CHAPTER - II
REVIEW OF LITERATURE

The available literature concerning the research problem at hand must be reviewed and examined before a scholar carries out his research work. This is done to find out what data and other relevant materials, if any, are available for operational purpose. This will enable a researcher for furtherance of knowledge. So, review of literature is of prime importance for any type of social research. Literature search in fact, enables a scholar to know the quantum of literature unfolded in a particular subject, and the extent to which the work in the same and allied fields has already been carried out by previous scholars along with their useful result and discussions.

The researcher must have up-to-date information about what has been done in there of research. In brief, it presents an overall review of studies conducted abroad as well as in India in chronological order. The investigator has reviewed only such studies which were similar to the present study.

2.1 Studies on Internet

Voorbij (1999) examined the use of the Internet amongst students and academicians in the Netherlands. A questionnaire was distributed among 1000 members of the academic community and three focus-group interviews were also held with faculty members. The study revealed that the Web was
being used primarily to search general, factual, ephemeral or very specific information. The study also revealed that students and academicians faced many problems while searching the web.

Williams (1999) reported the use of information technology and the Internet in his project entitled "Information Technology in Michigan: Adult and Teen Survey Report." The results indicated that the majority of the respondents used the Internet at least once a week and 45% of them at least once a day.

Chandran (2000) conducted a study at S V University, Tirupathi, which showed that more than 25% of the respondents used the Internet for 2-3 times a week and more than 56% of the respondents used it for accessing information. A majority of the respondents used the Web and e-mail services of Internet. The purposes of using Internet included communication and information gathering. The sources used for identifying information about Internet included website itself, journals and magazines, staff and newspapers. A majority of the respondents used general websites as compared to recreational and discipline oriented websites.

Laite (2000) surveyed 406 graduate and undergraduate students from Shippensburg University. The survey showed that 57.6% of the undergraduate students used the Internet 1-2 times per week and another 37.1% of them used it 1-2 times daily. More than 50% of the graduate students used Internet 1-2 times per week and 37.7% used it 1-2 times daily. The survey showed that the most used Internet service was e-mail. A hundred percent of the graduates and undergraduate students used e-mail service.
Ali (2000) conducted a study at Aligarh Muslim University, Aligarh. The study showed that more than 50% of the study population was satisfied regarding the timings of the Internet service, but were not satisfied with staff’s cooperation, and reservation facility. Majority of the respondents were not happy with the number of nodes available.

Subba Rao (2000) discussed that the CD-ROM as a provider of multiple, simultaneous and remote access to a large amount of information such as abstracts, full text, directories, education materials, music, etc. He presented a number of options that are available to increase access to a CD-ROM collection and commonly used CD-ROM networks under LANs, viz., peer-to-peer, file servers, client/server and optical servers. He also discussed selection of hardware and software for successful networking. He concluded that careful study of the pros and cons of establishing a CD-ROM network has to be weighed in terms of cost and usage.

Liaw and Huang, (2003), examined an individual attitude model towards search engines as a tool for retrieving information. This model integrates individual computer experience with perceptions. In addition, it also combines perception theories, such as technology acceptance model (TAM) and motivation, in order to understand individual attitudes toward search engines. The results show that individual computer experience, quality of search systems, motivation, and perceptions of technology acceptance are all key factors that affect individual feelings to use search engines as an information retrieval tool.
Spink and Jansen (2004) provide an overview of recent research conducted from 1997 to 2003 and they have explored how people search the Web. The article reports selected findings from many research studies conducted by the co-authors of the paper from 1997 to 2003 using large-scale. The researchers examined the topics of Web searches; how the users search the Web using terms in queries during search sessions; and the diverse types of searches, including medical, sex, e-commerce, multimedia, etc. information. Their Key findings include changes in search topics since 1997, including a shift from entertainment to e-commerce queries. Further findings show little change in many aspects of Web searching from 1997-2003, including query and search session length.

Hanauer, et. al, (2004) surveyed a diverse community college to assess the use of the Internet by the students for health-related information. The survey showed that although all the students surveyed had free Internet access through their community college, yet only 97% of the students reported having access to the Internet. The survey showed that 83% Internet users had access to the Internet at their home and 51% of the respondents accessed Internet at college or library. Eighty-one percent of the students reported to access the Internet most for college work and 80% for e-mail/chat.

Asemi (2005) shows that all the respondents were using the Internet frequently because all faculties were provided with internet connection to the Internet. It was revealed that the researchers of the university were
getting quality information through the Internet. Fifty-five percent of the respondents searched for scientific information through the Internet because the university library had provided access to various databases and online journals for all the students and staff.

Kumar and Kaur, (2005)\(^1\) analyzed the use of the Internet and related issues among the teachers and students of engineering colleges of Punjab, India. A well structured questionnaire was distributed among the 960 teachers and students of all the engineering colleges of Punjab. The response rate was 84.2 per cent. The present study demonstrates and elaborates the various aspects of Internet use such as, frequency of Internet use, most frequently used place for Internet use, purposes for which the Internet is used, use of Internet services, ways to browse the information from the Internet, problems faced by the users and satisfaction level of users with the Internet facilities provided in the colleges. The result of the survey also provided information about the benefits of the Internet over conventional documents. This study makes suggestions to make the service more beneficial for the academic community of the engineering colleges under study.

