CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

The review of literature is an essential component of any research investigation, which gives necessary input to the investigator to frame the research study on the chosen topic. As far as the field of “Use of Electronic Journals” and identifying the information needs of a group in a particular field is concerned, a large number of studies have been conducted and it continues to grow. A number of research reports, articles, books and conference volumes on the subject of “Use of E-Journals” have been published.

Since 1996 three International Conferences have conducted research in information needs, seeking and use, held at Tampere (Finland), Sheffield (UK) and Gothenburg (Sweden) respectively. These seminar volumes presented a collection of papers, which represents a variety of research conducted in this area.

Move from print collections to digital collections has generated much significant research on scholars' reading patterns and the take-up and use of e-journals (Curtis et al 1997; Eason et al 2000; Mahe et al 2000; Pullinger 1999; Tomney and Burton 1998; Zhang 2001). Much of literature has tended to focus more on measuring levels of use than on the reasons underlying use and non-use. Among the most significant contributions to e-journal use studies are the Tenopir and King studies (Tenopir and King,
Tenopir et al. (2003a, 2003b, 2003c) focused mainly on physical and applied sciences. These studies have looked at facets such as:

- the use, usefulness and value of the articles read;
- from where scientists obtain the articles they read;
- the format of the articles obtained;
- how scientists learn about the articles they read and;
- the age of articles read

Kling and McKim (2000) pointed out in their study of e-journals, the assumption often was that given the ease, speed and seamless experience provided by access to full-text e-journals from the scholars' own terminal, all fields would come in a homogeneous manner to rely on a stable set of electronic forms such as preprint servers, discussion lists, and electronic journals. The survey gathered information about e-journal use, acceptance, attitudes, and computer and internet use skills, in order to discover ways in which scholars' awareness and use of e-journal services could be enhanced.

In view of the vast amount of literature available in this field, in this chapter, an attempt has been made to review only the significant studies and recent literature on the various aspects of use of e-journals under the following sub-headings:

- Usability
- Use of e-journals
- User attitude on e-journals
- Impact of e-journals
- Impact of online journals
• Pattern of e-journals use
• Library consortiums

2.2 USABILITY

Landauer (1995) distinguishes usability (ease of operation) from usefulness (serving an intended purpose), commenting that the two are hard to separate in the context of evaluation. Usability has several attributes. The International Standards Organization (1994) defines usability as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.” Nielsen (1993) points out that usability has five attributes: learnability, efficiency, memorability, low error rate or easy error recovery, and satisfaction. Brinck, Gergle, and Wood (2002) share a similar perspective that usability is functionally correct, efficient to use, easy to learn and remember, error tolerant, and subjectively pleasing. In addition, Booth (1989) outlines that usability has four factors: usefulness, effectiveness (ease of use), learnability, and attitude (likeability). Hix and Hartson (1993) classify usability into initial performance, long-term performance, learnability, retainability, advanced feature usage, first impression, and long-term user satisfaction. Hix and Hartson are unique in that they take one step further to differentiate performance and satisfaction into initial and long-term measures.

2.2.1 Usability Study

Few usability studies on e-journal based are shown in Table 2.1.
<table>
<thead>
<tr>
<th>Site</th>
<th>Methods</th>
<th>Sample</th>
<th>Areas</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM, IEEE-CS, NCSTRL, NDLTD</td>
<td>formal usability test, questionnaire</td>
<td>48 students (38 graduate, 10 undergraduate)</td>
<td>Interface</td>
<td>Kengeri et al (1999)</td>
</tr>
<tr>
<td>ACMDL, NCSTRL, NZDL</td>
<td>questionnaire, heuristic evaluation</td>
<td>45 undergraduate</td>
<td>design and structure</td>
<td>Theng et al (2000a, 2000b)</td>
</tr>
<tr>
<td>Alexandria</td>
<td>questionnaire, formal usability test</td>
<td>23 students</td>
<td>interface</td>
<td>Thomas (1998)</td>
</tr>
<tr>
<td>CUNY+</td>
<td>questionnaire</td>
<td>10 students</td>
<td>interface</td>
<td>Oulanov and Pajarillo (2002)</td>
</tr>
<tr>
<td>DeLiver</td>
<td>transaction log survey, interview, focus groups, formal usability test</td>
<td>1900 graduate, 420 faculty</td>
<td>accessibility</td>
<td>Neumann and Bishop (1998) Bishop (2001)</td>
</tr>
<tr>
<td>DLESE, NSDL</td>
<td>focus groups</td>
<td>36 teachers, 2 librarians</td>
<td>design</td>
<td>Sumner et al (2003)</td>
</tr>
<tr>
<td>Instructional Architect</td>
<td>formal usability test, focus group</td>
<td>26 teachers</td>
<td>interface, content</td>
<td>Dorward et al (2002)</td>
</tr>
<tr>
<td>London Hospital</td>
<td>focus groups, interviews</td>
<td>73 clinicians</td>
<td>accessibility</td>
<td>Adams and Blandford (2002)</td>
</tr>
<tr>
<td>MARIAN (VirginiaTech)</td>
<td>formal usability test, log analysis, questionnaire</td>
<td>students, faculty, staff</td>
<td>interface</td>
<td>France et al (1999)</td>
</tr>
<tr>
<td>MIT</td>
<td>formal usability test</td>
<td>29 (faculty, graduate, undergraduate, staff)</td>
<td>site design</td>
<td>Henning (1999)</td>
</tr>
<tr>
<td>National University, Taiwan</td>
<td>Questionnaire</td>
<td>1784 faculty and students</td>
<td>information architecture, browsing and searching mechanism, layout and display</td>
<td>Lan (2001)</td>
</tr>
</tbody>
</table>
2.3 USE OF E-JOURNALS

