Chapter - III

REVIEW OF LITERATURE

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*Ask a question and you're a fool for three minutes; do not ask a question and you're a fool for the rest of your life.*

- Chinese Proverb
3.1. Introduction

Review of the related literature is very essential for a research topic in the light of successive changes in the field of information technology, and in the dispersal of information sources, as well as diversity and changes in users' expectations. "A literature review involves identifying relevant literature or sources of relevant information (bibliographic access), physically accessing the most relevant literature (document delivery), reading and analysing these works" (Kaniki 2006). Thody (2006) stated that the purposes of a literature review are:

- To justify the research by showing that others have not already researched that topic or researched it in the same way;
- To establish the credentials for a person's research is important because others have investigated the same general area;
- To explain the emergence of a person's research topic and data gathering methodology;
- To reveal current understanding of a person's topic. A person's work will be judged in comparison with that of others, hence the significance of the literature;
- To show how a researcher generated his/her conceptual framework; and
- To provide a general overview of the area of his/her research.

Reading the literature helps the researcher to focus on important issues and variables that have a bearing on the research question. Various studies have been done on the use of electronic resources by students of institutions of higher learning. The researcher thus made an attempt to review the studies conducted in relation to present study. The review of literature has been done on the following broad sections.

3.2. Use of Internet as an Information Source

A careful review of literature discloses that, good number of investigations has been carried out to study the use of Internet and electronic resources in India and abroad by the faculty members, students and research scholars of different academic institutions
from time to time. Most of the studies (Shuling, 2006; Odero-Musakali and Mutula, 2007) reported acceptance of electronic information resources and services by the user community and have emphasized the need for adequate infrastructure and training programmes to make the users aware about ever changing tools and techniques of ICT and electronic resources. The Internet as an important tool for retrieving information on the World Wide Web is being used predominantly by the user community with varied purposes. The results of majority of studies (Gibson and Oberg, 2004; Biradar and Kumar 2005; Koovakkai and Noor, 2006), shows that the Internet is mainly used with the purpose of study/research. Whereas, in some other studies (Waldman, 2003; Kumar and Kaur, 2004), majority of users used the Internet for education purpose. In a study conducted by Biradar et al. (2006) the main purposes by majority of faculty members was teaching (66.66%) and research (47.9%) which is quite natural for a teaching fraternity. Among the students, majority (52.63%) of them used e-mail as the main purpose for using the Internet followed by general information (44.73%). Chandran (2000) in his study at S. V. University, Tirupathi, India, found that more than 56% of users used Internet for accessing information and also for communication and information gathering and most of them used general websites as compared to recreational and discipline oriented websites. Another study by Hewitson (2002) at Leeds Metropolitan University (LMU) revealed that Internet was the most extensively used electronic information with 71.3% of academic staff using it for finding required information at least weekly or more. Whereas in the study by Nasir Uddin (2003), it was mainly used for e-mailing by majority (88.07%) of faculty members followed by accessing WWW resources (70.64%) and downloading files (55.96%). They also used mainly for making contact with overseas education and research organizations (74.31%), information about publications (68.81%), and finding information about higher education opportunities (53.67%). Here communication with higher educational institutions seems to be important purpose. The purpose of using Internet by the students is quite different from faculty members in a study at G.B. Pant University of Agriculture and Technology by Mishra et al. (2005) wherein majority of male (61.5%) and female (51.6%) students used it for preparing assignments. Regarding the services provided by the Internet, E-mail remains the most popular and dominant service among the users in many studies (Amritpal Kaur, 2000;
Mugwisi and Ocholla, 2003; Badu and Markwei 2005; Verma et al. 2007). Therefore, it can be observed that information needs would differ according to user category and type of institution and also on extent of involvement in academic activities such as study, research and teaching. A survey conducted by Kaur and Manhas (2008) on the use of Internet services and resources in the engineering colleges of Punjab and Haryana states of India found that more than 75% of the respondent’s use the Internet services mainly for educational and research purposes. Most of the respondents used the Internet for consulting technical reports while the standards and patents were least consulted sources of information. More than 70% of the respondents opined that the Internet was useful, informative, easy to use, inexpensive and time saving. Similarly, a study by Madhusudhan (2007) on the use of the Internet by the research scholars of the university of Delhi, Delhi, India, indicated that majority of the research scholars (70%) used the Internet daily for academic purposes. The study also indicated that 98% of users preferred the Internet for e-mail facility, 96% for using the World Wide Web and only 4% used the FTP Internet service. Ani et al. (2010) in their study came out with the basic reasons for Internet access and use by the respondents is for communication through e-mail (16.87%), teaching (15.66%) and research related activities (14.58%). The findings also indicated that although there exists a high level of skills in Internet access and use by the respondents, there was a need to organize regular formal user training by the university library (University management) for all academic staff in the University of Calabar, as well as each Nigerian University. Regarding the methods of acquiring the necessary skills in order to find information on the Internet, in many studies (Ndahi, 2003; Manhas, 2008), it was found that majority of the respondents used the trial and error method. A majority of the respondents felt that Internet services and electronic resources could not replace the print resources that it only supplemented the print resources. A study by Mahajan (2006) observed that researchers under study in sciences were more positive about the use of Internet and its impact on their educational experience. All of them (100%) had positive attitude toward the Internet and felt comfortable in gaining information through it for academic and personal purposes. About 70% of researchers in social sciences and 20% in humanities also agreed with them on the importance of Internet’s information resources.
3.3. Use of Electronic Information Resources