Mishra, et.al, (2005)\(^2\) conducted a study to know Internet utilization pattern of the undergraduate students of G B Pant University of Agriculture and Technology, Pantnagar. The findings of the study indicated that a majority of the students (85.7%) used the Internet. Out of the Internet users 67.7% were male students and 32.3% female students. The findings of the
study also showed that 61.5% of the males and 51.6% of the females used Internet for preparing assignments. A majority of the respondents i.e. 83.1% male and 61.3% female respondents indicated that they faced the problem of slow functioning of Internet connection.

Sivaraj and Esmail (2007)\textsuperscript{13} elaborated the various aspects of internet use, such as frequency of internet use, methods used for accessing internet resources, the frequently used places for internet access, purposes for internet search and use of internet services, ways to browse the internet, problems faced and satisfaction level of the students, faculty members and research scholars with the internet facilities provided at the Bannari Amman Institute of Technology. Responses of users showed that the internet is being used by students, faculty members, and research scholars to gather a variety of information and gain more extensive knowledge as part of their learning, teaching, and research activities.

Rajput, et al (2007)\textsuperscript{14} surveyed the internet resources and services of the Institute of Engineering & Science, Indore (India) and the findings in the paper “Internet Resources and Services in Institute of Engineering & Science, IPS Academy Indore: An Exploratory Study”. A large number of users were dissatisfied with the infrastructure facilities available in IES, specifically in terms of hardware facilities.

Agarwal and Dave (2009)\textsuperscript{15} have studied the use of internet by the scientists and research fellows of Central Arid Zone Research Institute, Jodhpur (Rajasthan) was assessed on the basis of the results of a
questionnaire survey in CAZRI, Jodhpur. Further, it also attempts to assess the frequency of use, location where used search engine accessed; purpose of use etc. The study reveals that the respondents accessed Google search frequently (100%) followed by Yahoo (85.29%). It is also observed that equally (97.06%) respondents use the internet for education and research. The strong desire of respondents is that the library initiate various functions and services like e-portals, online information, abstracts retrieval along with internet.

Radhakrishnan and Rani (2009)\textsuperscript{16} have studied internet usage by research scholars and faculty members. The result of study indicates that the internet facility in the central library are being used very well by the research scholars, and faculty members. The major problem of the respondent of down of internet server, speed of internet and timing of internet lab in library.

Esmail, et al., (2010)\textsuperscript{17} have discussed in his study that most of the respondents used yahoo search engine and 90% of the respondents used general web site. It is also noted that most of the respondents demanded course material, web site information and electronic document delivery services from the library.

Mahesh, et al., (2010)\textsuperscript{18} conducted a study on ICT based resources using behaviour of the respondents NAAC accredited arts and science colleges in Thiruvalluvar University. From the study it is observed that among 765 respondents 22.88% of the respondents were made aware
through teachers and research guide, 28.76% respondents were accessed internet in off campus and on-shore, 21.05% of the respondents have used internet frequently. Regarding the problem of use of ICT based resources showed that 13% of the respondents expressed that they did not know how to use this facility. From the study it is suggested by the researcher that the library professional should concentrate on providing library orientation programme for all the students studying in the colleges.

Ramesh, et al., (2010)\textsuperscript{19} found in their study on e-mail use behaviour among the users in engineering college in Puducherry that 95% of female and 75% male respondents having their won e-mail address, 43.12% of the respondents most commonly used g-mail browser.

Thanuskodi, S. (2010)\textsuperscript{20} to know the internet has emerged as the most powerful medium for storage and retrieval of information. Since past few years free online information sources like e-journals, e-books, e-data-bases have increased considerably. The traditional library systems are going to transform into digital library systems. Information-seeking is important for students of agricultural sciences who have access to many dedicated electronic resources. Internet and CD-ROM were the most frequently used IT-based sources and facilities. Results of the present study show that majority of the students does not have own personal computer or laptop. Study reveals that the majority of the respondents (57.28%) feel that the internet and electronic resources cannot replace the print resources.
Natarajan, et al., (2010)\textsuperscript{21} discussed in their study on application of ICT in health care profession in India. Among the five selected medical institute in India the respondents of Christian medical College, Vellore, Tamilnadu occupy the first position with respect to their realization of overall problems in the application of ICT in healthcare; respondents of Indra Prasta Medical Corporation, the second; respondents of Batra Hospital, New Delhi, the third; respondents of Apollo Hospital, the fourth; and respondents of all India medical science, the last.

Shuva and Akhter (2011)\textsuperscript{22} have contacted a study on internet usage by students of arts faculty in the University of Dhaka (Bangladesh). In this study they found that most of popular internet browser among the undergraduate students in Mozilla Firefox. 2\textsuperscript{nd} popular internet Brower is internet explorer. 111 (24.08\%) students use internet explorer and 61 (13.23\%) students use Google chrome. And most popular internet search Engine among the under graduate students is Google. It is also found that more than 98\% of the respondents use the internet for communication and WWW is the most popular internet services used by the respondents.

Tikam (2011)\textsuperscript{23} has studied gender differences in the usage and attitudes towards the internet among students of City Colleges of Mumbai. In his study he found that students spend more time on non - academic purposes than the academic ones. Goolge is the widely used and preferred search engine by both male and females.
Dhanavandan (2011)\textsuperscript{24} paper highlighted that a large portion of librarians are aware of the internet, but they do not know all of its techniques and applications. Further, the librarians still do not have knowledge about the internet and related applications. For this purpose, there is need for effective user education, to develop awareness and knowledge to the users. More efforts of librarian are needed to educate users to effectively use the internet and its techniques and applications.

