Medical librarians in India indicated that their hardware facilities were adequate, whereas just less than half of medical librarians in Iran were satisfied with their hardware facilities.

**Krubu and Osawaru (2011)** described the advancement of latest technology affects the everyday functions of library and information centers of Nigeria. Every section of academic library like technical section, collection development, and acquisition of books are affected by these technologies. Nigerian libraries are using advanced ICT tools to enhance/promote the productivity and efficiency of library professionals of academic libraries. ICT has been changing the existing system of library services- CAS, SDI, OPAC, Reference, Referral services, etc. These services take less time than the conventional system with ICT tools. Using ICT academic libraries can provide cost-effective and efficient services. Now they are showing interest of making the Institutional repositories to disseminate information to the users.

**Mathew (2011)** in his research found that there is the influence of ICT development on the library professional’s growth in libraries. The study aimed to know the level of education and training programs to evaluate professional’s skill in expansion of ICT in Kerala. In the advanced technological world, University administrators and Library associations have to must give priority to develop high quality ICT applications in all departments of libraries to enhance competitive quality, management and professional skills of the library professionals. Library science schools and teaching departments of various universities should have to take significant steps for the advancement of library science curriculum, according to the demands and supply of the library science professionals across the country.

**Woodward et al. (2011)** have thrown the light on the running computer training programs for the senior citizens to enhance their computer knowledge. Social media has become a considerable tool for the social support, especially for the old age persons.
Learning computers can help them to connect with on-line aids when they essentially need. The data collected through 348 old-age persons from age-group of 60-89 of northern Michigan. The respondents were excited to participate in the survey. These were the short term training programs could be about 6 months and 9 months. The major objective of these trainings was to increase comfort level of participants accompanied by the latest technologies, increase knowledge about safety and security issues available on-line which could reduce the distance between them and their families. 64% participants already had the knowledge about computers and Internet and 87% are more comfortable with the new technologies. Consequently, researchers got the result that old age persons needed to use latest technologies and develop their ICT skills to face the loneliness among the people. The society needs to conduct various training programs at regular intervals for them.

Arinola et al. (2012) explained the role of ICT in traditional areas of the libraries where due to the development of ICT traditional library converts its structure. ICT is recreating its major role in the area of cataloguing and classification in libraries accordingly. At the present machine readable database takes place of traditional cataloguing and traditional systems. Employees get trained for developing machine readable databases. Now conventional library converts into digital library where ICT helps to organize digital and text documents.

Houshyari et al. (2012) studied the experiences of Iranian medical educators about ICT and its resources in Iran and other developing countries. However, Medical educators are also using the technology to deliver learning resources, which increased the number of research publications and conferences, related to Educational technology. Communication technologies enhance the teaching and learning abilities of educators in medical field, which continues to develop gradually and become future integrated into all aspects of the medical industry. Information communication technology made it possible for all medical educators to access medical information at anywhere, anytime. The tough competition in the global market is pushing medical schools under pressure to use computer assisted learning.
Without any support of tech-trained staff, new ICT could prove an expensive disaster. Moreover, developed countries are harvesting their investments in ICT resources, but medical schools are still struggling with designing, implementing, and delivering ICT resources in the in developing countries. Medical educators in developing countries should be aware of the existing technological gaps and bring fundamental changes in their institutions with regard to ICT.

**Oviawe and Oshio (2012)** have focused on the determination and development of the ICT policies as the bedrock of national survival in the global surroundings. ICT has included the communication tools, applications (Radio, Television, Cellular phone, Computer Hardware, Software, Networking, and Satellite system) and other appropriate services, associated with them. The study investigated the utilization of Information and Communication Technology resources by Teachers/Educators/Academician for effective teaching and learning in Nigerian Universities, using descriptive survey design. The study population consist 28 Teacher/Educators from the two Public Universities in Edo State of Nigeria. The study also recommended strategies for maximum utilization of ICT and all the resources should be made available for effective teaching and learning in teacher education.

**Kattimani and Naik (2012)** explored “Evaluation of librarian ship and ICT skills of library and information personals working in the Engineering college libraries in Karnataka, India: a survey” in their study. The focus of this study was to check out the proficiency of librarian-ship and ICT skills of the library personals of engineering college libraries affiliated with Visvesvaraya Technological University, Karnataka.