The need for electronic information has gradually become a major resource in every university library. The growth and diversity of electronic resources, especially e-journals, has led many to predict the extinction of the printed journal. This has resulted in increased use of electronic resources which has become common in university environment with the rapid advance of information and communication technologies. It is very much dependent on the user and the purpose of using electronic resources. In recent years, the electronic resources have become an integral part of the information needs of users. Further, they can be good substitutes for the conventional resources. As a result users started using electronic resources with varied needs and purposes. It can be observed from the recent studies that electronic resources were being used by the users with a purpose of study and teaching (Satpathy and Rout, 2010), updating knowledge (Mishra and Gohain, 2010), research work and finding relevant information in their area of specialisation (Madhusudhan, 2010), scientific research, teaching and self-development (Zhang et al. 2011).

Tenopir and King (2002) surveyed more than 16,000 scientists, engineers, and social scientists in both university and non-university settings. They found that scientists, on average read more journal articles than engineers and medical faculty reading the most. Chemists and physicists read between these extremes. Use of electronic journals varied in the studies, from a high of about 80% of all readings by astronomers to a low of 35% from science and social science faculty at one university. Habits have been changing and most students and faculty prefer e-journals when they make access easier. A study conducted by Kanauija and Satyanarayana (2003) showed that 40.4% of respondents used the Internet for consulting technical reports, 36.6% users consulted e-journals regularly, 24.8% to find online databases. Another study by Ali (2005) regarding the use of e-journals and databases revealed that 63% of users utilized the service regularly, whereas only 45% of users were aware about the list of online journals and databases subscribed by the library. However, 14% of users indicated that they had never used any e-journals or databases.
A study by Song (2004) sought to explore and report international business students' perceptions and expectations of electronic library services at the University of Illinois at Urbana-Champaign. According to the survey, a significant percentage of the respondents (43%) had no prior experience with electronic resources in their home countries. Many business databases, especially financial databases, were complicated to use, and thus, international business students perhaps avoided using such databases and continued to use web-based free business information resources. Further, study also suggested that the focus of library instruction for international business students should first be placed on motivating them to use electronic business information resources, and then on educating them on how to use various databases with widely different interfaces. Thus, it was recommended that library instruction and outreach programs were to be scheduled. Similarly, in a study by Gardiner et al. (2006) on information behaviour of academics in British University in three disciplines- Computer and Information Sciences (CIS), Business/Management, and English literature. The study found that English academics made higher use of printed information resources, than electronic resources such as full-text databases, indexing and abstracting databases, search engines, and Internet sites. CIS academics generally tended to make greatest use of electronic-based information resources, and the least use of print-based information resources, and business/management academics fell somewhere in between these two disciplines. Korobili et al. (2006) in their study examined the use of library resources, focusing on e-sources, by the members of the faculty of the technological educational institute of Thessaloniki, Greece. The great majority of the faculty used printed sources more than e-sources, but they also used e-sources quite frequently. The study also found that the use of e-sources was higher in the faculty members of school of business administration and economics. The awareness and the quality of the available electronic resources were the two important factors for the effective and efficient use of electronic resources (Deng, 2010). At the same time, educating the users by providing adequate training from time to time in searching and using the electronic resources was also necessary (Parameshwar and Patil, 2009). These views substantiated very much with the results of the study by Shuling (2007) on the current use of electronic resources by teachers and students at Shaanxi University of Science and Technology which indicated that
unfamiliarity with the construction of databases and searching methods was the main reason to influence for not using of the electronic resources. Most of the teachers held the opinion that the traditional books and periodicals could still meet their needs. It showed clearly that the teachers in this university had no awareness of using the electronic resources. Therefore, there was a need to strengthen readers’ awareness about electronic information resources. Vakkari (2006) compared patterns in the use of the Finnish Electronic Library, FinELib, by university faculty between the years 2000 and 2005 in Finland. The results of the study showed that the use of electronic resources and those using FinELib frequently increased over the years. The findings mainly indicated that the perceived availability was a central factor. The study also showed that availability varied by discipline and this produced variation in the frequency of use. Therefore, author concluded that there was a need to study in detail how specific disciplinary characteristics and the perceived availability were associated with the use of electronic resources.