Shuva and Akhter (2011)\textsuperscript{25} have conducted a study on internet usage by students of Dhaka University library, Bangladesh. It is found in their study that among the total number of 461 respondents from the faculty of arts, more than 98% of the respondents using the internet for communication while 67% of respondents for academic purpose. Regarding the use of internet services 99% of the respondents using electronic mail and 55% of the respondents using job announcement site. Towards the problems encounter using internet by the respondents found that slow internet access speed was the major problem with 95.23% and it was followed by virus problem. Regarding the opinion of the respondents on satisfaction with internet facilities showed that 50% of the respondents ‘some what satisfied’ and 7.59% ‘were not at all satisfied’ with internet facilities.

Dhanavandan, et al., (2011)\textsuperscript{26} discussed in their study that majority of the respondent’s difficulty in accessing the internet were slow accessibility searching difficulties, browsing difficulties, obtaining connection and down
loading difficulties. Considerable levels of respondent’s problem in accessing the internet were opening web page and reliability.

Kannan and Abilash (2011) discussed in their study that Google, yahoo and AltaVista are rated as better search engine for retrieval of information on internet regarding search quarries of law of library science, library resources sharing and networking, library extension service, knowledge management and library association in India.

2.2 Studies on E-resources and Services

Rogers (1995) described that the electronic journals also known as e-journals have altered the way scholarly information is disseminated throughout the world, especially in the fields of “hard sciences” where, on average, many scientists could be described as early adopters of innovation. In other words, they possess a rather high degree of innovativeness and are the second group to adopt an innovation. E-journals have not only affected the way information is spread, but the way information is acquired and how scientific researchers seek that needed information. There is no doubt that this particular innovation has changed the information behaviors of scientists.

Tomney and Burton (1998) conducted a study on “Electronic Journals: Study of Usage and Attitudes among Academics” and investigated that there are more users of electronic journals among academics in the Science and Engineering faculties than in the Arts or Business, while the results from the Law Department, where some staff are involved in an
electronic journal project, indicate how influential the atmosphere within a department can be on the level of usage. The principal limiting factor is that of time to find electronic journals: academics initially simply need time to come to terms with the new technology and to locate electronic resources.

Gashaw Kebede (2002)\textsuperscript{30} has discussed the highlights about the trend and nature of the physical form in which information content is currently being made available for users’ access and use in electronic information environments. It then attempts to determine why the prevailing information needs of users are coming into being and how they are shaped in electronic information environments. Finally, they make suggestions regarding how to go about identifying and meeting the prevailing needs in electronic information.

Dylaymi, et. al., (2004)\textsuperscript{31} discussed the growth of e-journals since 1992. Their study investigates the changes in electronic journal (EJ) and printed journal (PJ) collections and acquisition interims of number of titles, type of provisions and acquisition, budgets and costs between the years 1995 and 2000. The instruments used in this study were questionnaires that were distributed to six academic libraries in Saudi Arabia. The percentages were used to show the differences between the increase and the decrease of electronic journal and printed journal collections and budgets. The most important finding shows that the percentage of electronic journal collection sharply increased in 1996 by 98% which corresponds to an increase in their budget by 125%.
Murlidhar, et al. (2004)\textsuperscript{32} in a conference paper entitled “Electronic Journals: Guidelines for licensing agreements and access monitoring,” emphasize the importance of e-journals and the need for licensing agreements. This paper addresses the core issue of the changing status and the role played by the learned periodicals and their authors. The producers of e-journals are requiring “Licenses” to content in order to protect profiles by restricting unauthorized access. It indicates the role of publisher, aggregators and subscription agents in publishing e-journals. It is widely expected that a great deal of scholarly communication will move to an electronic format.

Ibrahim (2004)\textsuperscript{33} conducted a study on “use and user perception of electronic resources in the United Arab Emirates University” and opined that analysis confirmed frequency of use of electronic resources was low. Reasons cited were lack of time because of the time needed to focus on teaching; ineffective communication channels and language barrier. He also showed that the frequency of use of e-resources was higher in the College of Food Systems and the College of Science than 36 other colleges. Respondents from the College of Business & Economics used e-resources more frequently than those in Humanities & Social Sciences.

Lohar and Roopashree (2004)\textsuperscript{34} found that majority of respondent (26.67\%) make use electronic resources ‘once a week’, and 35.09\% respondents are using electronic resources for finding relevant information in their specialization. Majority of respondents 42.64\%, 23.26\% make use Internet and CD-ROMs respectively where as 33.33\% of respondents take
guidance from library staff while using the electronic resources. Majority of respondents (51.67%) indicate that the information available in the electronic resources is always adequate. Majority of respondents (30.66%) make use electronic resources for current up-to-date information. Majority of respondents (23.33%) face the problem of lack of time where as 21.11% respondents indicate lack of training is the main problem for using electronic resources. Regarding the success rate of finding the required information in electronic resources, 40.00% respondents rated that they have succeeded in the range of 75-99.

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Chakravarty and Singh (2005)\textsuperscript{36} made a study on “E-resources for Indian universities: New initiatives” and concluded that free/highly subsidized access to scholarly online resources will help educational institutions in translating their mission into reality. The research output will increase multifold. Also all parts of the country will have simultaneous
access to some quality resources enabling academia to join the main stream. This is an opportunity for those who were earlier deprived of scholarly resources to utilize these resources in a meaningful way and contribute as such as possible to the nation’s development.

