Chapter 2

Literature Review

Introduction

This work is an aim to study the status of attitude of Library Professional towards the use and acceptance of Information Technology in library activities. Still no comprehensive study has been carried out so far to investigate the attitudes of library professionals towards application or use and acceptance of information technology in library activities in academic colleges. This chapter focuses on previously published scholarly literature relevant to this study. Specifically, this part attempts to examine the literature on the following topics:

2.1 Attitude of Library Professional Towards ICT

2.2 ICT in Academic libraries

2.3 Library Automation

2.4 Barcode/RFID technology

2.5 Network technologies & Internet

2.6 Web 2.0 & Library 2.0

2.7 E-Resources

2.8 Library consortia

2.9 Institutional Repositories

2.10 Digital Library

2.11 Mobile-Learning

2.12 Cloud Computing and libraries

2.13 E-literary

2.14 ICT Training

2.1 Attitude of Library Professional towards ICT
Ray K. & Day J. (1998)\(^9\) determine the level of use of e-resources and how students feel about various issues adjoining e-resources. In their article “student attitude towards e-information resources” they followed questionnaire method. They explained in study that there are that 91 percent of respondents acknowledged access to a networked computer via university, and also that more internet use is from job place than home. The mainly popular e-resources used were CD-ROM & the internet, only 35.5 percent of the sample population used e-journals as an information tool.

Gupta Rakesh (2001)\(^{10}\) An attitude is a tendency to respond in positive or negative way to someone or something in one’s environment. When you say, for example I like to use computer or I don’t like to use computer an attitude is being expressed. An attitude is tendency to act in response to a situation, person, or concept with a particular response. This response can be either positive or negative. It is a learn reaction –one that result from an individual past objection, direct experiences, or exposure to others attitude. For example, library professional says “I love to use internet and e-mail” thus the communicating to others and general attitude the information technology, some library professionals develops their skill for information technology.

Saraf Veena and Temjen T. (2003)\(^{11}\) The study was based on already developed and tested scales of attitudes towards computer and information technology. The five variables identified through factor analysis are anxiety, efficiency, work performance, use confidence and acceptance. A anxiety ranks the highest variable of attitudes towards information technology. They concluded that most of the socio economic variables do not show any significance with attitudes towards intonation technology except sex and working experience. The study suggests sufficient information technology infrastructural facilities, training and education is required for information technology to library professional working in North East to become at par with the main stream.

Ramzan, Muhammad (2010)\(^{12}\) highlighted remarks on library scholars that the majority of the librarians in Pakistan still not have necessary skills to plan, use and application of information technology, as over 85 percent of the respondents had only a reasonable stage of IT awareness, and more than 75 percent of the respondents had
made no written or published contribution about information technology in libraries. Librarians proved in general positive attitudes toward information technology as the mean scores for each of the four groups of information technology statements as well as for the in general IT attitudes were higher than 3.7 on a 5 point scale. The findings with regard to the in general positive attitude of the librarians toward information technology, was further supported by the fact that the respondents proved a low stage of agreement with negative statements. The study established the hypothesis that a major positive relationship exists between librarians’ attitude toward information technology and their level of knowledge of information technology. Pearson’s correlation coefficient for the two constructs was .172, important at 0.01 levels, evidencing a positive relationship between averages information technology attitudes’ and level of information technology knowledge.’ The significant relationship between librarians’ level of knowledge in IT and their attitudes toward IT is an indication that prior experience and knowledge has a significant relationship with attitudes toward IT. Librarians’ attitudes could be made more optimistic given adequate training, opportunities to participate in professional workshops, seminars, and environment favorable to read, research and publish regarding information technology. It would certainly lift the use of appropriate information technologies in libraries.

**Ganeshan P and Pandian N. Murugesas (2004)**13 The study discussed user attitude towards use web based formation services & resources offered by library. Generally user were not aware to new technology based services & resources offered by library. Now a day university libraries providing number of e-journals, databases of different subjects, web based services. For study author select 35 students of different discipline from 2500 users Study found attitude of users in Hyderabad university is positive towards web based. Social sc students using internet 40% and Humanity students 28.57% . 14 out 35 used OPAC. 28 out 35 were used internet for academic purpose. 25 out of 35 used Google as search engine.

**Adekunle Paul and others (2007)**14 The paper indicated that the knowledge and training is require to develop use of information in libraries of said geographical area. Libraries are not automated, it is necessary to begin automation and proper training will reduce fear information communication technology. Technology of library automation is developing with great speed.
Gowda, Vasappa and Shivalingaiah, D.(2009)\textsuperscript{15} they study focused on exists of considerable variation in use of print and e-resources among various disciplines. Till printed material is available on big scale but it is not sufficient for research and use and availability of online information material is the present is of researchers.

Mahmood Khalif (2010)\textsuperscript{16} This study concluded library professionals functioning in every types of colleges or institutions in Pakistan greeted to the internet. Professionals outlook in the directions of internet supported amenities & services is positive. Professionals understood internet is extremely helpful tool for personal & professional mission. It was found that the age, gender and college’s type of participates had refusal outcome on the power of their approach in the directions of internet. But frequency, familiarity, stage of apparent ability and education in the use of internet hand burly effect on the extend of library professional’s approach. Lib. Sc. association and school should give extra all-embracing ICT and internet guidance to the Library professionals.