The study by Sharma (2009) examined the existence of various e-resource databases in Guru Gobind Singh Indraprastha University Library. The results of the study indicated that majority of the teachers preferred to use e-resources in comparison to traditional resources since majority of them felt that e-resources were easy to use, highly informative, less expensive, and saved time. Maharana et al. (2010) in their study to find out the necessity and usage of Internet and e-resources by the students Business Administration, in Sambalpur University, Orissa, India found that the level of competence was high in handling Internet and e-mail whereas majority were beginners in handling other e-resources such as online and CD-ROM databases, online catalogues, e-journals, search engines. The study also exhibited that about (50%) of respondents strongly agreed that “management study would suffer without Internet and e-resources”. Hence, looking after such an impact of Internet over management studies the investigators liked to suggest that the users should be well intimated with technology to handle their demands.
3.3.1. Use of Databases

Majid and Tan (2002) studied computer engineering under-graduate students in Nanyang Technological University in Singapore and discovered that more than one-third of the respondents had never accessed computer-engineering databases available through the library and of those, half of them had never heard of them. Whereas, in a study by Weingart and Anderson (2000) to know the awareness of the libraries' databases at Utah State university library found that more than two-third of the respondents were aware of some of the electronic resources. Respondents who were aware of and made use of databases were asked to rate the importance of each database to their own work. The majority of faculty members (77.8%) gave a high priority rating to Elsevier electronic journals. Similar studies were also undertaken by the researchers to know the use of databases and the results of these studies indicated that there were many databases preferred most by the respondents such as EbscoHost and Africa Virtual University (AVU), Library of Congress databases used most by the University of Zimbabwe respondents, while Sabinet, FirstSearch, and EbscoHost were used most by University of Zululand librarians (Mugwisi and Ocholla, 2003), Lexis/Nexis was the most used database, which contained newspaper articles and law information (Waldman, 2003), EbscoHost remained the most used databases in Social Sciences (Ramlogan and Tedd, 2006), Web of Science, Science Direct, and EBSCO was the most preferred databases at Ankara University (Attilgan and Bayram's, 2006), ELSEVIER and Science Direct databases received a positive approach towards accessing and using these databases (Hassanshahi, 2006), whereas EMX (70.4 %), EBSCO (63.3%), and PROQEST (53.1%) was the most used databases (Swain and Panda, 2009) Science Direct (53.6%) and EbscoHost (28.6%) was used often (Egberongbe, 2011). Disparities in the use of databases mostly depended on whether subscribed or open access resource, who is funding i.e. whether donor supported or government subsidized and also their availability. Singh and Gautam (2004) in their study determined that the information services and products of all kinds are being generated by various agencies in the government, public and private sectors and was emerging into the information market place. As a result, the nature of information delivery and consumption was changing, as modern information technology provided easy access for almost everyone to the ever-
growing amount of stored information in international, national, and local databases. Falk (2005) reviewed library online databases of United States libraries and described the availability of online databases for library patrons in the USA. The major findings were (i) online databases are now widely available to library patrons in the United States, and many patrons can tap into these databases from their own computers; and (ii) larger libraries and library systems could afford to offer their own choice of databases to their patrons through their web sites. Dadzie (2005) in his study found that general computer usage for information access was high because of the university’s state-of-the art IT infrastructure. Usage of some Internet resources was very high, whilst the use of scholarly databases was quite low. But, it was quite disappointing that the percentage of non-usage of some of the search tools was rather too high. Similar results with varied degrees about low usage of online databases were also reported in the earlier studies (Ibrahim, 2004; Majid and Tan, 2002). The findings of these studies showed that, respondents were not as diversified as they ought to be and are limiting their searches to only a few tools. Concerned about the maximization of the use of electronic resources should be raised. Studies were also made by the researchers to know the behaviour of searches, level of knowledge etc. A study by Okpala and Igbeka (2005) at Kenneth Dike Library of the University of Ibadan examined users’ experience in searching databases to identify the students’ knowledge of search systems confirmed that there was no relationship between the level of education and the quality of search strategies. Therefore, the study implied that the quality of information retrieved mostly depended on the database infrastructure and its ability to disseminate proper data according to the user’s requests. Another study by Atilgan and Bayram (2006) showed that there was a relationship between “level of knowledge of databases” and “use of databases”. The result supported the idea that the use of databases was influenced by the level of knowledge of them. Therefore, it was realized that steps to be taken to create awareness among the users. It was observed from the study by Janaki and Mohamed (2007) which described the steps taken by the University of Malaya Library to successfully implement the continual improvement project entitled “promoting the use of online databases” for the year 2005,. It included the efforts taken by the library to increase the usage of online databases among the postgraduates by 20% as compared to the year 2004. It was realized
for increasing the basic awareness of these online databases among the library users and highlighting the relevant databases for the respective faculty prove to be vital to bring about an increase in the usage. Atakan et al. (2008) conducted a survey on use and evaluation of electronic databases at Ankara University digital library. When the survey was conducted between 2002 and 2005 on using the databases with similar purposes, it was found that there was gradual increase in the use of databases. The improvement in the use of the databases proofs that the presentations and trainings were conducted for three years to introduce the databases have been successful. Another study by Khan et al. (2009) focused on finding out the level of use of online databases by faculty members and research scholars of the Jawaharlal Nehru University (JNU) and Jamia Millia Islamia (JMI), Delhi (India). The degree of usefulness and utilization of online databases was high among the universities’ faculty members and research scholars. A larger population of faculty members and research scholars from both universities used online databases for updating knowledge and researching. This supported the idea that through the use of online databases, access to quality research has certainly added to the respondents’ research and study work.