Judith and Neal (2004) examined the patterns of use of electronic versions of journals supplied by an academic health sciences library to determine whether they different from patterns of use among corresponding print titles and to relate the applicability of print collection development practices to an electronic environment. Use data supplied by three major vendors of electronic journals were compared to reshelving data for corresponding print titles, impact factors, and presence of Brandon/ Hill Lists (The list includes a core collection of medical journals listed alphabetically and by subject area). In collections where one-click access from a database record to the full text of articles was possible. Electronic use was correlated with print use across journal pairs. In both versions, Brandon/ Hill titles were used more frequently than non-Brandon /Hill titles, use had modest correlations with journals impact factors, and clinical use appeared to be higher than research use. Titles that had not been selected for the library’s print collections, but which were bundled into publisher’s packages, received little use compared to electronic titles also selected in print. Collection development practices based on quality and user needs could be applied with confidence to the electronic environment. Facilitating direct connections between citation databases and the corresponding journal articles regardless of platform or publisher would support scholarship and quality health care.

Afaq and Mahmood (2005) in their study investigated the use of library and information science (LIS) journals (electronic and print) in Malaysia and Pakistan. The targeted group includes two sets of graduate students from Departments of Library and Information Science, each in an academic institution from one of the two countries. Findings of the survey showed that LIS Journals had as their objective the provision of leadership in the practice of librarianship. The profession needed to have a heightened
awareness of LIS journals and required fast and easy access to that body of literature. For developing countries, objective could only be met through help of developed nations who could provide improved means to access LIS journals more efficiently and more effectively in both paper and electronic medium.

Naushad Ali (2005) examined the use of electronic information services (EIS) among the users of the Indian Institute of Technology (IIT) Library in Delhi, India. Both questionnaire and Observational method were used for data collection where 300 samples were collected. The analysis of the data collected covered awareness of EIS Services, use of e-journals, advanced search facilities, acquaintance with electronic information sources, the purpose of using e-information, problems faced by the users while using EIS, infrastructure facility available and satisfaction level of users. The study found that Boolean logic and truncation are the most often used search facilities by IIT users. Lack of printing facilities, terminals and trained staff are the major reasons that would discourage users from accessing the e-resources. The survey also reveals that some 60 percent of the users faced difficulties while browsing e-information.

Mishra and Reshmi Rekha (2010) in their study described that the use of e-resources among the students is primarily to update knowledge. The teachers of the university use UGC-Infonet and INDEST Consortium to find the latest information in their own subject and constitute the highest percentage for using the e-journals. It is also surprising to note that a good number of respondents are not used to e-resources of the library due to the lack of their awareness.

Muhammad Tahir (2010) aims to assess the use of electronic information resources and facilities by humanities scholars at the
University of the Punjab, Lahore, Pakistan. A questionnaire survey of faculty from arts and humanities departments at the University of the Punjab was conducted. In total, 62 faculty and research staff participated. The results correspond with previous studies conducted in other countries. The humanists still stick to the printed information sources but they pay good attention to electronic resources. Most of them have access to computer and internet at office and home. They are regular users of a variety of electronic resources. Although faced with many problems, the humanists perceive that modern technology made their work easier.

Mohamad Bagher Negahban and Talawar (2010) in their study aimed at assessment of e-resources dependency by Iranian social science faculty members. Results revealed that Iranian faculty members were more dependent on all the e-resources. It was also observed that Iranian faulty members were more dependent on e-journals, followed by online database, e-tutorials and least on e-reports. The Iranian universities have special reward systems for those who publish articles or books on International level. This factor also motivates the faculty members to be more dependent on e-resources like journals and books.