Kumbar, et. al, (2005)\textsuperscript{37} jointly conducted a study on “Use of Electronic Resources by Research Scholars in CFTRI, Mysore”. It revealed that the more and more electronic resources should be provided to the research scholar to retrieve relevant and up-to-date information an also the research scholar are more familiar with the FSTA (Food Science Technology Abstract) than other databases, which provides the necessary information regarding their area of research. Its clear from the (over all) study those, the impact of electronic resources on research scholar are unbelievable. The frequency of usage of electronic information is increasing day by day rapidly. Google search engine is considered the highly familiar search engines among research scholar (91.43%) of CFTRI. 75.71% respondents indicate that the electronic resources have change the way of doing research and the information through electronic form greatly improve their standard of research.

Bennett and Landoni (2005)\textsuperscript{38} discussed the current state-of-the-art in e-books, and attempts both to set the scene and provide reasons for their low uptake. Design/methodology/approach. The different approaches to e-books of academic librarians, authors, publishers and readers are considered, using the results of a recent survey commissioned by the Joint Information Systems Committee. The findings of this study make it clear that those who
know about e-books see them as potentially useful tools. However, a number of users of ICT resources are still unaware of e-books even when their academic libraries' e-book holding is high. The lack of promotion from within the university, particularly from the academics, and to a certain extent from the librarians, is indeed a major reason for this knowledge gap.

Doraswamy (2005) identified that most of the respondents (61.25%) are familiar with electronic information resources. 27.50% of respondents make use the computer daily where as 5.63% of respondents never use it. 25%, 33.13%, 38.13%, 36.87% and 21.25% of respondents make use CD-ROM, Internet, E-mail, Search engines and VRSEC Web site daily respectively where as 25% of respondents make use online databases, VRSECE catalogue once a month; 18.75% of respondents make use online journals rarely. Most of respondents make use search engines compared to other electronic information resources and also online journals; online databases are less in use compared to other resources. Majority of respondents (42.50%) make use electronic information resources for communication purposes. Majority of respondents (75.62%) are learning the necessary skills to use electronic information resources through the self study method (reading books/journals, tutorials etc.). Majority of respondents (55%) indicate the information available in the electronic resources is always adequate. Majority of respondents 46.25% and 38.12% express lack of training and lack of time respectively as the main problems while using electronic information resources.
Rabia and Lucy (2006)\(^{40}\) have discussed gathering of some empirical, baseline information on the use/non-use of selected, subscribed electronic information services (EIS) among the Universities of the West Indies. Lack of awareness of the services’ availability is revealed as the overriding factor for non-use. It is concluded that undergraduates make infrequent or no use at all of certain EIS largely for lack of awareness.

Lohar and Roopashree (2006)\(^{41}\) have analyzed of the collected data to cover the use of electronic resources and how the electronic resources are improve the academic career of the faculty and also the problems that are faced in using the electronic resources. They conclude that the main intention of the use of electronic resources has been the academic interest of the users.

Kaur (2006)\(^{42}\) conducted a survey on “Use of E-resources by Teachers and Researchers of the Science and Engineering & Technology Faculties in Guru Nanak Dev University” the findings of the study revealed that majority of respondents (37.50\%) make use E-resources 2-3 times a week. 100\% respondents make use E-journals where as only 40.83\% respondents make use online databases. 67.50\% respondents feel that the self-instruction is the most popular method of acquiring the necessary skill to use E-resources. 90\% respondents make use E-resources for research/project work where as 75\% respondents find the information in E-resources always adequate. 85.83\% respondents feel slow access speed as the most common problem in using the E-resources. 35.83\% respondents
succeeded in getting required information in the E-resources in the range of 75-99%. More than 80% respondents feel that E-resources are time saving and more informative in comparison to conventional resources. 100% respondents admit that E-resources can be good substitutes for conventional resources if the access speed is fast, access to all the important E-journals is provided and more computer terminals are installed to provide access to E-resources. The information available in E-resources has proved to be a great asset for many of the respondents. They have been able to keep themselves abreast of the latest information and improve their academic and professional competence.

Lohar, et. al., (2006) made a survey on “Use and Impact of Electronic Resources in Jawaharlal Nehru National College of Engineering, Shimoga” and found that majority of faculties (32.65%) visit their library every day. About 26.14% faculties indicate OPAC whereas 22.88% faculties indicate CD-ROM are available in their library. 38.96% faculty members use electronic resources every day in their library. 23.21% and 20.83% faculties use the electronic resources for the purpose of Teaching and updating the subject, general knowledge respectively. 43.33% faculty members prefer to use Google and Yahoo search engines for their academic development. 40.86% faculty members seek guidance from the library staff where as 26.88% of faculties learns through the ‘Trail and error’ method. 25.87% faculties face the problem of ‘Lack of time’ to use the electronic resources. Majority of faculty members (49.41%) disagree regarding the
standard of their work would not suffer without electronic resources. 31.76% of faculty members get their required information on electronic resources between the range of '75-99%'. The study reveals that most faculty members are aware of the availability of electronic resources and they are used frequently for their teaching purposes. However, a large number of faculty members have no time to use these resources and services.