3.3.2. Use of Electronic Journals

Since the introduction of electronic journals many surveys have been administered to find out users’ behaviours. The results of most of these surveys provided details on the usage of e-journals in the first and second stages of the evolutionary process (Tenopir et al. 2003). These studies supplied valuable information that could be summarized as follows: Unfamiliarity with how to access the journals and a lack of need (Dillon and Hahn, 2002) Use of electronic journal increases with time (as can be seen comparing results of several studies, e.g., Smith, 2003; Tenner and Zheng, 1999; Lenares, 1999; Tomney and Burton, 1998). Age and/or academic position had been inversely related to the use of electronic media and journals (Bar-Ilan et al. 2003; EJUSSt, 2002). In some other cases, no relation was found between age and usage (Rogers, 2001) or faculty members were heavier users of the electronic format than students (Dillon and Hahn, 2002). Monopoli et al. (2002) conducted a survey of the use of the electronic journals services at the University of Patras in Greece which looked at the frequency of use
according to the demographics as age, gender and academic occupation were considered. E-journal service appeared to be used by all age groups, although the majority of users were reported by those less than 35 years due to high proportion of students. 66% preferred e-format of journals, but this number decreased in those between 55-64 years old to 40%. Proportionally, more males used the service on daily, weekly or monthly basis than females. Galbraith and Brady (2004) in their study on print journals at Washington State University’s Owen Science and Engineering Library in 2003 found that print journals were actually used more than prior to the introduction of electronic journals. They argued that the availability of electronic journals had in fact greatly enhanced the total use of all titles. A survey by Woo (2005) to evaluate the performance gaps and to find out user preferences for print and electronic materials in the paper titled “The 2004 user survey at University of Hong Kong libraries” showed that 68.8% of the respondents preferred to use online journals where compared to 31.2% who preferred to use print journals, and 71.8% of the respondents preferred to use print books as compared to 28.2% who preferred to use electronic books. Bar-Ilan and Fink's (2005) in their study assessed the usage frequencies of electronic and printed journals and monitors changes in behaviours and perceptions toward these formats at the Hebrew University of Jerusalem. The findings indicated that 80.9% of the respondents were very frequent or frequent users of e-journals, regardless of their academic status or age. 83.1% of the respondents preferred the electronic format over the printed format when both formats were accessible. The authors concluded that, “the trend of cancellation of the printed one where an electronic format is available is regarded not only as an inevitable financial decision but a natural process where young and old alike adopt and prefer the electronic format over the printed one”. Borrego et al. (2007) in their survey on the use of print and e-journals by the academic staff of the universities belonging to the Consortium of Academic Libraries of Catalonia (CBUC) reported that more than 95% of the respondents were aware of the e-journals; electronic journals used exclusively or predominantly by 52% of the respondents; use of the e-journal collection showed a statistically significant relationship with the discipline, age of the respondents and their academic status; and 76% of the respondents preferred the electronic format over the printed format when both formats were accessible. The acceptance of format change was also related to the
discipline and age and academic status of the respondents. Regarding the use of the content of e-journals, Pankaj Kumar Singh et al. (2008) in their study observed that majority 70% of respondents took printout before using online journals. 68.57% downloaded the content in storage devices and 25.71% of respondents used on the computer screen. According to study by Sivapragasam and Prabhakara Raya (2011), the preferred utilization form of e-resource research scholars was electronic-read (46.7%), taking print out by 37.8% and both electronic-read as well as print out 15.6% of research scholars.

A study by Wickramanayake (2010) evaluated management and commerce academics' information-seeking behaviour, information needs, and their attitudes and perceptions towards the library system in Sri Lankan Universities. The study found that the majority of academics were more interested in research than teaching. They had good library skills for finding information and accessing services. Most of them were unable to keep in touch with current information due to insufficiency of current resources. The majority (59.77%) of academics felt satisfied about the printed journals subscribed by the library. Regarding electronic journals, 33 (37.93%) were found poor and 52 (59.77%) academics found fair. Since e-journals have become vital part of information for various needs, availability of adequate e-journals for the user communities to make them confident in pursuing their academic activities. The findings of the study by Shahmohammadi (2012) confirmed that the working environment of staff, researchers, and students was also found to be important clues for the reasons, why electronic journals was used or not, and which particular periodical publications will prove popular. The differences in the working environments meant that design of access mechanisms, whether through library Web sites or through open access mode were needed to take into account the different target audience needs and levels of experience. Thanuskodi (2011) in his study on user awareness and use of e-journals among education faculty members found that majority of faculty members were highly satisfied and they made use of e-journals for variety of purposes. According to him e-journals had both advantages and disadvantages. Librarians needed to identify and balance the factor that would make e-journals a success in their libraries.
3.4. Use of search engines and search strategy