Eguavoen O.E.L. (2011)\textsuperscript{17} the study explained the library staff’s attitude to the bring into play of IT in Dike Kenneth Library. This article expands and exploits library staff’s attitude to employ of ICT scale to depict information from the respondent. The Pearson correlation matrix and Friedman test was exercised in analyzing of the data., result proved that in general staff of the library have knowledge of ICT and positive attitudes in the direction of the use and execution of ICT it may due to skilled or trained to reduce the nervousness and doubts about the use and nervousness in relation to the employ and application of ICT in their individual libraries. It was recommended that libraries of Nigeria yet to be computerized, it is suggested that ICT orientation or training is the initial footstep to decrease fear while execution of IT initiate.

Gopalakrishnan S and Saravanan T (2010)\textsuperscript{18} the paper explain that traditional process of information collecting in every fields have been gradually replaced by the technology, as the growth of Information and Communication Technology is very fast. Internet plays a key role in information storage and retrieval method. Students and teachers should come forward to utilize the infrastructure, which are offered by
the college libraries. Many features are available on the Internet and they would be traced and utilized by the users. Satisfaction with the internet is depends on the users hands. If one is familiar with the search techniques and other technology skills there is no doubt that he would get satisfaction. A smaller amount experience, and awareness will never bring satisfaction in any field. Hence, further studies in these tracks may help to understand the current behaviors of the users as their attitudes are often changing due to the growth of modern and continue changing technology.

Sakarkar Sachin D and Kuralkar Rushikumar R(2013)\(^{19}\) the paper explained trainings play a crucial role in creating an ideal atmosphere for ICT orientation of Librarians to evolve their attitudes favoring ICT amenities. This would surely reduce the fear of digital divide amongst society and librarian could become an ideal guide to all eager readers to avail broad spectrum of knowledge available at an affordable time. The ICT implementation is very much safe and progressive to the society under the guidance of a well-trained and positive librarian.

2.2 ICT in Academic Libraries

Jeevan, V K J (1999)\(^{20}\) the article focused on availability of information technology in Central Library at IIT, Kharagpur. Library is fully computerized with electronic resources for accessing electronic databases is also set up to offer information on those sources which are not present in the library. It is also motioned that electronic databases subscribed, and research projects undertaken so far in the library.

Pradeep C, Ganesh P and Ramareddy E (1999)\(^{21}\) This article discussed the responsibility of the libraries, fund provider bodies, central organization, LIS proficient and the group of peoples of users in the relation of quickly shifting IT, study says change is expected, but to say necessity to acquire the skill to manage the change. Librarians have to imagine about the prospect today for great tomorrow, since of advances in technology. New age of technical expertise, LIS Professionals must rotate themselves to the new technology. Today more technology available for opportunities and change and we have to take advantage.
Vyas S. D. (2003)\textsuperscript{22} The study survey conducted in 12 state universities as well as deemed university, institutions of Rajasthan to study the status of library automation. It concluded that the university libraries are interested in library automation. But INFLIBNET should also provide multilingual script to SOUL software to speed up database preparation. Finally UGC should consider sanctioning a post of Information Scientist and a Technical Assistant. There are a lot of reasons for slow speed of library automation which have stated in the study.

Jeevan V. K. and Nair Saji (2004)\textsuperscript{23} was surveyed eighteen libraries, to study the adoption of information technology in libraries of Kerala. 18 libraries were of the view that IT had a positive impact on the day to day work of the library and that IT played a positive role in enhancing services, users satisfaction, meeting user’s demands, and overall library image. Information technologies impact as in the case with any other service for the library also; users are the best judge to assess the information facilities and services. This study reflects the view of librarians only who may adopt an ideal stand even on those issues where the users have a poor opinion. Therefore, there is need to take into account the feedback of the users in various categories to have a practical assessment of the status of information facilities available and information services rendered by these libraries. A questionnaire was developed and the results tell so as to the librarians are extremely encouraging regarding the use of information technology in libraries & a lot of the libraries are information technology serious.

Islam Shariful Md. and Islam Nazmul (2007)\textsuperscript{25} the paper concluded that a bigger require for library materials due to an improved number of users, boost in the price of published printed reading material, fresh e-formats, e-sources & the steps forward of latest cheaper computers are few of the causes for the rising need for ICT in Bangladesh. The steps forward of libraries is some across the country. Government, library Patron, Librarians, and supporters must assist. User’s changing demand of ICT-based services, libraries should prepare themselves with help all these authorities.

Mallik, Soumen and Sen, B.K. (2008)\textsuperscript{25} has done study of the libraries of top 20 law academic libraries of India which indicates that more than 50 % 20 of the law academic college libraries of India do not provide any information regarding their
online information resources and online information services are provided very rarely. 8 of the 20 of the law academic college libraries of India have proper infrastructure for electronic resources and also have rich online information resources.

**Rathinasabapathy G, Sundari T Mohana and Rajendran Thirru L (2008)** The article focus Biometric technology application in library. Information technology provided various techniques and devices for library. Library services are now the advance stage due to ICT and numbers of users are increased now day. They handling various type of information and reading material like online journals, online thesis, articles, database. It is responsibility of the librarian to secure the reading and online services. Sometime users misuse of online information and cyber crime take place. Biometric application is only answer to solve this type of problems. Finger prints, hands, retina, voice there are some example of biometric technology.