Most of the library professionals of these colleges didn’t want to become library personals. They came into the profession accidentally, due to some financial problems or some other. The researcher suggested, conducting more training programs to implement ICT resources for library personals in the selected engineering colleges. Continuously involvements of library personals in research works and deport them into the ICT based training programs were also the strong suggestions given by the researcher through this research.
Satpathy and Satpathy (2012) revealed in their study that almost all the medical college libraries are using the conventional system. Now they have to develop their own ICT based system to enhance the professional quality which will allow the loyalty towards the library. They found that as a traditional library all the selected Medical college libraries of a high standard. Moreover, they are providing all the services like- Current Awareness Services (CAS), Selective Dissemination of Information (SDI), Document Delivery Service, Indexing, Abstracting, Bibliography, etc. in a very adequate manner to the users, but ICT resources in these Medical libraries are very limited and library professionals are suffering with a lot of problems due to it.

Talab and Tajafari (2012) in their study on “Impact on Information communication Technology (ICT) on Library staff training: A Comparative Study” found the Impact of ICT on library staff’s training in University libraries of India and Iran with the help of descriptive data analysis. They found that both library staff needs training of ICT and its applications to make their library automated. Both libraries have been affected by the introduction of ICT in their respective areas. In Indian libraries more respondents were interested to keep update their libraries by growing ICTs than Iranian respondents. The study tells that there was a need for regular training of ICT for both library human resources.

Ansari (2013) revealed the ICT skills of library professionals of Universities in Karachi, Pakistan. At present due to ICT, libraries and librarian-ship has been changed their perspectives. Now most of the libraries are collecting digital and web resources and they disseminate information speedily by the use of ICT. By NLDPP project, which is sponsored by Netherland government, ICT resources such as computer, printer, and photocopier machine were provided to several library science schools in Pakistan in the year 1990. Under this project selected library professionals of Pakistan got training of CDS/ISIS at Netherland. PLA is also helping to train the working librarians by conducting short-term computer training programs accordingly. In 1980s some Universities were changing their educational syllabus according to the development of ICT. In-spite of all efforts most of the libraries are still not fully automated. These are partially. There are lots of possibilities for the future.
Garg (2013) in his study entitled “Libraries in the Era of ICT: An Overall Transformation” explored that there is a very large impact of ICT in modernized digital libraries. Now Libraries have transformed from the traditional storehouse of books into the intellectual dissemination centre of information and its resources. This is today's librarian’s necessity to implement ICTs in libraries. Librarian faces a lot of challenges while implementing the ICT in libraries. But it’s not so tough for them because they are well qualified and know how to digitize the library and implement the ICT resource. Continuous and regular efforts have to be made to implement and update the ICT resources and software. Librarian and library professionals should also have to develop tech savvy brains and regularly update themselves with latest technologies.

Kadli and Kumbar (2013) presented their views on lots of paper which is written by several writers. After the study, they explained the reason of conducting a literature review. In the review, four points, i.e. unstable information environment, library resources and services in ICT environment, information seeking behaviour and model of information seeking behaviour are discussed. Now, due to the development of ICT major changes have been shown in the society. Lots of library resources & services emerge in digital format. Information technology has a positive impact on all the library resources & services. Internet and WWW are newly emerging tools for teaching & learning from which users gathered information easily. Different models are developed for information seeking behaviour.

Kumar and Singh (2013) focused in their study on the role of ICT in Health-care sector of Fiji. Government of Fiji allocated a special budget on the making of policies & planning for health sector. The result of this study showed that there are (0.90%) short-term and (0.62%) long-term effects of ICT which are not much for the health sector of Fiji. Consequently Fiji government is planning to provide a big platform for ICT resources to encourage and promote healthy lifestyle and health education to remove the health issues of the public of Fiji.
Mndzebele (2013) has done a study on “Challenges Faced by Schools when Introducing ICT in Developing Countries” and found that technology increased the capacity of reading and learning of the teachers and students in the developing countries. ICT is playing a major role in the education system. It has been changed the point of view of the teachers to that how to teach students by using the applications of ICT and how to get it to learn them.

The study aimed to evaluate the ongoing conditions of using ICT resources in the classrooms in the developing countries as the state of the art reviews of ICT in the school system. The researcher has used the questionnaire and interview methods for the data collection. The study conducted at the 42 schools. From this study researcher found that in the developing countries due to the lack of knowledge of ICT resources and applications schools and teachers are facing many problems at the beginning stage of implementation of ICT. The researcher found some reasons behind these problems. They are-

1. Due to the insufficient funds schools are unable to make the availability of hardware, software and other resources.
2. Most of the schools have no Internet connections because they can’t afford the high-charges of surfing Internet.
3. There is very high cost of maintenance of hardware, software and the Internet connection cables and other equipments and schools are unable to pay this cost.
4. Various types of hardware and software are the basic need for implementing ICT Resources and unavailability of these could be a big problem.
5. Due to the heavy load of work, teachers are unable to give proper time to study the ICT and it makes the reason behind that ICT resources are not working well.
6. Most of the teachers have the lack of knowledge about ICT. So how they can teach students well?