Natarajan et al (2010) analysed the effectiveness of e-resources provided by Annamalai University for its faculty members and research scholars in eight different faculties. Results reveal that despite the availability of wide range of e-resources the frequency of their use was low. The reasons identified for this are lack of time, lack of awareness, lack of subject coverage and slow downloading. More than fifty percent of the users were opinion that the relevance of the e-resources covered by e-journals consortium of Annamalai University was satisfactory. Majority of the users agreed that training would lead to better utilization of e-resources.
Negahban (2010) surveyed among post-graduate and research scholars in Shiraz city. It revealed that in the extent of digital technologies usage, CD Browsing usage was 40.2 of 50%, in internet searching it was 42.3 of 100% research scholars used more of CD browsing, telefax, CD writes, LCD Pad/Data Projectors, while students used more of printers. In familiarity with accessing digital sources, they were more familiar with internet journals and less familiarity was observed regarding internet encyclopedias, directories and yellow pages, and digital libraries. The selected sample had more familiarity with book search and book shops on net (about 65% to an extent of more than 75%) internet relay chatting and email and less of teleconferencing on the net. Research scholars had higher familiarity with book search and book shops on internet than students.

Rusch-Feja and Siebeky (1999) carried out research at the Max Plank Society in Germany to study about the use and acceptance of electronic journals. Results showed that significantly high acceptance of electronic journals and an unwillingness to return to print versions only. Use of Elsevier journals was on higher side. The frequency of use of electronic journals from four scholarly publishers was evaluated. The researchers also rated the advantages and disadvantages of electronic journals. The advantages listed as currency, ease of access, timeliness, up-to-date information, additional searching modification, etc. The Disadvantages are the lack of long term access, network dependency, difficulty in reading from monitor, loss of important attributes of the paper version, lack of citation status and standards.

Mahe et al (2000) in their study focused mainly on the disciplines covered by the largest number of electronic journals (i.e. biology, physics, chemistry, mathematics, computer science and earth sciences) used by researchers on the two universities. A user typology was built up, and several of the findings agree substantially which demonstrate the researchers’ practice
is influenced by a whole range of intertwined factors: communication habits in the discipline, sharing of information, status, working environment and context and various more subjective factors, such as personal or inherited working habits, greater or lesser individual motivation or reluctance, etc. The trends noted among physicists and chemists agree substantially with observations made in other study locations of particular interest is the reluctance that is apparent among biologists and mathematicians. The reluctance demonstrated by the mathematicians is more surprising, especially in view of the efforts undertaken by the French mathematics community to make electronic resources available.

Fry and Talja (2000) in their research on e-journal usage patterns focus more on measuring levels of the use and measuring changes in reading pattern than developing theoretical models that enable the explanation and prediction of patterns in the adoption and update of e-journals across scientific fields.

Luther (2001) examined that librarians and publishers need to understand users and their information-seeking behaviors in ways that were not previously possible or necessary. As intermediaries between the author and the reader, publishers and librarians must learn how best to serve their users.

Rogers (2001) in his article ‘electronic journal usage at Ohio State University’ described the impact of electronic journals. The computer-assisted telephone interviewing operating cases software and e-mail solicitation software were used for collecting the survey data via a website. The research shows an increased use of e-journals and decreased use of printed journals by faculty and graduate students as the number of available e-journals increased
from 200 to 300 titles. A majority of frequent users of all these three types of resources were from the departments in science.

Pazur (2002) studied the extent of use and acceptance of e-journals among the scientists at the Rudjer Boskovic Institute (RBI). Further, what they consider as advantages and disadvantages of electronic journals. Also tried to know what titles do they use and to which ones they would like to have access. Results of this survey showed high acceptance of electronic journals at the Rudjer Boskovic Institute. Respondents stated following advantages such as "the possibility to link directly to the references in the article", "the possibility of zooming the text on the screen", "it is not necessary to order articles from other libraries so it is time saving" and "the possibility of using the journals that the library does not subscribe in print. Most of the respondents pointed out slow downloading is main disadvantage.

Withers (2002) examines the development of a system which automatically exports data from the online catalog and incorporates it into dynamically-generated web sites. These sites provide multiple access points for journals, include web-based interfaces enabling subject specialists to manage the list of titles which appears in their subject area. Because data are automatically extracted from the catalog, overlap in updating titles and URLs is avoided.

Bar-Ilan, Peritz and Wolman (2003) in their study state that the use of electronic sources is already widespread among the respondents and more than 50% found the electronic services indispensable.

Bevis and Graham (2003) found that user access and collection management control can be greatly enhanced by integrating electronic journals into an OPAC.
Bonthron et al (2003) in their study indicate that academic staff incorporate electronic journal usage into their working patterns in different ways than students and that these differences may affect attitudes towards support services (library Web pages, Virtual Learning Environments) designed to promote electronic journal usage. Disciplinary differences also need to be considered.

Cochenour and Moothart (2003) surveyed the Colorado State University faculty, graduate students, and administrative staffs in Spring 2001 to determine their usage and acceptance of e-journals. Findings of the study highlight the majority of respondent’s use e-journals at least monthly and preferred multiple access points on the library web page and OPAC. Almost all respondents supported adding electronic access to print journal subscriptions. Also it discussed respondents strongly supported having access to journal back runs older than four years.