Kaur and Verma (2006) found that uses should be encouraged to use e-resources available in the library and also the library should subscribe to more web based resources. The maximum numbers of users are unaware of various electronic resources. The electronic resources/services are available TIET library. They even are not aware about the use of these e-resources. Therefore, library should provide users education program/awareness program for the users to educate them about but e-resources are available in the library and how to make maximum use of these resources for academic work.

Raza and Upadhyay (2006) conducted a study on “Usage of E-journals by researchers in Aligarh Muslim University” and found that that all the researchers are aware of e-journals in Aligarh Muslim University. Many research scholars are consulting e-journals from their departmental labs and computer centers, not only for research purposes but also to update their own knowledge. However, the study also revealed several problems, including lack of training and slow downloading.
Mohamed and Sreelatha (2006)\textsuperscript{46} studied the “Use of E-journals by Doctoral Students of Calicut University” and found that Most (93.40 per cent) of the doctoral students had access to E-journals and a sizeable number (48.83 per cent) of the male doctoral students used E-journals everyday. Most (73.63 per cent) of doctoral students indicated that accessing full-text of articles was the major problem faced by the browsing E-journals. The majority (52.75 per cent) of the doctoral students indicated that the INFONET was helpful for their research work. The major problem faced by the doctoral students in the INFONET centre was the lack of sufficient number of useful E-Journals. Analysis of data revealed that most of the doctoral students had access E-journals through the INFONET Consortium. They were accessing E-journals daily or twice or thrice a week. The features like easy and speedy access to back volumes and hyperlinks attracted the researchers towards accessing E-journals. Access to full text of Journals was the major problem faced while browsing E-Journals. The study also brings out some major suggestions for improving the use of E-journals and the services rendered by the INFONET centre, like to increase the number of core Journals, to provide orientation classes and training programmes in accessing, searching and downloading of E-journals and to appoint properly trained and skilled library professionals in the INFONET centre.

Parameshwar and Kumbargoudar (2006)\textsuperscript{47} in their study observed in their study that most of the research scholars search printed journals and electronic journals. UGC-Infonet consortium is most helpful in fulfilling
their information needs. Of the publishers subscribed under the consortium, American Chemical Society is a leading publisher in Chemistry. It is needed to train the research scholars in using the UGC Infonet Journals. Further, more journals are required in the consortium. Users also expected other kinds of services along with the UGC-Infonet Service. Most of the users rated the consortium as excellent and good. But there is need to improve the internet facility.

Beard, et al., (2007) brought out two significant findings: i) 66 percent of Institute of Health and Community Studies students surveyed in 2005 claimed to be using e-resources more than in the previous year, and in 2006, 76 percent of students in CS and 70 percent of students in DEC claimed to use e-resources more; and ii) 66 percent of staff from Institute of Health and Community Studies in 2005 claimed to be using e-resources more than in the previous year and in 2006 the percentage for staff in the School of Conservation Sciences was 75 percent and for the School of Design, Engineering and Computing 53 percent.

Ismail and Zainab (2007) described a case study, which looks at the use of e-books among information technology (IT) undergraduates at an academic library in Malaysia. It focuses on identifying the places and situations where students access e-books, their reasons for use or non-use and their preference of using a e-book to printed book. The study employs questionnaire as the data collection instrument. The findings are based on a total of 206 returned questionnaires from IT students who were selected
based on programmes and semesters using the stratified random sampling
technique. Users indicated e-books were easy to use, while non-users preferred the printed text and professed lack of knowledge on its use. Generally, both users and non-users of e-books preferred to use the printed version of textbooks especially if the text was continuously used. The majority preferred to use e-versions of reference sources.

Gunasekaran, et al., (2008)\textsuperscript{50} found that among nine departments, the users belonging to Computer Science and Engineering use the electronic journals with high rate (17\%) followed by Information Technology (16\%), Computer Applications (15\%), Electrical and Electronics Engineering (12\%), Electronics and Communication Engineering (10\%), Mechanical Engineering (9\%), Biotechnology (8\%), Civil Engineering (7\%) and Textile Technology (6\%).

Sevukan and Sivaraman (2008)\textsuperscript{51} revealed in their study that with regard to the satisfaction of users on the adequacy of e-resources provided by Pondicherry University Library, 70.59 \% of users are satisfied while 29.41\% is not satisfied.

Ashok Kumar, et al., (2008)\textsuperscript{52} measured the users attitude towards the e-resources in Madras University Library. A survey was conducted among the research scholars in University of Madras Guindy Campus Library. The aim of this study was to know the usage pattern and the level of acceptance towards the e-resources. Its found from the study that most of the scholars accept to use electronic form of resources. This study also shows that the
scholars frequently use the e-mail, e-journals and online databases for their research work. And most of the users are willing to use the e-resources at work place i.e., from their departments. The authors also measured about the problems encountered while accessing e-resources, the major problem that scholars highlight is hardware, bandwidth and lack of training. This study concludes with e-resources will become indispensible for researchers in future.

Madhusudhan and Margham. (2008) in his study focused on the use of UGC-INFONET e-journals by research scholars and students. A survey was conducted by the author to identify the needs and requirements of users. The study shows that e-Journals perform an increasingly important role in research at library & information science. There is an ever increasing demand for subscriptions of more e-journal titles in the subject.

Shamin, R. (2008) has studied the use of electronic information resources by medical science faculty at the universities of West Indies. The objectives was to study the faculty’s knowledge of electronic resources access to a computer, use of electronic resources available at the medical science library and the areas of training needed, and to identify areas for further research.