**Dhanavandan S & others (2008)** The survey highlighted that total respondents use few types ICT tools like mobile phone and internet. ICT use is higher in female than men. Age below or above 40 there is not any momentous rapport among the exercise of internet, e-mail, gender and utilization of ICT although there is some differences. It is a believer of respondents that significant role of ICT in at the bottom of and pleasing to the eye their skill and search behavior. It is put it to somebody so as to they look the employ of IT as probably going fine further than the employ of the internet hunt for possessions also exercise of email to keep contact with colleagues, acquaintances and experts.

**Sangeetan Keisham and Sarika L. (2008)** The study focused on present position of Manipur’s academic libraries, above all of institutional libraries of different locations on a range of facets like automation status, ICT footed services and others as well as problem in ICT application. It also released some idea to improve the service environment of the college libraries.

**Borang, Kaling and Sarma Gautam Kumar (2008)** Here the discussion is done on the status of library automation, different software packages used for automation, use of electronics-resources, OPAC & the stage of their utilization in library activities of these two libraries. This paper also throws light on the difficulties and troubles being faced by the library authority in applying ICT in the libraries.
Sharma Parul, Singh Mahesh and Kumar Pankaj (2009) paper discussed different issues linked to information communication technology in library with esteem to recent digital age. Library functions are change due to technology and it is necessary adapt it to changes to gather the users need and also satisfy them. Library collection is move from traditional collection towards digital collection as well as all other functions i.e. Design, Planning, development, technical support, continuing operations management and ICT infrastructure. For digital library project two components are required that and library professional and ICT infrastructure. After data analysis it concluded and recommended that power should give main concern to get better the condition, suitable amount of computer with competence of internet should be provide to the academic institutions, fund should be increased and regular supply of power should be provided to nullify the disturbance.

Sampath Kumar and Biradar ((2010) paper look into the use of information technology in Karnataka’s academic library, it is find out the existing position of library automation, ICT infrastructure, blockade in accomplishment of library automation and too librarians’ approach in the direction of the exercise of information communication technology. Researcher discovers that function of ICT in sampled college libraries has not arrived at a very far above the ground level. be deficient in of skilled, be short of of manpower, not have of budget, trained staff and be deficient in training are the major limitations for not computerization college library services and actions.

Arjun, Kumar Dinesh and Kaur Updesh (2010) The paper indicate that the Information technology has changed all fields of life. IT has also revolutionized the function of academic libraries. Academic Libraries begin the tank of the recourses of information. Communities search for information for their reference, education, research and help from library. Digital libraries require IT skilled librarians. Librarians are required to organize, acquire, select, make, and preserve digital collections and information accessible. Services must be planned, supported and implemented of digital library. Sadly, opportunities for librarians to receive training are currently very less to carry the responsibilities and task of digital libraries.
Parvez Ahmed (2011)\textsuperscript{33} the study concentration in the direction of the development & modernization of ICT and its employ in library services, its use will create much changes in complete library management structure. By the application and development of information communication technology, the libraries have shifted from the conventional to hybrid library, automated library, then digital archives stages, mobile phone services and library 2.0. All these effects of the transforms, the operation, structure and management, of libraries has too changed in a vibrant manner, as in a constant procedure.

Thanuskodi, S.(2011)\textsuperscript{34} The study highlighted that 37.28% respondents are using e-mail for electronic information resources and 29.38 % of respondents are using DVDs & CDs for electronic information resources . The survey illustrates that 4 to 5 hrs. of access to internet takes the first order reporting among the faculty and government law colleges students, over 5 hrs. of access to internet the second, 3 to 4 hours of access to internet the 3rd, 2 to 3 hrs of access to internet the 4th and below 2 hrs. of access to internet the end.

Krubu Dorcas E. & Osawaru Kingsley E. (2011)\textsuperscript{35} studied the impact of ICT in two university libraries of Nigeria, and barrier in the efficient and effective employ of the ICT in the libraries activities where the problems come across for the academic libraries while applying ICT in function. He concluded so as to IT has satisfied its assurance in academic libraries; there is considerable growth in the use of IT in libraries rut in tasks such as processing, acquisition, storage, revival and dissemination. Information explosion can be control by ICT. they recommended that to provide the ICT infrastructural facilities financial support should be made available, Library staff should be computer literate, standby generators or power supplemented should be provide for efficient and effective power supply, time to time training of computer and orientation programs should be organized to update the computer skills, orientation programs should be arrange and made compulsory for fresh library professionals and Imported ICT equipments should be tax free.

Zhang X.(2011)\textsuperscript{36} the study explored on restructuring and gap up for last 3 decades in which university libraries have large transforms in the library functioning due to computer technology and networking application. Computer application functional
made available in the each field libraries of china undertake onto a new stage of career.

Satija M. P. (2011) the paper highlights ethical part of ICT like plagiarism problems in academic field. Internet is growing fast and due to internet peoples are coping others work without giving any proper credit to him. The author has suggested some plagiarism softwares to check originality of publish material. There are some problems with software that it can check only e-format material only. There is no provision for printed material.

Pragasam, Arul (2011) A survey conducted at University of Mumbai affiliated engineering college libraries to find out the use of different types of ICT and its impact on the library development. The study revealed that almost all the college libraries are using the ICT and its application and bring the benefit them in to the libraries.

Satpathy Sunil Kumar and Maharana Rabindra K. (2012) the article explains the objectives and downside of information communication technology. The main results of the survey, bring to a close with the comments that in the era of information communication technology, the weight of information communication technology based library services cannot be unseen hence cannot be belated. The maximum use of information communication technology based library services will enhance the teaching and learning process of Odessa’s engineering colleges.