Gargiulo (2003) discussed CIBER, a library consortium established in 1999, to share electronic content licensing in the centre and in the south of Italy. Emeroteca Virtuale (EV) is the name of the digital platform used by CIBER to access over 3,300 licensed e-journals. After a brief description of CIBER member institutions, of their user population, and of the EV main features, the paper reports on the journal usage statistics of CIBER members during 2002 and the first six months of 2003.

Johnson (2003) states that the CONSER publication pattern initiative, task force to explore the needs and uses for holdings and pattern data for electronic journals survey, was presented. Following the survey data, two information professionals react with contrasting views on the usefulness
and effectiveness of providing detailed e-journal holdings information to the end user.

Siebenberg et al (2004) determined that the selection of e-journals in the science and engineering library was changing students’ and researchers’ choice of journals. The statistics available from the publishers of the journals from 1998 to 2001 were used as method for study in three sci/tech disciplines at Washington State University. The results showed that print journals were being used more than electronic journals. Generally, electronic journals were used heavily and the availability of electronic format enhanced the total use of most titles.

Torma and Vakkari (2004) demonstrated relations between digital library use by university faculty, users’ discipline and the availability of key resources in the Finnish National Electronic Library (FinELib), by using nationwide representative survey data. The results showed that the perceived availability was a stronger predictor of the frequency of use of its services than user’s discipline. Regardless of discipline, a good perceived provision of central resources led to a more frequent use of FinELib. The satisfaction with the services did not vary with the discipline, but perceived relevance was the key predictor.

Yue and Syring (2004) in their case study at the University of Nevada, Reno, University Libraries (UNR) focusing on the usage of the Elsevier online journal package and interlibrary loan (ILL) borrowing activities. It analyzes four-year worth of UNR usage and ILL statistics, gathered between July 1999 and June 2003. It also provides observations and explanations from a perspective beyond statistics, at the level of library services and the campus demographic and research environments.
Bar-Illan and Fink (2005) surveyed the use of printed and electronic journals in a science library and showed that use of electronic journals increased with time; age and or academic position was inversely related to the use of electronic media and journals; there was a graduate reduction in the use of printed journals as users preferred and used the electronic format more frequently; The use of a journal was not necessarily an indication of the preference of users. Accessibility and desktop access, home access, ease of retrieval, and hyperlinks to outside content were the advantages of electronic journals and the disadvantage of electronic journals mentioned were the lack of back issues and problems with reading a text from the computer screen.

Jamali et al (2005) in their article provide a review of the log analysis studies of use and users of scholarly electronic journals. Log analysis is clearly useful for certain kinds of analyses, like shedding light on the format of the articles scientists read (PDF or HTML), the age of the articles (obsolescence), and the way scientists navigate to the required material (searching and browsing behaviour). But log analysis is not all that helpful at discovering the value and use of the articles retrieved, or about what lies behind expressed information seeking Behaviour.

Abouserie (2006) surveyed on use of electronic journals by Library and Information Science faculty members at the school of Information Science at the University of Pittsburgh. The study showed a difference in using various information sources, where the study found variability in the sources used according to rank and gender. Also there was a variance satisfaction with electronic resources, where faculty members were most satisfied with index and abstracts and Full Text databases and Electronic Journals. Faculty members considered electronic journals highly credible,
most accurate, highly responsible and most supportive and convenient to meet their needs.

Atilgan and Bayram (2006) reported the results of a survey on the use of e-databases at Ankara University. They surveyed faculty in 2002 to determine the level of awareness of digital library resources, particularly journal articles, along with their usage rate, and to evaluate the preferences of faculty for specific electronic databases. They distributed a questionnaire to researchers at Ankara University. The main findings were that the majority of respondents indicated that they knew that digital library resources available in Ankara University. Many of the faculty members (88 percent) used electronic databases. Full Professors and research assistants placed second after associate and assistant professors in the use of electronic databases, although they placed first in level of awareness of the digital library.

Raza and Upadhyay (2006) measured the usage of e-journals by the researchers at Aligarh Muslim University (AMU, Aligarh, India). They distributed a questionnaire to a sample of seventy-two researchers at AMU. Findings reveals that all the researchers were aware of e-journals in AMU. From this survey, 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. Most of the researchers used both printed journals and e-journals, a large number of researchers were storing e-journals articles by downloading them on to discs; and lack of training and slow downloading were the problems faced by the researchers while using e-journals. That study concluded with the statement that e-journals would not replace the traditional print format but rather complement it as a new medium of communication.
Nicholas and Huntington (2006) in their study aims to quantify the usage of electronic journals as an aid to making judgments on the use of document supply. Findings of the study states that the many more people are accessing electronic journals than was previously the case in a print environment. Users are searching more widely as linking becomes easier and abstracts are becoming increasingly popular.