Zhang, Y. (2008) scrutinized the scholarly use of internet based electronic sources. The objectives of the study were to analyse the use of internet based electronic resources by a group of library and information science scholars. It focuses particularly on how scholars used, cited and
evaluated the e-resources. The research also explored the problems encountered while searching for information for research.

Pratil and Parameshwar (2009)\(^5\) made a survey on “Use of electronic resources by the faculty members and research scholars in Gulbarga University, Gulbarga”. The objectives of the study was to find out the awareness about UGC Infonet consortium, the search strategy adopted to find the relevant information, and the satisfaction level. The study revealed that 73.27% of responders searched information by e-journals, 81.86% of respondents still continued to use print journals, 9.79% did not know how to access e-resources through UGC infonet consortium. While 37.95% got assistance from the library staff to access the e-resources through UGC infonet consortium.

Haridasan and Khan (2009)\(^5\) in his study focused on the impact and use of E-resources by social scientists pursuing research in NASSDOC Library. The findings of this study indicate that respondents are aware of the e-resources such as e-books, e-journals, e-encyclopedia, e-theses, CD-ROM databases, e-mail, Internet and OPAC. Majority of them are satisfied with e-resources access and strongly agreed the necessity to have about basic computer & Internet literacy. Scholarly research in India can be enhanced with the use of these e-resources the study concludes.

Visakhi, V. (2009)\(^5\) in his study focuses Consortium for e-Resources in Agriculture is a e-Consortium of Agricultural Libraries under the Indian Council of Agricultural Research for National Agricultural Research System
libraries. The National Agricultural Research System of India comprises Indian Council of Agricultural Research and Central/State Agricultural Universities under Department of Agricultural Research and Education, Ministry of Agriculture, Govt of India. The paper discusses the background, main features, and advantages of the consortium for e-resources in Agriculture.

Moghaddam (2009)\textsuperscript{59} digital libraries (DLs) are treated as determinant information centers, libraries especially their managers are thinking about how phenomenon "DLs" can be effectively managed. So, the present article aims to provide managers of DLs with an approach. To do this, two main pillars considered in definition offered by Digital Library Federation namely staff and users are debated. Accordingly, some skills, instructional programs and qualities needed both for users and staff of DLs with which they can interact more effectively with new technologies such as DLs are included in the text. In fact, this paper emphasizes on educational function of DLs and thus offers an approach for its implementation from a managerial standpoint. It should be noted that specialized staff is not simply limited to the librarians including catalogers, indexers and archivists but because of nature of DLs, other fields of particularly computer science are also involved.

Kanyengo (2009)\textsuperscript{60} deals with permanent access and storage of recorded knowledge resources have been the cornerstone of libraries for centuries. Preserving the integrity of scholarship is one of the greatest challenges facing librarians and information professionals the world over today. In Africa the issue comes very much to the fore because of the
prevailing conditions and the state of the continent's knowledge resources. This paper explores and reviews issues of permanency, accuracy, and integrity of stored digital knowledge resources in sub-Saharan Africa.

Dhanavendan, et al., (2009)\textsuperscript{61} have studied the use of digital library resources by the engineering professionals in the engineering colleges at Cuddalore district. From the study it is concluded that majority of the staff using digital resources to collect general knowledge and 31.20\% of the students used for communication purpose. The results showed that majority of them have felt that digital information awareness his adequate and 50\% of the respondents satisfied with digital resources.

Anitha (2009)\textsuperscript{62} has studied about usage of e-journal among physicians. The study indicate 50\% of physicians spent 1 to 2 hours in internet and 39\% spent less than 1 hour on internet weekly. It is also observed from the study that majority of the respondents agree e-journals provided other valuable services or features beside full text.

Carlol... et. al (2009)\textsuperscript{63} studied Electronic journals and changes in scholarly article seeking and reading patterns and found that the average member of readings per year per science faculty member continues to increase, while the average time spent per reading is decreasing. Electronic articles now account for the majority of readings,’ though cost readings are still printed on paper for final reading.

Khan and Ahmad (2009)\textsuperscript{64} revealed that most of the research scholars are aware of the availability of e-journals and largely use them for reference purposes in their research work. They fully agree that with, the usage of e-

journal the quality of research work improves with enrichment of appurtenant contents and materials leading to high quality manuscript. It is however found that there is lack of training in proper and full utilization of e-journals.

Angello and Wema. (2010) study was conducted to investigate the accessibility and use of e-resources in Tanzania. The methodology adopted for the study was survey in which questionnaires, interviews and observations were used in collection of the data. A total of 50 respondents participated in the study. The study revealed that livestock research institutes in Tanzania had very few e-resources for their researchers. It was concluded that most livestock researchers were not aware of most of the e-resources available hence they could not access and use them effectively in their research work. The researchers recommended for improvement of internet connectivity to enable efficient information searching from the internet.

Bothmann and Holmberg (2010) extended the definition to include focus on an approach to budget management, provision of administrative functions and tracking of license agreements. They also addressed electronic resource management from the perspectives of planning, policy and workflow issues experienced by libraries. Effective management requires planning. Planning starts with libraries developing a prioritized list of goals for electronic resources to guide their work Bothmann and Holmberg (2010) noted that creating a small electronic resources committee of key players in a library's electronic resource management work is the first step. The key players should come from various divisions of the library. The committee
would then identify all of the staff involved in electronic resources workflow from administrative support personnel to administrators. They gave other aspects which the committee should consider as budgetary concerns such as creating a list of electronic resource types, such as A-Z lists, open URL, and full text databases. The list may be used to prioritize what a library has, what it needs but is lacking and what it wants to have but is not essential for service to patrons.