Nebeolise (2013) studied about the Library of National Open University of Nigeria. The researcher studied the effects of ICT on Library services of the national library. Libraries are changing into Information centre by using ICT resources.
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Now traditional services are quickly provided by using ICT resources. Inadequate skilled staff, interrupted electric power supply, lack of information policy, absence of proper planning, lack of funds, standard hardware and software, negative attitude of staff, etc. were some of the reasons which were responsible for insufficient ICT progress in Nigeria. He also gave suggestions for providing training to the librarians.

Rattan (2013) explained in his study that how Government Engineering College Libraries of Punjab are using ICT resources for the betterment of the libraries? The researcher had selected 25 students from 6 engineering colleges of Punjab as a sample of the study. The researcher used percentage method to find the results from data analysis. However due to lack of knowledge about the existing ICT facilities and resources in the library some respondents give the poor responses. The results from this study are here-

1. 95.24% respondents are from the age-group 18-23.
2. 98% users know how to use the ICT resources.
3. Approx 98% users have the information about the institute's computerized library services.
4. 65% of users are using the facilities of automated library services.

Singh (2015) studied the impact of ICT in Kendriya Vidyalaya library and information services. This is a case study, conducted to find the result of implementing ICTs in library and information services in Kandriya Vidyalaya Sanghathan libraries in India. The researcher, taken various fields for the study like- purpose of Internet usage, Types of search engines, issues comes on the implementing ICTs. Implementation of ICT expanded the role of the libraries and librarians to provide not only the books, but also provide authentic information to the users in the desired form. 76 fully automated KVS libraries, which are using E-granthalaya software of NIC has been selected from all over India for the study.
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The questionnaire method was used for collecting and evaluating data. Researcher found that each and every library has the facility of WEB-OPAC and using their own blog and website to provide and promote the library services. The researcher got the result that KVS libraries are providing 99% facilities to the students and 76% of them are using those facilities. Teachers are using ICTs to teach reading material effectively. To train the staff and teachers KVS management conducts workshops/seminars and other training programs at regular intervals.

Thanuskodi (2013) in his study found that ICT is assisting modern digital libraries to provide accurate and authentic information and services to the users rapidly. The research implied that more than 50% people have accomplished their Internet proficiency from the training programs conducted by the institutions. Over than 56.53% students used the Internet weekly and 73. 91% of respondents used the Internet for information/literature search.

Yusuf (2013) examined “The impact of ICT in developing SMEs in Rwanda (An African country)”. How ICT improves various skills and business environment in the expeditiously changed and globalism world with a pertinent growth. The researcher tried to keep Rwandan SMEs in the global business framework in order to compare and diversify their uniqueness, aggressiveness and achievements.

The study focused on the needs of the government’s attempt to address more about ICT framework, investment and consciousness attitude related to the various benefits and adoption policy of ICT in Rwanda. The study distinguishes the requirements of all sectors concerned with ICT acceptance to work together in a networked and coordinated manner in order to import ICT diffusion at the required level. The study also imparted the ingenious use of ICT that permit SMEs not only cutting costs and improving proficiency, but also for creating different levels of relationship with their customers who give them valuable proportion. However, the outcomes of this research verified that ICT has diversified and very absolute impact on the advancement and competitiveness of SMEs.
Hicks (2014) investigated in his study that ICT is playing an important role to shape up proficiency and identities of today’s librarians. In this study researcher has tried to find out the role of ICT in language resources which modern librarians used when they constructing their professional identities. This study focused on that why library professionals are using certain ICT based services like- as blogging or social media to fulfill their needs. However, modern librarians are looking forward to the ICT resources for the improvement of their professional working skills by providing them with new technical roles and areas of expertise.

Hortovanyi and Ferince (2014) conducted a study to analyze how ICT can help employees to learn and improve knowledge on-the-work space and to identify the relationship status between ICT and work space, they had selected 200 knowledge workers and managers from 62 small and medium corporations. Observation and semi-structured interview methods were the data collection tools. The researchers had tried to know the effective use of ICT in the job area for knowledge transfer with recent ICT resources. To imply the ICT applications in the organization’s management also has to provide sufficient funding and developed interest in to employee by conducting seminars, workshops and other monthly training programs on the regular basis.