Voorbij and Ongering (2006) discussed the use of e-journals among Dutch faculty was surveyed as to their use of electronic journals. It concluded that electronic journals have become indispensable for scientists and social scientists, and have a profound effect on information behavior, varying from methods of becoming aware of relevant articles to benefits on research.

Vakkari and Talja (2006) discussed keyword searching in journal and reference databases were clearly the most important access methods in all disciplines compared to browsing, chaining or obtaining material from colleagues. Academic status and discipline influenced the patterning of search methods used. Keyword searching in databases was more common in natural sciences, engineering and medicine than in other disciplines. Semi-directed searching comprised of browsing, chaining and colleagues as sources of access. It was significantly more common in humanities than in other disciplines.

Tedd (2006) studied the use of Library and Information Science journals in dissertations written by students undertaking the Master’s course in Information and Library Studies at the University of Wales Aberystwyth. Analysis of the citations of 100 (post 2000) dissertations submitted gave an indication of the range of material used in dissertations. In addition, responses to questionnaires from students provided about how relevant papers were found from LIS journals. LISA was the most popular source for a literature
search followed by EMERALD with 15 students. Other sources mentioned (in alphabetic order: EBSCO, Google, Google Scholar, Ingenta, JSTOR, LISTA, OCLC First Search, Web of Knowledge (WoK) and ZETOC. Findings showed that journals with a practical bias were cited more than research oriented journals.

Anitha (2007) in her survey concluded that the collection and service infrastructure of the libraries in the Bangalore regions are not up to the mark. They are struggling in building digital collection and disseminate the same due to the lack of various factors such as, ICT infrastructure, IT Trained manpower, awareness, user demand, finance, knowledge and training of digital resources.

Bonorino and Molteni (2007) described the impact of electronic journals regarding access, use, publishing information units in Argentina private universities. This study suggested guidelines related to serials publications should be drawn up in agreement with standards, and librarians should be trained in processing this material.

Borrego et al (2007) presented the results of a survey on the use of electronic journals by the academic staff of the universities belonging to the Consortium of Academic Libraries of Catalonia (CBUC). The results showed that a high proportion of teaching and research staff are aware of the collection of electronic journals and that there is an increasing preference for the electronic to the detriment of the printed format. The collection of electronic journals was highly valued and most users expect to increase their use of them during the next few years. The results also confirmed the importance of user’s discipline and age as explanatory factors of the use of electronic journals. The preference for the electronic format was higher
among academic staff in Biomedicine, Engineering and Exact and Natural Sciences.

Borrego (2007) studied the behavior of the users of a package of electronic journals using the data of consumption per IP address. They analysed the data of consumption at the University of Barcelona of 31 electronic journals of the American Chemical Society (ACS) in 2003. Data of sessions, articles downloaded and abstracts viewed were analysed. The author found that there was greater dispersion of the consumption of electronic information than of information on paper. Finally, it was determined that the number of abstracts viewed was a good predictor of the number of regular users of a journal.

Kozak et al (2007) examined the academic atmospheric scientists on why and how they use electronic journals and article databases. The results confirmed that many atmospheric scientists use article databases and electronic journals to find current as well as older literature. The findings of the study showed that atmospheric scientists use article databases and electronic journals regularly. These results could ultimately be used for the design of both better interfaces and more effective instructional courses.

Kurata et al (2007) in their study showed the position of electronic journals in scholarly communication based on Japanese researchers’ information behavior and estimation. The questionnaire method was used. The results showed that Japanese researchers used electronic journals as a matter of course, and other electronic resources to some extent, for accessing information; but that shift to electronic resources seemed to be not a transformation but a modification of traditional patterns of use. Researchers relied on traditional scholarly journals for accessing information and Publication, although their recognition had begun to change.
Nikam and Pramodini (2007) examined the utilization and satisfaction levels of users in respect to the e-resources and present the use of internet by the users of University of Mysore. The survey indicates that the use is marginal and the scientists in the Mysore University campus need constant guidance and training to maximize the use of the e-resources.

Zainab and Ang (2007) examined users preference and use of electronic journals of the University of Malaya (EJUM). This study utilized the survey method and employed an online questionnaire as the data collection instrument. A list of 330 users who registered with EJUM was selected and an e-mail was sent. A total of 140 responses were returned, out of which 102 responses were usable. Results showed that the electronic journals are used for searching new information, reading full-text articles, reading abstracts, and browsing the table of contents. Users are led to EJUM by chance while browsing the internet (41.8 per cent) when searching using Google, through citations obtained from conference papers, from articles or citations in databases. About 50 per cent of respondents rated the journals as “good” and 20.6 per cent rated “fair”. Respondents prefer keywords (28.9 per cent) and title (24.3 per cent) searches. The majority of respondents (70 per cent) prefer articles in PDF. The majority of respondents read the abstracts first to determine relevance before downloading the articles. Respondents believe that electronic journals will either co-exist with print journals (46.2 per cent) or replace the print journals (25.5 per cent) or supplement (25.5 per cent) them. Users indicate the functions and features preferred in electronic journals.