Sangaranarayanan and Nagarajan (2010) discussed in their study on use of e-resources by the faculty of agricultural science, Tamil Nadu Agricultural University that 23.29% respondents have used e-journals 47.81% used Google search engine, 32.88% of the respondents using e-resources at department, 32.05% of the respondents reported that time saving is the main benefit of using e-resources and 26.16% of the respondents have used e-resources for their research purpose.

Saravanan, et al., (2010) have conducted a survey to know the various searching methods adopted by the internet users to locate the required information. The authors discusses about the various features of Google search engine and conducted a survey among the students from six disciplines. From this study it is found that most of the respondents are aware of the AND type of search query operations. This study concludes with remarks that the users can be given orientation to develop their skills in searching. Authors also say about the success of information retrieval starts
with what type of information he/she is seeking and how to pose queries in the search engines should be determined first.

Esmail, et al., (2010) has conducted a study on use of internet by engineering college student in Thiruvannamalai district, Tamil Nadu. In their study they concluded that most of respondents demanded course material, websites information and electronic document delivery services form the library and major reason for non – using the internet and its services by the respondents was “Don’t know and how to use it”. Their finding also shows that WWW are the most used internet tools by the respondents.

West (2011) discussed the growth and availability of electronic journals offer libraries the opportunity to provide end users with quick and easy access to more journals than ever before, thereby creating a complex new workload in academic libraries. Libraries have addressed the evolving challenges unique to electronic resources by creating new policies and workflows and dedicating staff to work on the processes, despite the lack of best practices. In the fall of 2009, a survey was distributed to ninety-five libraries at peer institutions to gather information about their policies and practices for cataloging and managing electronic journals in order to gauge the current status of electronic journal management among these peer institutions. This paper reports on the survey findings related to cataloging approach, sources for bibliographic records, methods for identifying problems, and the staff and staff hours dedicated to electronic journals.
Rasool and Doraswamy (2011)\textsuperscript{71} The 21st century has brought at tremendous revolution in information and communication technology. It has resulted in perennial access to networked information and other information resources. Usage of information through electronic mode has become the order of the day. After arrival of internet facility into the society, the entire world has become a hamlet. The entire information is readily available everywhere. Today, the readers residing in a remote village are able to have access to the information whatever they want through internet facility. In order to highlight the accessibility of internet to the users in the modern era and to familiarize the multifarious utilities with the same, the author has made an earnest attempt in this paper.

Bakkiaraj, et al., (2012)\textsuperscript{72} found that majority of male respondents visit the library every day. Majority 67 male respondents uses online information some time. At the same time the level of satisfaction of the research scholar with e-resources available in university library shows a positive results, so it is proved that the university library providing maximum level of services to its user.

Dhanavandan (2012)\textsuperscript{73} describes the Use of Digital Library Resources by the engineering professionals in the engineering colleges at Cuddalore District, and investigates the current state-of-the art information through the digital library resources. The 33.7\% of users feel that lack of information is the problems with access of digital library resources. The findings of this study would assist the internet browsers to improve their level.
Kumar and Dominic (2012)\cite{Kumar2012} found that the world became small global village due to strong influence and communication technology. It is necessary to provide quality information in a best possible way through ICT applications to the end users. Since most of the colleges have various sources, the authorities should turn their attention towards the digital libraries to improve more on ICT facilities and others required facilities.

Belwal and Batcha (2012)\cite{Belwal2012} The data in the table ranks e-mail technology at the top level and explains 60.80\% of respondents highly depend on this ICT technology followed by 25.23\% in other scale of moderately dependant. The next rank goes to Internet browsing as it records 57.23\% of users in the highly dependent scale and in moderate dependant scale it is noted about 24.13\%. The following table focuses on what percent of dependency that the respondents rely on the net phone technology.

Jing Li et al., (2012)\cite{Li2012} in this study, the authors explored the exact nature of patrons' usage behavior as well as their perception of ease of use and usefulness of print and electronic resources in the context of Chinese university libraries. A large scale survey was conducted and data were analyzed from 273 users. The study found that users are undergoing a transfer of usage behavior from print resources to electronic resources. This study advances knowledge about the current status of the use of university library information resources, helps librarians in Chinese university libraries understand the information needs of their users more specifically, and provides some guidelines for the efficient and effective management of information resources.
Das and Mohapatra (2012)\textsuperscript{77} they discussed that Emergences of Electronic Resources have made revolutionary changes in the library scenario. Many librarians believe that these resources have changed the principles of selection radically; some believe that they will virtually eliminate selection. Although it is true that the art of selection is undergoing profound change, the selection of material is still crucial for libraries. The four basic criteria for selection- quality, library relevancy, aesthetic and technical aspects, and cost remain the same in the electronic era of information. The development of new technology for the storage of Information, challenge of the future for libraries is not supporting a new electronic literacy, but supporting “The multi-literacy” that will be required in future year. A collection of up – to-date general materials that serve to introduce and define a subject and to indicate the varieties of information available elsewhere. Collection Management can also be defined as the organization and maintenance of library resources, starting from collection development principle. The present study explains the state of e-collection development and management in the engineering college libraries of Bhubaneswar city, which are situated more than 10 years back. The assessment of the present study lies upon the general consideration of the policy, Practices and procedures adopted by the libraries under study.