3.4.1. Use of Search Engines

Regarding the use of search engine through which users could get required information, most of the respondents in many studies (Arya and Talukdar 2010; Riahinia and Zandian 2008; Biradar and Kumar, 2008; Dhanavandan et al. 2007; Patitungkho and Deshpande, 2005; Asemi, 2005) preferred Google as the most used search engine. In the studies conducted by (Maheswarappa and Ebnazar, 2003; Ehikhamenor, 2003; Pangannaya and Shijith Kumar 2000) found that Yahoo was the most used search engine. Al-Ansari (2006) showed that academic staff and students of Kuwait University used Yahoo! more than other search engines, while Alta Vista, InfoSeek, and Google were used less frequently. Brophy and Bawden (2005) in their study compared Google as an Internet search engine with academic library resources. Surprisingly, their finding showed while Google was superior for coverage and accessibility, library systems was superior for quality of results, and that precision was similar for both systems. Gardiner et al. (2006) made an attempt to study information behaviour of British university academics in the digital age by comparing in three disciplines- Computer and Information Sciences (CIS), Business/Management, and English literature. The study found that, there was no significant difference in use of search engines between disciplines: 89% of both CIS and English academics, and 78% of business/management academics used them more than once a week. However, one surprising result was that 22% of business/management academics cited never using search engines. It was also worth noting that whilst search engines were indeed the most frequently used resource, meta search engines fared much less favourably i.e. half of all respondents never used them at all. Another study by Maharana and Mishra (2007) indicated that 60 (85.71%) teachers use search engines for searching the Internet. All other search tools were used only by a small group of faculty i.e. 20 (28.57%) of them used subject gateways, 16 (22.86%) used online bibliographic databases and 14 (20%) of them used digital libraries. When the respondents were asked for reasons for using search engines instead of online databases, some 25.8% of the population chose "unavailability of online databases off campus" option, followed by being user friendly (23.4%), and being free of charge.
Similarly, Dubicki (2010) in his study also found heavier dependence on search engines to begin the research. Google (46.60%) was the starting point for research for almost half of the students, while Wikipedia was mentioned by only 6% of students. A total of 27% of students started their research with the MU Library web site. Swain (2010) in his study found that large majority of students used Google (84.4%), Yahoo (81.8%), and MSN (55.7%) frequently. Concurrently, majority of respondents opined that they never used Infoseek (66.7%), AltaVista (65.6%), and Dogpile (62.5%). It was presumed that students of business schools of this part of the world were not well accustomed with the use of multi varieties of search engines. Thus, this area seems to be unidentified by the librarians of the respective business schools. Therefore, students should be instilled comprehensive ideas about the web searching features of different search engines through periodic information literacy programs.

3.4.2. Use of Search Strategy

The library provided access to thousands of e-journals and good number of databases from different world reputed publishers and providers covering a wide range of science and technological subjects. All these electronic documents provide basic searching services to every title, such as search by title of journals, by author, by keyword, by date of publication, etc. As the literature showed, different authors have discussed early studies on search strategy adopted by the users. The most important and often the most difficult aspect of an electronic search was the search strategy. It can be observed from the survey of Jansen (2000) that people did feel hesitant in using advanced search techniques and indeed that failure rates was high when they are used.