Atakan et al (2008) studied electronic database usage at Ankara University Digital Library to encompass the assessment of the effectiveness of the digital library and the value of the multidisciplinary databases in terms
of user preferences and use frequency by academic ranking. They compared the results of two surveys carried out in 2002 and 2005. Findings were consistent; the positive results have been observed in two studies conducted in two years, 2002 and 2005. According to the results of the current survey, more number of faculty members of Ankara University are aware and use of electronic databases. The most preferred databases had been Web of Science, Science Direct and EBSCO. When use of the electronic databases was analyzed, in respect of faculty rank and level of awareness, associate and assistant professors, assistants are ranked first.

Deshpande and Pathak (2008) carried out a survey in astronomy and astrophysics libraries and information centers in India. Structured questionnaires for users (Academic Members, Post-Doctoral Fellows and Research Scholars) containing 40 different questions were used. The purpose was to identify the basic minimum infrastructure necessary to provide users access to electronic journals and to facilitate easy response in all major astronomy and astrophysics organizations in India. Findings showed that the increasing use of the electronic information-seeking environment had produced change in the practice of science.

Nicholas et al (2008) demonstrated a novel form of deep log analysis by linking questionnaire data with transactional server log data generated by the same users; and to provide a richer understanding of the information-seeking behaviour of a strategic community of virtual scholars. Usage statistics were obtained from logs for an 18 month period: 16,865 sessions were covered and 110,029 pages were viewed. Searching behaviour was studied in regard to number of returned hits and number of searches in a session. A questionnaire survey was also conducted to identify Science Direct users according to the subject/discipline to which they belonged and attitude towards some scholarly communication issues. The answers of more than 750
Science Direct users to the questionnaire were linked to the usage logs of the same users through matching internet protocol (IP) addresses. The study reveals large differences between scholars in different subjects in terms of information-seeking behaviour and their interaction with electronic journal systems.

Fukazawa et al (2008) carried out a survey on the usage of electronic journals (Elsevier Science Direct) at the Japan Atomic Energy Agency (JAEA). Results showed that the number of users and articles read by users increased during the survey period. Moreover, JAEA users browsed a total of 1,028 title for various fields such as chemistry, engineering, medicine, physics and social sciences.

Galyani and Talawar (2008) studied the scholarly electronic journals at the Indian Institute of Science. The questionnaire method was used to collect data. The results showed a growing interest in electronic journals among the users at IISc. Electronic journals were mostly used for research needs and PDF was the most preferred format. The fact that users had free access to electronic journals at all hours from their own computers seems to be the most appealing feature.

Kayaoglu (2008) surveyed the use of e-journals among Istanbul University faculty in particular to determine whether the users would be pleased by the cancellation of the printed or parallel published journal subscriptions in favor of the e-only. It was a Web-based user study. The majority of respondents supported the transition from print to e-only. The faculty in the field of natural science and health sciences gave the strongest support for the transition from print to e-only, while the humanities and social scientists gave the least support, respectively. Three-fifths of the respondents,
regardless of discipline, reported that the major barrier to use of e-journals was the lack of subscriptions in their discipline.

Sivasubramanian and Nikam (2008) in their comparative study of universities of Karnataka and Tamilnadu revealed that all libraries are having well developed internet browsing centers. Professionals from medical universities in both states are well trained for offering internet based services to users compared to other universities.

Tenopir et al (2008) present part of phase two of a research project funded by the National Science Digital Library Project, which observed how academic users interact with the Science Direct information retrieval system for simulated class related assignments. This study explored possible relationships between affective feelings and cognitive behaviors. During search interactions both feelings and thought occurred frequently. Positive feelings were more common and were associated more often with thoughts about results.

Tenopir and King (2008) found that electronic journals have resulted in a narrowing of scientific citation patterns. This brief article expands on the evidence cited by Evans based on the authors' ongoing surveys of academic readers of scholarly articles. Reading patterns and citation patterns differ, as faculty read many more articles than they ultimately cite and read for many purposes in addition to research and writing. The number of articles read has steadily increased over the last three decades, so the actual numbers of articles found by browsing has not decreased much, even though the percentage of readings found by searching has increased. Readings from library-provided electronic journals has increased substantially, while readings of older articles have recently increased somewhat. Ironically,
reading patterns have broadened with electronic journals at the same time citing patterns have narrowed.

Abdul Mannan Khan and Naved Ahmed (2009) in their study aim to find out the level of awareness and use of e-journals by the researchers of the Aligarh Muslim University and Banaras Hindu University. Results reveal that the most of the research scholars are aware of the availability of e-journals and largely use them for reference purpose. Respondents fully agree that with the usage of e-journal the quality of research work improves with enrichment of contents and materials leading to high quality manuscript. Also found that lack of training is the obstacle in proper and full utilization of e-journals.