Balasubramanian, et. al., (2013)\textsuperscript{78} found that all faculty members are familiar about e-resources and usage of internet. A large number of faculty members are facing the problem of slow access speed at the time of
accessing e-journals, e-books and e-data bases. Among the 592 scholars, 278 respondents (49.96%) access the internet from the university central library. 165 respondents (27.87%) access the internet from their office departments, 52 respondents (8.78%) access the internet from students amenities centre on campus. 82 respondents (13.85%) access the internet from both university central library and office/ departments. Only 15 respondents (2.53%) access to internet through other places. Most of the respondents learned internet skill by their friends, around two fifth of the respondents use the internet frequently. One third of the respondents are use the internet for getting specific information with regard to their subjects.

Moorthy and Dominic (2013)\textsuperscript{79} found that most of the faculty members use the Journals and Electronic Resources for their own publication purpose. The respondents are using search engine frequently for accessing publication based resources and services and majority of respondents are using Google (40.48). Most of the faculty members use the internet for browsing purpose.

Puttaswamy and Krishnamurthy (2013)\textsuperscript{80} found that the preferred ways of information seeking habits confirms that, 78% of the teaching staffs read books and articles as part of preferred way of information seeking habits, 74% of them conversing with experts on the topic, 73% conversing with their colleagues, 72% by attending seminars, conferences and workshops, for 64% of the teachers through e-mail to colleagues/experts, for 64% referring to electronic journals, and for 55% of
them searching for electronic database are the best information seeking behavior habits. Approximately of 34% of the teachers think, discussion lists/list servers is the preferred information seeking habits. 77% (665 out of 866) of the engineering college teachers in Visvesvaraya Technological University have indicated that, sufficient computer terminals and adequate internet facility with required accessories are made available to access e-Resources. 99% (857 out of 866) of the respondents inform that their library does not have e-book reader where the librarians should take a not of it. Another remark given by the teachers an scholars that 51% of the libraries, have not provided any orientation/training programs to their staffs for using e-Resources.

Jayanthi and Saravanan (2013) discussed in their study that the respondents utilize ICT based resources and services up to the maximum level. Majority of the respondents are satisfied in using the e-resources and services ant the ICT based resources and serves has become an indispensable as well as unavoidable commodity.

Senthilkumar and Santhi (2013) have discussed in their study that majority of the respondents visit the library weekly. Majority of the respondents accessing in the website for preparation of their project work. More the 55% of respondents satisfied with internet services.

Ranganathan (2013) has studied that the electronic databases have enabled the library patrons to access the information remotely and enhance their academic excellence. The study reveals that though a majority of the
library users feel that electronic database are easy to use and have more up-to-date information. Than the conventional documents, some of the users still face problems in finding the required information. In order to make these more beneficial, the library staff should provide more training session for the library users to make sure that the users are familiar with the databases, and are able to obtain right information at the right time.

Shanmugamoorthy, et.al., (2013) have studied that 27.42% of the respondents spend two hour per day for searching / accessing ICT based resources and services and services. 27.03% of the respondents have used ICT based resources and services for their research purpose. It is witnessed that 38.37% of respondents are using Google search engine. 39.97% of respondents are very much satisfied. With ICT based resources and services. The findings of this survey conclude that PG students and Research scholars need to improve their IT skills to more usage of ICT based resources for their learning and research purposes.

Hema, et. al., (2013) found that the PG students, research scholars and teachers of arts and science college libraries in Pondicherry highly use ICT based resources and services for their study and research purposes and in result it has made high impact on the use pattern and information seeking approaches.

Jebamalar, et.al, (2013) have discussed in their study that the use of ICT based resources and services is very common among the faculty members, research scholars and PG students of arts and science college and
majority of the teachers and research scholars are dependent on ICT based resources and services to get the desired and relevant information. A good number of library users feel that there is a place for improvement in infrastructure facility which is most important in providing undisturbed access.

Prtheepa and Jayaraman (2013)\textsuperscript{87} found that the information like reviews, journals, educational information is some of the information accessed more by the internet users. The search engine mostly used by the users is the Google and Yahoo websites to find the above information in the internet.

GopalaKrishnan, et. al., (2013)\textsuperscript{88} discussed in their study that information access pattern of the respondents studied in encouraging as the students and faculty of the surveyed Chennai based selected Engineering Colleges are adopting the range of search methods and approaches to information. Accessing information through library staff and colleagues are the most preferred mechanism used by the respondents to get the information. The respondents also access information. The respondents also access information by trial and error, training at work place and by the participating workshops, training and seminars. Respondents prefer search approached to the documents by the title, keywords and by the journal name. Search through the author, publisher were preferred by less number of respondents. The mean were used as sources to consume the scholarly information are both print and e-resources. Among the e-resources, e-books,
full text articles, abstracts, models and designs were mostly used forum of
documents. Study could find the limitations pursued by the users in the
Chennai based selected Engineering College, towards information access.
Such as lack of knowledge in computer handling browsing the e-journals,
limitations of internet access speed the attitude of library staff and power
fluctuations.
REFERENCES


67. Sangaranarayanan, D and M. Nagarajan (2010). Use of e-resources by the members of Faculty in Agricultural Science in Tamil Nadu; A study. *IJISS* 4(2); p7-10.