The authors tried to get to understand in the research that how Human being and computers are working together and on which level ICT can be essential for the knowledge transfer in the work space. The authors suggested that technology provides a facility for sharing information among employees, but teamwork could be a replacement to enhance the working capacity of workers in the organizations. Knowledge could be accessible and visible by using ICT resources and disseminate information through efficient and effective mechanism.

Raboca and Carbunarean (2014) in their study about the “ICT in Education - Exploratory Analysis of Students’ Perceptions Regarding ICT Impact in the Educational Process” analyzed the student’s perceptions of the Educational process regarding the impact of ICT.
The article discussed about the use of ICT tools in various areas of schools which are going to improve their performance in the process of learning and teaching. Nevertheless, due to the lack of knowledge of ICT, the infrastructure of ICT, financial resources, the process of implementation of ICT is going to be very slow and which is not good for modern educational society. The concept of E-learning has changed the process of getting educated by the use of ICT tools.

Saxena and Dubey (2014) studied about the effects of digital technology in the perspective of the academic library. Digital Technologies are used for accessing, processing, gathering, manipulating and presenting or communicating information. The objectives of the study were to know the impact, faced problems by academic libraries due to digital technology. Lots of factors such as lack of finance, unskilled staff, lack of effective planning, lack of willingness of staff, inadequate hardware, erratic power supply etc were some factors which were faced by the academic library accordingly. They also gave various suggestions to overcome the problems faced by the libraries.

Shrivastava et al. (2014) in the study entitled “Role of Information Communication Technology in Higher Education: Learners Perspective in Rural Medical Schools” found that in the education field the role of information communication technology should be undertaken in anticipated and applicable measures for its maximum and adequate usage by properly trained students as well as faculties. The researcher also found a new hypothesis from his research that in relevance with uncertain patterns of the modern technology as learning and teaching tool. Consequently, it should be mandatory for the all faculty and staff members to be very well trained with technology. So the process of learning can be carried forward.

Velmurugan and Amudha (2014) studied about the ICT resources and its users from arts and science colleges of Virudhunagar district. Here user means faculty members, research scholars and students of 12 arts and science colleges of Virudhunagar district. In the study, they use both primary & secondary data. After analysis of the data it reveals that users utilize the ICT resources and services for acquiring knowledge.
These sources are available on the Internet. So it can be useful for all types of users and library professionals. They give some suggestions for improving the ICT services in the library, i.e. high speed of the Internet; acquire more electronic journals, electronic document delivery service, recruitment of ICT professionals, etc. Hence they also enforce the adoption of newly ICT techniques from the library professionals.

**Angeline and Swarooprani (2015)** found in their research about the technological development between librarians of few arts and science colleges in Trichy and Tanjore districts which are affiliated to “Bharatidasan University”. Consequently, due to ICT development traditionally trained librarians need technology based skills. For this several training programs, seminar, conferences, refresher courses are conducted by the institutes. Moreover, librarians should have to attend this for increasing their skill about technology. Several Library Associations e.g. ILA, IATLIS, IASLIC etc. are also involving to train the traditional librarians.

**Atiso and Adkins (2015)** examined the conditions of librarians, research scientists and research institutes in Ghana on the adoption of ICTs. Ghana is a developing West African country. However, the financial resources, educational system and other basic infrastructure are not in a strong position in the country. Consequently, lots of changes have been found in the condition after the year 1995 because Ghana was one of the first countries to get an Internet connection. This study also focused on several scientists and Librarians' work that are familiar with social networking sites like- Face-book, twitter etc. Moreover, for the advanced digital libraries, lots of training programs is required for those persons whose have lack of knowledge of ICT resources. Continuous training programs should be conducted for awareness of ICT resources among the society.

**Kaur (2015)** in her study on “Changing Scenario of College Libraries due the Application of ICT” wrote the importance of ICT and changing dimensions of the activities of the college library. Moreover, due to the ICT resources, major changes are coming into the libraries. Consequently, traditional librarians are becoming as cyber librarian.
As a cyber librarian they have to collect documents in the form of E-books, E-journals, Databases, E-theses and E-dissertation etc. for developing digital library. Several libraries are creating their separate websites, blogs, and portal for informing to users. By using the services of INFLIBNET and N-List projects, several college libraries are providing services in the digital forms. Due to improvement of ICT, information literacy is also increasing in the society.

Rose and Kadvekar (2015) studied the ICT adoption model in higher academics in India. Which types of problems facing by the academicians in the teaching, learning and many more are discussed in the research paper? The researchers used the questionnaire method as a data collection tool. There are many challenges faced by academician in the past years. The Indian government has made the policies for the education system to adopt the ICT as soon as possible. The researchers wanted to apply and implement the ICT tools and services in the other sectors also. How ICT is beneficial to modern India, researchers wanted to find it from this study.