Briget Anitha (2009) in her study focused on usage of e-journals among physicians in Nagercoil. Results showed that majority of physicians spent one to two hours for browsing internet. Most of the physicians felt that features in e-journals are useful. They prefer HTML format. They search information by title, author and journal name to retrieve relevant information.

Kumbar and Gururaj (2009) in their survey clearly indicate that electronic sources of information are highly useful for the research, teaching and learning processes. In order to make it successful and best use of the consortium, authorities of the University Library should conduct regular user education or awareness programmes to maximize the use of electronic sources of information more effectively and efficiently.

Praveena and Nagarajan (2009) in their study reveal that there was no significant difference in their mode of search, frequency of search and place of access for information using e-journals among the teaching staff of (Faculty of Engineering and Technology) FEAT Annamalai University. Most
of the Lecturers and Professors use e-journals for research purpose. While Readers use it for writing article, Google is the most commonly used search engine followed by yahoo among the teachers of FEAT, Annamalai University.

Vinod Kumar (2009) conducted a comparative study of six databases namely science direct, Ovid, Black well-synergy, Web of science, Emerald and Ebsco. The findings revealed that all the resources are clearly focused on their respective disciplines by fulfilling the information needs of the targeted users.

Nicholas et al (2010) the evaluated the use of Science Direct journals database with regard to Life sciences, Economics, Chemistry, Earth and Environmental Sciences and Physics by ten major UK research institutions. Result indicates that 5 percent of the science direct journals viewed accounted for a third to half of all use. A high proportion of researchers entered the science direct site via a third-party site, and this was especially so in the case of the life sciences and in the highest ranked research institutions.

Nikkar and Mooghali (2010) showed that e-journals acceptance among faculty members was at average level on the basis of which it seems both printed and electronic journals have got equal positions among such a group. Faculty members computer and internet skills and their knowledge of online full text databases make positive effects on e-journals acceptance. Results indicate that the more age and experience, the slighter tendency to E-journals’ use. Therefore, there is no significant correlation among gender, major, educational level and E-journals’ acceptance.
Warraich and Kanwal (2010) investigated the perceptions of LIS professionals regarding the usage and satisfaction of the Pakistani Higher Education Commission (HEC) National Digital Library (NDL) databases. The NDL Programme provides free access to electronic resources (30 full text databases including 24,000 peer reviewed online journals and e-books) of world-renowned publishers to public and private sector universities and non-profitable research and development organizations, in Pakistan. A total of 75 people from 40 institutions responded to the survey. The findings reveal that younger professionals showed more interest in the use of databases. A majority of users accessed these databases through the HEC web site. The respondents were more satisfied with electronic journals and were least satisfied with e-books. It was found that the resources of HEC NDL are under used. HEC NDL needs to develop a promotional strategy and a feedback mechanism with the assistance of LIS professionals to improve its usage, because they have better knowledge of the information needs of their potential clients.

Masoumeh (2011) determined the users dependency on electronic and print journals by research scholars and faculty in Iran. A total of 118 faculty members and research scholars were selected. The results showed that the majority of users had high dependency on electronic journals.

Omotayo (2011) finds that majority of respondents prefer electronic journals than print journals. All respondents were of the opinion that use will continue to increase. It showed that only 35% of the respondents had published in electronic journals.

Thanuskodi (2011) in his study found that majority (92.30%) of the male users were aware about the e- journals whereas only 83.33 % of female
respondents were aware. The analysis reveals that most of the respondents 73.22% use e-journals for writing papers.

Victor et al (2011) investigated the adoption of electronic journals by business academicians as a medium for disseminating academic research. It present a theoretical framework based on the body of literature in the area of adoption and diffusion of innovation, and the Technology Acceptance Model. Four hypotheses proposing that age, tenure status, gender and whether an institution is accredited affect perceptions of electronic journals are tested using a sample of 141 business professors. Age and gender were found to be correlated with propensity to regard electronic journals as equivalent to print journals. Younger respondents and women were found to be more likely to regard electronic journals favorably than older and male respondents. No tenure or accreditation effects were found.

2.4 USER ATTITUDE ON E-JOURNALS

Tenopir and King (2002) in their study suggest that scientists are reading from a broader range of journals than in the past, influenced by timely electronic publishing and by growth in bibliographic searching and interpersonal communication as means of identifying and locating articles. Although the scholarly journals system has changed dramatically in the past few decades, it is evident that the value scientists place on the information found in scholarly journal articles, whether electronic or print remains high.

Mounissamy et al (2005) found out that 67% of students and 33% of faculty at National Institute of Technology, Tiruchirapalli use the electronic journals to fulfill their information needs. On analysis of users’ opinion, the study shows that, the adobe acrobat software used by several
commercial publishers does not yet adequately support the usage of user-friendly journals.