Vijayakumar, A and Thomas, Jaison (2012) the study says the role of libraries is very important in encouraging the development of knowledge. It is main component of any learning institution. Library connected with all technical and academic institution which is spin of teaching learning system. Libraries of colleges play an important role in providing in general library and information services to the students or its users. Now have come into in new era and we have lot of challenges before us for keeping us in pace with modern development in IT which have brought information explosion and information uprising.
Chouhan D. S (2013)\textsuperscript{41} this paper discussed about impact of ICT in rural India and how technologies could be shared with the common mass through digital technology. The paper also compares the proposed Gram e-library and which will be implemented through Gram Kiosks with the existing approaches.

Bendkar Y. (2013)\textsuperscript{42} this paper discussed role of ICT in libraries and a range of issues associated to ICT in library in current way. Rapidly developing ICT is generating new prospects and challenges for conventional libraries. The latest trend globe over is to move on the way to digital collection. Present libraries are actively digitizing their conventional collection of the libraries and planning for online acquisition and subscription.

Khan N.B.R.(2013)\textsuperscript{43} this paper explained ICT and its use in Information services and how digital libraries are usual progressing for e-document sharing, and also informed that the how digital library has the capability to make available twenty-four hrs, distant access to accomplish the users need.

Kumar Rajendra (2013)\textsuperscript{44} this study focused and recognize various components of ICT which are used in libraries and information system. The study indentifies correct reasons to use computer and its related technologies in libraries. It also explained the role; impact and challenge of information communication technology based library system.

2.3 Library Automation

Rao Ravichandra (1997)\textsuperscript{45} The study focus automation activities in academic libraries in india which have slowly picked up. Funding agencies have now started providing hardware facilities. Software facilities are not adequate enough to start automation activities at a reasonable pace. Further, CD-ROM based information services and E-mail services are becoming popular. However, the challenges remain same over the last two-three decades trained manpower requirements, preparation of machine readable catalogues, sufficient and free flow of funds etc. Librarians have to overcome these challenges for a successful implementation of automation.
Jeevan V.K.J. (2001) the article highlight in-house software for library management some library of engineering and technology institutes has made their own software from there IT department. IIT, Kharagpur has taken some effort to made their own for library activities. These type of softwares are use for libraries because these softwares are made for as per requirement of Institution, but there are some drawbacks of in-house software that who will take responsibility to upgrade it with changing environment and continuous technical support.

Mishra, Parasnath (2003) this article explain the present picture of computerization particularly in academic libraries. The study has also included the Jharkhand’s libraries. Jharkhand was the part of Bihar state. Current situation 14 universities are providing higher education. The Patna University is rich in terms of collection, infrastructure which established in 1917. All the university libraries are having good IT infrastructure and modern facilities. As far as library computerization is concerned is joint responsibilities of state authority, UGC and INFLIBNET to make computerized.

Choukhande Vaishali G. (2004) this paper discusses the librarian's awareness of computer and application of IT in college libraries of Maharashtra’s Yavatmal district. The author conducted a questionnaire survey of college libraries to find out the percentage of librarian's computer consciousness and use of information technology application in college libraries of Yavatmal district. The finding of this study was that out of 34 respondents 18 librarians were computer literate and aware of Information Technology. Only 8 colleges have computers in the libraries and 6 college libraries are automated. The results of this study suggest that UGC should provide financial help for the automation of degree colleges libraries and the librarians must get ready by keeping abreast of latest Information Technology in order to face the new challenge in information field.

Basode Sadanad Y and Periera Shamim (2008) The study say computerization in the academic colleges of Goa is not different from other state libraries. Stake holder like librarians, college administrations and library staff must initiate to computerization in order to provide successful and competent services to users or students. Librarians must improve their abilities in order to meet the rising hope of users from libraries.
Rajput P.S. and Gautam J. N. (2010)\textsuperscript{50} the highlighted computerization issues related to special libraries of Indore city (M.P.) to position of library automation and problems in their completion. It discussed about necessity of automation and use in special libraries. The study has taken mind the difficulties faced and authorities and staff in automation stages. Researcher used structured questionnaire for survey. The staff indistinctness, lack of attitude in the direction of automation and problem substandard library software are the most important obstruction to fast computerization. Researcher suggested that automation has satisfied the users and it helped in enhancing library services and helped in resource sharing through networking. Automation may help in new type of library work and it may also to transformed traditional organizational structure into new institutional entities.

Ossai- Ugbah Ngozi Blessing (2010)\textsuperscript{51} this study was studied in 3 institutions respect Covenant University, University of Ibadan, Ladoke Akintola University and Sango Ota of technology of Nigeria that the level to which apply of automated e-information services by students had influenced the educational performance of students. The result exposed that having pre university computer literacy did not account for better academic performance; students who made use of automated library services were better showed to academic materials and execute academically better than those who did not make use of the services of automated library and result also surveyed that there is important relationship between educational academic exposures with the use of the automated library services and they were fulfilled with these computerized e-library services. Researcher suggested institution to provide internet bandwidth and it is make available free of cost to the students.

Joteen Singh R. K (2010)\textsuperscript{52} this paper focused on design of library software. Information technology changes and development of numerous library networks using contrasting hardware and software platforms require library software interoperability. The technology also made wandering treasured and a variety of knowledge in the field of arts, commerce and science in the internet cloud. The basic thing requires use of inter operable library software which can use web resources which are able to search multiple databases in different networks and platforms apart from the local repositories and databases. If we develop software in the line of the above it will
promote software interoperability and compatibility. It will also have the capability to integrate all the libraries of the world to a single global library.