Teachers' role has been transformed now a days and they are simply not only a teacher, but have the responsibility to prepare students as a fighter as they have to succeed in achieving goals of their lives and ready to be a responsible person. Technology makes the man's life easier and help with growing students. Consequently, ICT helps academician to improve their knowledge and get aware to the students about the latest trends and customized the whole education process in India. ICT applications are the great tools to monitor the research projects in the Indian education sector accordingly. Academician can standardize their research projects, curriculum, teaching and learning techniques, etc. With ICT tools the power of computerization and automation can be understood and it makes an easy approach of students to the teacher any time after the school time and gets the solutions of the problems. The ICT affects the education system directly or indirectly and helps to understand the new learning and teaching techniques and processes. As the result researcher found that while adopting and implementing the ICT resources there are many challenges faced by academicians, but the regular training programs, awareness and monitoring step by step of each technology makes it easier and improve the comfort level of teachers and students.
Sayed (2015) in her study entitled “Awareness and Use of ICT: Comparative Study among Graduate & Post Graduate Students of Faculty of Arts and Faculty of Social Sciences” found that most of the students of faculty of arts and social sciences know the term ICT accordingly. Moreover, they used most of the ICT applications/resources as they need. The study indicates that the majority of the students are using ICT facilities provided by the libraries. PG students used almost all the facilities like- mobile, computers, laptop, and Internet facilities in comparison of UG students.

Teryima and Sunday (2015) have conducted a research to discover enhancing ICT productivity in the state government administration, Nigeria. Benue is an important state of the Nigeria. Researchers have taken 23 local govt. of this state for the study. Nigeria is a progressive country and going to implement new technologies which are very useful for the country. Moreover, nearly all the countries of this global world are facing problems due to lack of technical skills, irregular power supply, unhygienic food and many more. Hence the adoption of ICT could be a great choice to solve these problems. Nigerian govt. is trying to use the ICT resources to develop the areas of education, health, administration, politics, e-governance, culture, business and production.

Researcher focused on the many problems faced by Nigerian Govt. in day to day functions due the absence of implementation of ICT applications like- unreliable telecommunication facilities, deficient awareness about Information Communication Technology (ICT), insufficiency of technological competences etc. The researchers concluded their study with these following suggestions accordingly-

1. Local govt. should give priorities to the implementation of ICT resources in every sector.
2. Nigerian govt. should develop a strong telecommunication system to fulfill the needs.
3. All 23 local govt. should adopt ICTs and conducting the training programs/workshops and other type of needful programs for their employees.
4. Local govt. should implement ICT with transparency in the banking sectors. E-payments could move the country ahead in the marketing field also.

A study conducted by Intel Corporation to find how ICT affects the life of medical practitioners and health-care sector of various regions of India entitled “Building capabilities and capacities through ICT for medical students and schools in India” The study is in the form of White-paper. The study described that over than 80% of medical practitioners are living in the cities and the rural area is very far from the approach of Doctors. Moreover 700 million people of India have no approach to medical professionals in the emergency. India has the shortage of 600,000 medical professionals’ including- Doctors, Dentists, Nurses and other Paramedical staff. However, the productivity and capabilities of health-care sector can be increased by implementation of ICT tools in medical research and education. The use of ICT tools like- PCs, latest Smart-phone’s always support to the productivity of medical professionals in India. The report said that 31% of instructors have performed additional tasks and 47% have done very well in the exiting tasks given by the authority accordingly.

In a meta-analysis conducted over 500 studies showed that the instructions given through the Computers and Smart-phones are taking less time than the traditional system and it is tending to the medical professionals to learn more in minimum time. The report has suggested a few points to make a better health-care system in India-

1. Digitalize the health-care system with Public-Private Partnership.
2. Maintain digital libraries with Wi-Fi infrastructure.
3. Easy access or approach for personals PCs, Laptops and Smart-phone’s in the campus.
4. Teachers should use new Smart-phones Apps to instruct their students through the latest Apps after the campus.

This literature survey provides the information regarding the impacts and applications of ICT in various fields in India or abroad. This is concluded from the above study that maximum studies, related to the ICTs have been conducted in the abroad.
Most of the Indian researches are comprehensive and related to the applications of ICT, to find out the current status of technological changes in the different fields such as Agriculture and Medical & Health-care. So it could be said from the study of above literature survey that technological changes affect the library professionals and users of the different fields.
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