Ming (2000) argued that keyword searching on the Internet needs to be supplemented by other search options, including word stemming, wild card, proximity search, Boolean logic and term expression. Zhang (2001) in his study regarding the strategies for finding information sources for research, it was observed that the use of references in printed sources, search engines, personal communication and follow up references in e-sources were the most widely used strategies by the respondents (over 84% each). Ali and Satyanarayana (2002) pointed out that Boolean operators followed by truncation and wild cards were the most popular search facilities among science and technology students. Therefore, it is imperative for the librarians to develop comprehensive information literacy programs that could educate students about the advanced features of search engines.
technology users in Delhi. They suggested that user training was essential for the better use of online resources. Similarly, Ali (2005) in his study observed that majority (63%) of the users used keyword as the popular search method. The second most favourable option was by author (53%) followed by subject and journal title (28% each). It was also observed regarding advanced search facility used that majority (70%) of respondents expressed that they are using Boolean search method very often and 17% used sometimes. In the case of truncation, 57% of users said that they used it often, 20% sometimes only, but 17% of respondents never used truncation at all. About 27% revealed that they are always using a wild card strategy, while 27 and 23 per cent of respondents often used phrases and field searching methods respectively. From the analysis it was evident that Boolean operators, truncation and wild cards were popular search facilities among the users of IITD Library. Laloo and Lahkar (2006) found that many of the respondents seemed to be fairly confident in their use of the search engines judging from their claim of using both simple and advanced search options. Amongst the advanced search options listed, phrase search, truncation and case sensitivity resulted as the most used, followed closely by field searching. Boolean operators did not seem to be popular with the respondents. Similarly, a study by Mohamed and Hassan (2008) examined the behaviour of the Egyptian scholars while accessing electronic resources through two federated search tools shows that about 42% of user queries include Boolean operators, while 58% had no operators at all. Among the Boolean operators used, the AND operator was the highest (28.5%) followed by the OR operator (about 13%) and almost no queries used the NOT operator. The study also found that Boolean operators was not used in about 50% of the queries and federated search tools did not provide techniques for query reformation and as a result there was a need for more training on Boolean operators for nearly 60% of members is essential. According to Madhusudhan (2007), an efficient and effective search required the development and adopting of an appropriate search strategy. In his study, the most popular search method of users was “keyword” with 74%. The second most favourable option was searching by “author” (44%), followed by “subject” (22%), journal title (18%) and title of the article (16%). The least preferred method of search was the date of publication (4%). The most important and often the most difficult aspect of an electronic search was the advance
search strategy. Out of 51 respondents who responded, the most popular advance search technique was "field searching" with 59% of the respondents preferring this technique. The second most favourable option was searching by "phrase search" (29%) followed by "Boolean search" (4%); while two respondents (4%) often used "truncation" searching technique. Another study by Kattimani (2010) showed that majority of library users adopted Simple search 55 (69%) strategy for retrieving information and followed by 32 (40%) users adopted the advance search strategy. 20 (25%) of them adopted the advanced search strategy for more relevant information. The different kinds of search techniques were frequently used for literature searching by social scientists. Similarly, Haridasan and Khan (2009) in their study found that 88.88% of faculty members and 30.23% of research scholars used subject term (Truncated) for searching e-resources, whereas 66.66% of faculty members and 46.51% of research scholars used weighted term searching, 55.55% of faculty members and 20.93% of research scholars used Boolean logic and 33.33% of faculty members, 13.95% of research scholars preferred using full text search. A study by Khan et al. (2009) in their study regarding search strategies used for accessing information from the online databases showed that 62.86% of JNU faculty and 64.23% of faculty from JMI used the field searching strategy for accessing information from online databases; 51.43% of the faculty from JNU and 5.71% of faculty from JMI used a Boolean operators search strategy; 34.29% and 42.86% of faculty members from JNU and JMI, respectively, used a phrase search strategy to access information from online databases; 17.14% of faculty from JNU and 17.86% of faculty from JMI were using truncation of search terms strategy for accessing information from online databases. From the above analysis, it could be evident that respondents were not using Boolean operators and effective advance search strategies when using the electronic resources to perform search. Therefore, more attention should be given to the search capabilities through ongoing training and awareness in order to maximize the Benefit from the available resources and tools. In addition to Boolean and other search techniques, the users also used other methods for searching. It can be found from the study by Singh et al. (2008) that many of the respondents search online journals through search engines (54.29%) as well as many through the linking facility available on the library website (41.43%) followed by link through online journals website (21.43%) and
17.14% through publishers' website. Similarly, in the study by Parameshwar and Patil (2009) more than three-fifths of respondents used search engines, while one-third type the web addressed directly, nearly one-fifth use Internet gateways, and less than 10% used subscription databases. Sethi and Panda (2012) in their study investigated the search strategy employed by the users during the course of their surfing for e-resources. It was seen that, the majority of the readers constituted 70.31% of the total response followed the “keyword” searching method which was highly significant. Those who used field searching account for 21.87%, whereas ‘phrase’, ‘Boolean operator’, ‘wildcard’ and ‘truncation’ was used by a few ranging between 0-13% of the total users. Hence, it was learned that the life scientists kept required knowledge on the information-searching technique and skill and adhering ‘keywords’ in surfing e-resources predominant among all the search strategies.

3.5. User Problems and Satisfaction

Libraries had been beset with a lot of problems due to an inability to comprehensively acquire, organize, store and disseminate information resources (Tsafe, 2003). This has been largely due to exponential growth in scientific and other information resources, rising costs of information materials, insufficient funding, inadequate storage facilities and other related technological problems. Fatoki, (2004) in her study on Internet accessibility found that under funding has been the bane of the failure of most libraries in the developing countries. Lack of sufficient funds hampered the ability of libraries to keep up with rapid changing technologies and training of staff while the infrastructure for connectivity internally and with the outside world was relatively low and was not allowed greater access to Internet information. Momani (2003) in his study found that lack of time, lack of training, lack of university support and lack of awareness on the e-resources also contributed to poor accessibility and use of Internet and other e electronic resources. Similar problems, in varying degrees, had been pointed out by other researchers (Dadzie, 2005; Hassanshahi 2006; Angello and Wema 2010; Ansari and Zuberi 2010). These studies recommended that information competency should be inculcated across the curriculum and more training should be provided for the vast majority of faculty members at different levels. Appleton (2004) in his study on users' experiences with
e-books usage for midwifery education at the faculty of health within Edge Hill College of higher education, Liverpool, UK reported that students did not found e-books as an effective learning material compared to printed books or e-journals due to factors such as a lack of user friendliness, cost, the relative quality of content and lack of promotion and encouragement of use, but also recognized their advantages with respect to remote access and use if appropriate promotion was undertaken. Manda (2005) assessed the conditions under which electronic resources were available through the Programme for the Enhancement of Research Information (PERI). He pointed out the problems in marketing electronic resources, inadequacy in end user training, limited levels of use of PERI resources, variations among institutions in accessing electronic resources. He also identified challenges of using electronic resources such as slow Internet connectivity, limited access to PCs for student use, poor search skills to effectively use electronic resources and power cuts. Similar studies (Rogani, 2007; Haridasan and Khan, 2009; Nwezeh, 2010) also highlighted the problem of following command, language, lack of back volumes in accessing electronic resources. These studies made policy recommendations on training in the use and marketing of electronic resources for user groups and resources. Many faculty members strongly agreed with the necessity for computer and Internet literacy to access information. Majority of users also expressed their satisfaction with the electronic resources. According to Janni (2007) barriers the respondents often mentioned which prevented effective information seeking faced difficulties in articulating queries for search engines and general dislike of using computers and lack of experience.