**Hambarde G.K. (2011)**\(^5\) this study reveal that an attempt is made to show the present picture of engineering college library automation in Maharashtra state. Paper also explained historical development of library automation, its application and enlighten present situation of ICT awareness amongst engineering college librarians, software used by the various libraries and e-journals uses.

### 2.4 Barcode/RFID technology

**Weddenkeri, Mallikarjun (2006)**\(^5\) the article explain RFID is the newest tools in library automation which is used for library stealing recognition system and also advanced technology for library circulation. RFID based system move beyond surety to come taking system that join security with more competent roadway of resources all over the library, including better, quicker charge and discharge, record & thereby make sincere efforts to accept the RFID technology to build the image of libraries in rendering effective technology based services to users.

**Nattar S.(2010)**\(^5\) this paper define various types of technologies and its use for libraries day to day activity and it will help to improve quality services to satisfy the users. it also informed about RFID technology, its four phase i.e. carry library circulation, security system of library, user self check in/checkout a, smart & rapid account.

**Hassan Nabi (2012)**\(^5\) the study present an overview of Radio Frequency Identification technology and importance in the library security system and working. The benefits of using the technology like self circulation of library material, renewing, high speed inventorying, detection of theft, automated materials handling, reliability, people counter, etc. have been highlighted. The merits of RFID over Bar code and EM have been detailed and the scope of the hybrid technology has been explored with special reference to Indian environment.
2.5 Network technologies & Internet

Deshpande, N J and Pange B. M. (2002)\(^{57}\) the study highlights internet based reference service. Lot of publishers are publishing their publications in digital form, few of these excellent and valuable resources are freely available on internet. Information seeking on internet is very difficult. It is that internet can to find answer for an inquiry or doubt in 3 days, which will require three hours in a traditional library. The study lists some of important resources available on internet. The authors are using these sources to provide reference service in pune university library and have visited the entire website described in this paper. These websites are carefully studied and found that these are valuable to provide reference.

Devchoudhary Gajendra Ballav (2005)\(^{58}\) the article highlights different hardware as well as software technologies which can make possible to control information within combination with communication networks from nearly a place with the obtainable distribution databases. The information communication and networking technologies have made considerable impact on the traditional libraries.

Kumar Hemant (2005)\(^{59}\) this paper has focused on different concern associated to the purpose and value of the library homepage, what is requirement, how to create etc. for library homepage. Task of the library is to choose, obtain, arrange and make accessible suitable subset of information. Information has given about IUCAA library that they face to rising technologies.

Jain Vivekanand and Saraf Sanjeev (2006)\(^{60}\) The paper discussed here use of google by library professional, study says use of Google search is increasing day by day. It is a most popular engine for library professional to use for reference service to users. It’s features like book search, translation service, dictionary search and other general queries.

Konnur P. V. and Ragavan S. Srinivasa (2007)\(^{61}\) the article is a survey of 440 affiliated college libraries of Bangalore University, to find out possibility for library network. Bangalore university has 440 affiliated colleges and 3 constitute college. Every college has own library. Each library has done automation work and also made
bibliographical database. All these colleges will come together for resource sharing. BELNET will develop a model for resource sharing. All participant college libraries can joint each other through network. It will be benefited for colleges who are in remote area. The author has suggested a model for proposed network.

**Kumar Vinit (2008)** discussed the growth of catalogue of the library in new generation. Author says traditional way of cataloging is old one now. After development of information technologies way of cataloguing also changing. Presently OPAC are taking new shape. All academic providing computerized catalogue for users which are more effective than old traditional catalogue. Numbers of academic libraries providing paperless catalogue which are automatically upgrade after entries in the library management software. Some libraries are providing online web based catalogue for user. Form of card is electronics version and students can all bibliographical detail with availability of book or journal means issued or available in the library. Information technology made easy way of cataloguing.

**Rao K Tata, Ramaiah L. S. and Somu Raju (2009)** the article emphasizes the benefits of the internet and its impact on college libraries. In an time of information blast, the library people in college library have to play a key role. Librarian have to recognize the change in the pattern and get ready to meet the fresh challenge by accepting like the internet. The study also highlighted the sensible use of Internet, email and other electronic Media has been dealt in brief.

**Firke Yogaraj S., Patherikar Shripad R and Dhakne Badrinath D. (2012)** This paper focused on wireless connectivity which is preferred in computer networks of computers. It’s engages connecting mobile libraries, laptops and bridges to computer networks, with no physical wire connections. Without physical wire connection means that individuals can potentially access the Internet, office networks and CD-ROM network from at anytime and anywhere. Without physical connection means that students are capable to roam or work wherever they desire and still have access to the computer network. This paper provides real information for the library people to establish a new wireless network or to migrate from existing wired network to wireless network. It is very important for college libraries to take advantage of latest technology to provide more information to user with minimum trouble.
2.6 Web 2.0 & Library 2.0

Mohmed Hanif N (2009)\textsuperscript{65} the article explained new idea of Web 2.0 for information services. Web 2.0 can be use for information services. Web 2.0 is a combination of a lot of tools and softwares. Blogs, social networking, wikis, RSS feeds are component of Web 2.0 site Social networking site can be use for library. It can built-up network among the interested users group Academic library can create a web page on this type of sites. It can be reach more users. Library can send their invitation for exhibition. Library can make announcement of new book arrival. If any new facilities are coming, it can be declared through social networking. Online reference service can be given to users.

Kumar H., Mishra B.K., Kulshreshtha S.B. (2010)\textsuperscript{66} this paper gives information about using blogs, many different types of blogs and how blog is useful tool for the library. Blogs are fundamentally 2.0, and it used in complicate collection development process.and it recommended by author that librarian should be ready to accept new challenges of fresh technology to provide information to needy users.

2.7 E-Resources

Gowda Vasappa and Shivalingaih D (2007)\textsuperscript{67} the survey focus application of e-resources in research in university library by research scholar. Research is main factor to generate and develop knowledge in all discipline. Libraries in university play important role to provide information to research scholar. Research scholar should get priority to provide information. E-resources are very important in changing environment. Research scholars of science are maximum user of e-resources. Maximum research scholars are interested to get e-resources access related training. By arranging training programmes libraries can increase use of e-resources.

Nagaraj Vaidya B, Obaiah and Thomas Abraham (2009)\textsuperscript{68} the paper discussed open access journal publishing in our country India. It is a great democratic country in the world. We have largest English speaking population. Hundreds of universities and thousands of colleges are available for education and research. More 10000 people gets M.Phil and Ph.D and this scholar publishing numbers of paper, dissertation and thesis’s. Maximum numbers of scholar published it in printed journals. The study
discussed here open access journals, software to publish open access journal which are available in open source software. It cost cutting system and also save environment to use of excess papers. Open access journal saving money of the universities and research scholars. It can be used for research projects. Research scholar can use thousands of online journal just seating in front of desktop or laptop computer. It made easy his research.

Arikrishnan R. (2010)\textsuperscript{69} this paper gave details about the Engineering and Technology libraries are facing challenges due to continuous increasing in the cost or subscription journal, scholarly journals and databases which affects the academic and research activity. The study reveals that many academic libraries have understood the importance of electronic source of information in order to satisfy their users, among these E-journals have absolutely an impact on academic libraries.

Tambe Vijay L. (2012)\textsuperscript{70} discussed e-resources broadly accepted in academic field and higher education like university it is accepted very quickly. Proper training of users to makes easy use of electronic resources, while without training will make errors in access. most important academics in universities have uniformly claimed they can run computers. Among collection of available e-resources, e-journals are most used. In the rank of e-resources; e-journals being used among academic university libraries if email, web and search engines follow. There is future for e-recourses and also large acceptance, it will be popular among the academics in coming days.

2.8 Library consortia

Cholin V S and Dr. Karisiddappa C. R. (2002)\textsuperscript{71} discussed that academic libraries facing uncertainty in finance. Academic libraries not sufficient finance or funds or budget to purchasing all electronics journal and publications. Uses require scholarly journal and ICT development, emerging consortia; e-electronic publishing of scholarly journals, prizing models of the publishers gives new opportunities for libraries to provide direct to information. Consortium is the one of the rising tool for libraries to stay alive in the electronics publishing atmosphere. Lot of initiative has taken in India for library consortia. The study also discusses the major consortia at International level. Author projected model for libraries from first to last publishers and vendor has talked about at the end.
Jayaprakash H and Bachalapur M. M. (2005) The paper explained that library consortia controls and reduces cost of information, develop sharing of recourses, increase a networking information surroundings and share authorization problems but now lot of consortium’s are coming up the numbers of subjects in our country. Academic libraries have increased their responsibility for retrieval of information from paper based resources, collection growth, preservation and now it has turn out to be more difficult with opening of digital resources and with assist of IT. We know that we have taken initiative taken very late, consortium development especially by the computerized and partially developed libraries joined to large libraries to get numbers of resources and services involving minimum time, money, space etc and serve the users community at an optimum level. It is very a lot of difficult for a single library to satisfy the needs of its readers in digital environment. Understanding view the old traditions and applying them to the new environment will make institutions raise and provide useful service to the readers community in the near future, all the libraries should be a partner of the one or the other consortium.

Abdul M Bavakutty and Azeez T.A. (2006) The study highlighted national level consortium especially for engineering and technology namely Digital Library in Engineering Science and Technology (INDEST). There are seventy six college in Kerala out of it only three colleges are member of INDUST and out these three two are aided by the AICTE. It means that only one college out of seventy six is able to expenditure. It is recommended that all seventy six colleges of Kerala come together for consortium and fulfill the need of information. The study has also suggested proposed model for consortium for engineering colleges libraries of Kerala. It is recommended that all participant libraries should sign memorandum of understanding what will be mission, role of participant, body for run the function and resources which are online such as e-journals, e-books, online databases etc. may be subscribed commonly.

2.9 Institutional Repositories

Jayprakash A (2005) Academic libraries role is especially important in rapidly changing atmosphere of electronic publishing. It does include finding out proper
information, organizing, storage, dissemination and retrieval to proper users at the correct time. All academic libraries is to meet the faculty, research and other information needs of the user. For this purpose lot information resources are requiring. Generally online debases, e-books, e-journals are main resources of information in this century. It is a need of time to formation of the consortia at resource sharing among the academic libraries. It is prove to one of the solutions to the problems of insufficient budget. It also discussed the need increasing the information resources in electronic form to meet the current requirement of academic libraries and colleges at affordable cost and also discuses need and importance of E-journal consortium and resources sharing among libraries and information centers.