Madhusudhan (2010) found number of obstacles to use e-resources for research work. For majority of users the most common problems had been slow access speed (62%), took too long to view/download pages (44%), difficult to get the relevant information (42%). Among the respondents, 28% were of the opinion that too much information was retrieved and 26% stated that they could not make use of e-resources effectively due to lack of proper IT knowledge. Similar results was also being brought out by a few scholars in their recent studies (Aqil and Parvez, 2011; Thanuskodi, 2010; Madhusudhan, 2008; Kanniappan et al. 2008; Raza and Upadhyay, 2006; Kumar and Kaur 2005; Luambano and Nawe, 2004).
Togia and Tsigilis (2009) in their study on awareness and use of electronic information resources by education graduate students found that the main problem associated with the non-use of resources was the lack of adequate searching skills. The study also found that limited use of electronic resources by graduate students was mainly due to absence of basic skills. In a study by Hussain et al. (2011), the majority students faced problems due to lack of knowledge of important websites in subject Areas (47.5%). Similarly low bandwidth (71.74%) and lack of Internet nodes (50.43%) in the library was found to be major problems by majority of faculty members (Walmiki et al. 2010). Similarly, low bandwidth was found to be an important problem in a study by where majority i.e. 158 (43.17%) faculty members from University of Ibadan (Owolabi et al. 2012). In order to exploit the full potential of electronic information, university library should undertake a more active role in informing, promoting, and educating the members of the academic community.

Regarding satisfaction with the use of Internet services and resources by Arya and Talukdar (2010) it was found that majority of respondents expressed their full satisfaction regarding e-mail, web OPAC, e-journals, search engines and online databases. Electronic resources had become an indispensable means for scientific research. The users’ average satisfaction degree for electronic resources was 93.3% (Min and Yi, 2010). In general, users were satisfied with the electronic resources and services, but there were still many areas to be improved. The library should strengthen its acquisition of new resources and implementation of new services and also carry out various user training courses for these new resources and services.

3.6. Impact of internet on library and information centres

With the boom in information technology and the explosive growth of digital content available on the web, Information retrieval was more convenient now, but higher technical requirements was needed as there are more varying ways for users to search and obtain information resources. A number of research studies have taken place in the recent past that aimed to determine how the digital information revolution influenced the information behaviour of users. There are reasons to assume that the electronic
environment caused a change in the navigation to the electronic information resources. As early as 1998, Butler wrote: “the ability to click from an abstract or citation to the full-text of an article is prompting a shift in the way that journals are used. Scientists often care less about the journal title than the ability to track down quickly the full-text of articles relevant to their interests” (Butler, 1999). In other words, the electronic environment caused users to consider articles as independent units rather than as parts of a larger whole. As a consequence, it may be expected that users identified relevant articles by searching electronic resources such as bibliographic databases, full-text databases, or search engines on the Internet rather than by browsing through journal issues. It was because of factors that influenced the use of electronic information such as individual’s acceptance of ICT, enthusiasm about the benefits of using electronic information, the ability to access electronic information and users own confidence (De Vicente et al. 2004). Several user studies have been carried out by research scholars and teachers of different institutes, colleges and universities all around the world focusing on the use and impact of e-resources, particularly on the Internet. The use of the Internet in the educational environment enabled easy access to many resources, and information sharing has, therefore, significantly increased. Moreover, the prevalence of this sharing has brought additional benefits in that these resources can be used in any location and any time.

A survey by Rogers (2001) at Ohio State University users from 1998 to 2000 found a steady increase in acceptance of electronic journals and their reported use and also replacement of print subscriptions with electronic journal subscriptions when permanent electronic storage was available. Tenopir and King (2002) in their study observed the declining of number of personal subscriptions. They started relying more on reading articles from a variety of sources, including e-print servers, university web sites, journal article databases and personal e-mails. The Internet was indeed a different thing to different people. Some believed that the Internet was the best thing ever to have happened to advance the world of research. A study conducted by Ehikhamenor (2003) regarding the impact of Internet of the scientific communication process and productivity of scientists in Nigerian universities, where, majority (57.7%) of scientists under study strongly disagreed with the suggestion that the Internet was the most important
information source in their research Rehman and Ramzy (2004) in their study found that Internet provided better access to information followed by better professional contacts with distant colleagues and organizations. It had given them the capacity to carry out tasks that were previously done by librarians. And also as a result of Internet use they were visiting the library less frequently, browsing print materials less frequently.