Dhiman Anil Kumar (2005) focus issues related consortium based library subscription. The study says academic environment is becoming rapidly competitive in its dealings and factions and the educational culture is fast transforming as enterprising in nature. Academic college libraries are centre to fulfill needs of scholar users. India is developing country and good initiative taken to disseminate information all subject areas. Suggestions are given by the author to handle issues related to consortium based subscription. He raised proper utilization of recourses. If resources not utilized properly there will certain be a fear of not accessing of information for which amount already have been paid in advance and the information is never or seldom used.

Satyabati Thiyam Devi and Murthy T.A.V. (2005) The study focused aim, organization, internal structures, policies and other characteristics of the UGC Info-net, consortium of e-journal which is one of the well known consortia for higher education in India. Highlighted issues faced by the consortia and important steps taken for it. Initiative taken up by UGC to provide e-access to e-journals and debases has started making a very good impact on the academic us of resources for research. Discussed barriers to consortium and solution to overcome and benefits of a consortium, particularly for small and middle size colleges or institution.

Dhanakar M. Arul and others (2008) the article explained Institutional Repository for colleges or institution. Institutional Repository includes collecting, preserving and dissemination of information in digital form. It’s including student’s projects, syllabus, question papers, college annual report, photos, and videos in digital form.
Lot of software available in market commercial and free base. Author has given some names like IIT Delhi, DRTC Bangalore, IIM Kozikhode etc. Where IR is available in India. There are also some software which are generally used for intuitional repositories DSpace, Eprint, Fedora, Greenstone, etc., but very few academic colleges started their institutional repository.

**Giri Kaushal K and Nirgude Kirti R (2009)** The study describe many web authoring software like FrontPage, Dreamweaver, etc which have been used to develop and maintain the website. But gradually, it became complex to maintain and update the websites because of their very dynamic nature and a variety of file formats. Content Management Systems (CMS) envolved as an alternative to such web-authoring tools. There are a lot of CMS like Joomla, Drupal, Mambo, Pligg, Plone, Post Nuke, Tweak, Zope etc., this study deal with a comparative analysis between Joomla and Drupal. The purpose of comparative study is to find the better CMS of the two according to various selected criteria. The criteria includes installation, platform support, browser support, modules and extension, documentation, support, user management, multimedia integration, content creation and searching.

**Bansod Bhupendra and Bhedekar Sanjay (2012)** the study is regarding presence of institutional repositories in Maharashtra state. Author says due to increase in demand for learned information, particularly in science and technology there is need of institutional repositories in universities and colleges. They concluded that not a signal University Library has developed their Institutional Repositories. But college like VPM College, Thane is a hope to others to develop their Institutional Repositories. IIT, Mumbai is leading in Maharashtra among the all institutions who having their Institutional Repositories. Library professionals from academic colleges should take initiative to develop their Institutional Repositories. It is advanced stage of use of information technology in library services.

### 2.10 Digital Library

**Dhansegaran G (2004)** The paper highlight present status of Digital Preservation in India and also need for digital content preservation. Described the various
requirement for digital content preservation. Preservation of digital material is certainly a challenging work for LIS Professionals. The prospect of library services is very much linked to the preservation and the fresh technologies will produce, gather, store procedure and recover the information and deliver from corner to corner the world.

Kaushik A., Sharma S. and Rajput L.S. (2011)\textsuperscript{81} this paper focused in popular open sources software and it also incorporates an interface that makes it easy for people to create their own library collection. Now a day ICT brought about great opportunities to justify their role in teaching and research work.

Rathod, Rashinath Rama (2012)\textsuperscript{82} the article focused on use and availability of open source and commercial softwares for library automation and repositories or digital library. They say digital library development in India has been started very well; focus has been on rising digital libraries. But is very important to education LIS profession & training, promotion and management is require. It needing have amend in copyright legislation to go well with the electronics surroundings. Some colleges or institution has taken positive steps with arranging workshop to train the LIS professionals. Open sources software has much potential for libraries and it also incorporates an interface that makes it easy for people to create their own library collection.

Barve Sunita and dahibhate N. B.(2012)\textsuperscript{83} The paper overviewed verity of open source softwares for libraries. Information technology has participated a major role in libraries. Present library services have been completely depended on computer application. Many computer programs and softwares are available for libraries to provide range of services from library automation, library website management, knowledge management, digital library management. To manage large amount of digital information, libraries need some computer applications which are developed by commercial vendor or are available as open source license to takes care of their requirements.

\textbf{2.11 Mobile-Learning}
Khare Nidhi (2009)\textsuperscript{84} the article focused use of mobile or mobile application for library services or library activities. Author suggested lot of latest devices which can use for library activities. Databases can be search through mobile device and e-book can search and read through mobile. SMS alert can be use for book reservation; answer small inquiry can be give through mobile.

Dresselhaus Angela and Shrode Flora (2012)\textsuperscript{85} the survey described use of mobile in academic libraries. Students were lot of interested in use of information through mobile. Survey concluded that academic libraries can arrange different types mobile of application for various library services. A concrete plan is required to establish use mobile based services in library. The survey also highlighted changing trends of information technology and upcoming new devices of communication and also focused changing face of academic library services.