A study on the perceptions of Internet and users attitudes and self-efficacy by Peng et al. (2006) showed that there was a positive effect, if the users used the Internet as a functional tool or functional technology. In addition to this, there were many other useful studies which investigated the effects of Internet and electronic resources on university students' self-efficacy and performance (Crews and Feinberg, 2002; Wu and Tsai, 2006; Mahajan, 2006; Wen and Tsai, 2006; Mohammed and Al-Karaki, 2008). Amritpal Kaur and Rajeev Manhas (2008) in their study assessed the influence of the Internet on the academic efficiency of the respondents. 62.8% believed that the near instant access and availability of the latest information online had increased dependency on the Internet. 46.5% of the respondents felt that the Internet improved their professional competence. 33.9% of the respondents thought that dependency on traditional documents decreased and 29.9% responded that the Internet expedited their research process.

Many studies have been conducted regarding the impact and usefulness of Internet in teaching and research. Ojedokun and Owolabi (2003) investigated the impact and competence in the use of the Internet by the faculty members in Botswana University. It was found that the respondents were more skilled in the use of the Internet for research purposes and less competent in its use for teaching. Cheung and Huang (2005) emphasized the effects of the Internet as an effective teaching tool in university education and they suggested that it was insufficient for university lecturers and administrators to use the Internet as a good teaching tool. Similar study conducted by Nwezeh (2010) reported the extent of usefulness of the Internet in their research activities and teaching. Nearly, three quarters (72.2%) responded that the Internet was very useful for their research while over half (52.8%) of them indicated that it was very useful for their teaching activities.
The technological changes found in the library moved faculty and students from using printed sources to using electronic sources, as a major source of information. There was a large body of literature that focused on the impact of electronic resources. The impact of e-resources at Bournemouth University 2004/2006 evaluated by Beard et al. (2007) reported that the use of and enthusiasm for electronic resources is widespread amongst students and staff of Bournemouth University (UK). This widespread nature and enthusiasm of users was not only due to increasing awareness of users but also due to transitory nature of libraries in building their collection from print resources to electronic resources. The findings of the study by Kurata et al. (2007) indicated that scholarly communication was gradually changing, but at different speeds in different research fields. Kaur and Verma (2009) studied the impact of e-resources and found that there was a decrease in number of printed journals in comparison to the increase in number of electronic journals. The use of e-journals increased manifold. The printed material was being quickly replaced by the electronic resources. In contrary to this study, it can be observed from the study by Semertzaki (2008) on ‘Internet usage in Greek libraries’ found that majority (37%) of libraries have not altered the status of print journals and the study concluded that Greek libraries still hesitated to proceed to radical changes in their print subscriptions, although many have embraced the new trend of electronic journals.

The study by Khan and Ahmad (2009) reported that the information available in e-journals proved to be a great asset to many of the researchers and they have been able to expedite their research process with the e-journals. Since electronic information resources provide latest, comprehensive and up-to-date information they were found to be essential for research as they had influenced highly for improving the quality of research/Learning capabilities (Tyagi, 2011). This resulted in user’s awareness about e-resources and encouraged users to depend and use electronic resources to the maximum. There were many recent studies which had shown that the usage of print sources decreased significantly since the introduction of electronic sources (Borrelli and Brady, 2009; Dilek-Kayaoglu, 2008; Borrego et al. 2007; De-Groote and Dorrch, 2001). Tahir, et al, (2010) in their study assessed the use of electronic information resources and facilities by humanities scholars at the University of the Punjab, Lahore, Pakistan. The study reported that most (55%) of the respondents mentioned that the amount of time they were spending on getting information decreased due to electronic resources. 63% respondents indicated that borrowing of material from the library also decreased. A total
of 64% of respondents mentioned that their number of visits to the library decreased. The results showed that 67% respondents pointed out that collection and use of information had become easier and 83% of respondents mentioned that searching the information had been easier. Similarly, a study by Shailendra Kumar and Manisha Singh (2011) on access and use of electronic information resources by scientists revealed the impact of using e-information resources. The study responded that 50% of scientists using e-information resources had been substituted for conventional resources, followed by improved research quality (37%) and increase in the number of research papers produced (36%). The study further concludes that e-resources impacted on the competence level of an individual and improved the intellectual activity necessary for research. Electronic information allowed scientists to directly access and use the materials which was not to be found otherwise.

3.7. Conclusion

The published literature on usage of electronic resources includes a fairly large number of articles devoted to analyse user attitudes and behaviours. The examination of published literature has showed, technological progresses have overcome some of the initial barriers for users. The present review study helped in determining the extent of information use, degree of information needs and information seeking behaviour of library users. Similarly, the reviews which covers significant studies on use of electronic information resources conducted all over the world certainly helped to narrow and to more clearly delineate the research plan, in conducting further research on use of electronic information resources. On the other hand, the findings about user behaviour and attitudes with online literature reveal the need for several improvements in design, access, interfaces, readability and standardisation of electronic resources and its use. Moreover, a number of local factors related both to the institutional library service provision and to the user individual approach to information management affect on the real success of these services. The existence of these different attitudes, behaviours and requirements cannot be underestimated by authorities, libraries, publishers and suppliers, if the purpose is to provide services addressed to the whole academic community. Then only the electronic resources will continue to enjoy wider acceptance among academics as the future unfolds and barriers to their use are reduced.
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