2.12 Cloud Computing and libraries

Kulkarni Vrushali S (2013)\textsuperscript{86} the study says Cloud computing is a latest type of service accessible over the internet, has totally altered the system one can use the control of computer irrespective of geographic location. The basic principle of cloud computing entailed the decrease of domestic data centers and the giving out of a part or all the IT infrastructure capability to a third party. In this study an attempt has been made to give an overview of this technology, initiatives, advantages and disadvantages and the area in which libraries can deploy this technology for providing services and augment the productivity of library staff.

Mohammed Sanjeeer (2013)\textsuperscript{87} say during the past few years, cloud computing has become a key buzzword. Although the definition of cloud computing is still cloudy the trade press and bloggers label many vendors as cloud computing vendors, and report on their services and issues. Cloud computing is in its infancy in terms of market adoption. However, it is a key IT mega trend that will take root. This article reviews its definition and status, adoption issues and provides a glimpse of it future and discusses technical issues that are expected to be addressed.
Ravtani M. R. (2013) explained Cloud computing is different from traditional computing. In traditional approach the organization need to setup large servers, storage devices and lot of other equipments to support the business. This not only need large capital expenditure but also lot of efforts in terms of maintenance and upgradation of technology. Uninterrupted power supply, cooling mechanism, expert technical team, big server rooms, were undoubtedly other requirement. Now due to cloud computing all such requirements are eliminated.

2.13 E-literary

Thanuskodi S. (2011) the paper outcome with a comprehensive study on information literacy of engineering college library professionals, with special reference to rapidly changing situation of divergent information resources and its varied formats and media, which are immensely affected by the continues growing information and communication technology in 21st century. The study found that the respondents indicated that 95.12 percent of library professionals have knowledge in computer fundamentals, 81.07 percent in Internet, 42.68 percent in multimedia and only a very a small number of professionals 29.26 % have familiarity in computer programming.

Karmbelkar Manjiri, Dhamdhere Sangeeta, Phunger Prakash & Dahibhate, N. B. (2012) the study highlights the impact of e-learning over the academic colleges libraries and the challenges faced by the college libraries. E-learning and E-publishing go hand in hand sand there is a need to find how libraries could support to this change. The paper is a also review e-learning need, demands of readers for e-learning, training for users, tool and techniques, support from the colleges libraries and also discussed best practices e-learning.

2.14 ICT Training and Skill

Devi Rama T. (2005) the article focused need of training for library staff & user in for proper make use of information resources. Digital or electronic information resources are highly technical. So librarian, library staff and user should have knowledge of latest technologies to use these resources. Trained librarian is a
intermediate between resources and users. It is very important that training of library staff must be using by latest technology and the similar lines the users also get training properly. Training should be once or twice for the staff and users.

**Venkata, Ramana P (2006)** The article discussed role of librarian new information communication technology based on rapid revolutionary changes. Library services profession is one of the most challenging professions in the knowledge society. Library professionals need to develop professional commentaries to adopt continuously changing technology. They must struggle, improve new skills and knowledge about new technologies to survive and provide advance services to users. They have to keep themselves update with changing new technological environment.

**Adupa, Soora Sudher, Adupa Sunil and Rahaman S. M. (2006)** the article discussed weblogs or blogs. Blogs or weblogs is a part of information communication technology. The study has also compared tradition library and digital library. Blogs is a instate library services. We can compare blogs with traditional library catalogue which shows direction towards information.

**Nath Amar, Bahl Gautam and Kumar Praveen (2007)** this article is based on the part of a survey that investigated the ICT skills and knowledge of librarians at the Chandigarh City. Study populations of 21 librarians of Chandigarh city were surveyed by a questionnaire to establish in what ways librarians were using ICTs, what were the level of ICT knowledge and skills amongst the librarians, what problems the librarians faced in the use of ICTs and what their ICT training needs were. Interpretation of the results revealed a low level of ICT knowledge and skill amongst librarians and a general lack of formal training for ICTs amongst the academic librarians.

**Bapu Ramesh B, Vinayagamoorthy and Gopalakrishnan S(2007)** The study illustrated that the library and information professionals working in engineering colleges in Tamilnadu state acquired considerable basic skill in ICT. But It’s necessary to concentrate more on online services and e-library services. It is suggested that library science courses should change their curriculums and add ICT skill topics. Librarian has to improve their skill of ICT to provide expertise services to the users of institution.
Modal Arup Kumar and Bandyopadyay Amit Kumar (2010)⁹⁶ The study examine the present situation IT application and human power problems. There were no proper training for library staff and also authorities were not interested in implementation of it in the library and fund was insufficient. IT skill in library staff found below expectation and attitude was not positive.

Talab Seyed and Tajafari Masoumeh (2012)⁹⁷ the paper identify and compare the impact of ICT on training of library staff in tow university libraries each of India and Iran, finding shows that both Indian and Iranian library staff believe that introduction of ICT in libraries has created a need for training. Library staff from Iran have perceived the of ICT on their training needs more than their Indian counterparts, it’s concluded that university libraries in both countries have get their library staff training in ICT.

Basavaraja K (2013)⁹⁸ this paper outline and discussed the professional skill and technology competencies necessary for library professionals and considers how these are acquired and developed to service in an ever changing technological environment, to meet the future challenges of the 21⁴ century.

Conclusion

It can be concluded that all these literature review indicates importance positive attitude of library professionals toward information technology and use of information technology in different area of library activities to enhance the service quality. All the component of ICT in academic library covered and highlighted in literature review with finding of studies, suggestions and conclusions of different researcher.