Liu (2006) in his study states that electronic sources are more heavily used by students in computer science, business, and LIS than those in social sciences. The majority of participants in this survey desire to meet their information needs through a mix of print and online resources, even though their resources for supplementing another type of information differ.

Adekunle et al (2007) presented the results of survey which focused on attitudes of librarians in selected Nigerian universities towards the use of ICT. Generally that librarian in the study have a positive attitude towards the use and implementation reacted favorably to the advantages of ICT, rather than to any perceived negatives. Librarian training and knowledge of ICT influence their attitudes towards it.

Chiemeke et al (2007) studied the user’s perceptions of the academic libraries and online facilities in Nigeria. Results revealed that there is no perceived significant difference in staff efficiency and ease of use of facilities on academic libraries and online environment. There is a significant difference in user’s perception of speed of access to needed research materials, availability of current and up to date materials, cost of access, and distractions within the facilities. Also users feel that library environment is more serene than internet café environment.

Rowlands (2007) explained that the researchers spend less time per article reading. There is a strong correlation between print and electronic journals use in that the more popular titles tend to be used relatively more heavily in both formats. Also this study states that researchers are technically
proficient at searching and employ a range of coping strategies to navigate digital libraries.

Gowda and Shivalingaiah (2009) gathered data from researchers of humanities, social science and science disciplines in six universities in Karnataka. Results of the survey shows that in general research scholars prefer print resources and there exist significant differences in the preference of print and e-resources among various disciplines. The discipline wise responses show that the science researchers use the facility most and their counterparts in humanities use least. More than half of the social science disciplines respondents are using the facilities. Full text databases and e-journals are most used resources followed by bibliographic databases and portals.

Kaliyapreumal, Rajasekar and Ashok Kumar (2010) in their study made an attempt to find out difficulties what the clientele experienced in using these e-resources in an academic library. Results reveals that the major difficulties experienced by the users of the e-resources along with their expectations to improve the browsing environment and speed of the network. It is also found that many of the users are unaware of the e-resources access and use. Even among the users who are known to use e-resources required training programmes for their effective and efficient use of e-resources.

2.5 IMPACT OF E-JOURNALS

King and Montgomery (2002) in their study found that amount of reading remains high; outcomes from reading continue to be favorable, particularly from library-provided articles; while 42 percent of faculty reading is from library-provided articles, faculty still rely heavily on readings from personal subscriptions; most of the library-provided reading is from electronic
articles; and readers spend much less time locating and obtaining library-provided articles when they are available electronically.

Smith (2003) explored the role of electronic journals currently play in faculty's reading habits at the University of Georgia. Discusses faculty choices for locating full-text articles and reports survey results that indicated that electronic access to journals, particularly library-funded access, is integral to research activities.

Beard et al (2007) studied the impact of electronic resources on the learning and teaching community of Bournemouth University. The findings in the paper show how the use of, and enthusiasm for, electronic resources is widespread amongst students and staff.

Tonta et al (2007) investigated the research impact of Open Access (OA) articles across the subject disciplines. The research impact of OA articles as measured by the number of citations varies from discipline to discipline. OA articles in Biology and Economics had the highest research impact. OA articles in hard, urban, and convergent fields such as Physics, Mathematics, and Chemical Engineering did not necessarily get cited most often.

Kanniyappan et al (2008) conducted a survey at Anna University Chennai to find out the use and impact of different types of e-resources and services. Findings of the survey revealed that majority of the faculty members feel that library activities have improved during past two years due to computerization. Majority of respondents used e-journals and Internet or WWW for their research and study purpose. Majority of the respondents used the e-journals rather than the printed journals and 32% used both electronic and printed journals equally. Most of the faculty members are
aware of the availability of e-resources which they used frequently for their teaching purposes.

Chowdappa et al (2009) in their survey deals with the impact of digital technology on information users of higher education in Mysore. It reveals that 83.3% of the subject experts of the opinion that there is high impact on IT on library resources and services. They told that the electronic resources will supplement the conventional printed media in getting precise, relevant, and timely information. The users in the age group of 50 to 70 years are rather reluctant to use Information Communication Technology (ICT) facilities.

Kaur and Rama Verma (2009) described the use of electronic resources and services provided at the central library of Indian Institute of Technology, Delhi. Results found that usage of e-journals is increasing; this is due to awareness among the users about the library e-resources and services. Owing to an easy access available at various places in the institute, users are accessing these resources at hostels and departments more as compared to the library.

Sudharma and Khan (2009) identified the acceptance of e-resources in the NASSDOC Library in New Delhi. Findings of the study indicate that respondents are aware of the e-resources such as e-books, e-journals, e-encyclopedias, e-theses, CD-ROM databases, e-mail and internet. Large number of research scholars and faculty members are using these e-resources for their research work. Many faculty members strongly agreed with the necessity for computer and internet literacy to access information. Majority of the users were satisfied with the e-resources available at the NASSDOC library.
Veeramani and Vinayagamoorthy (2010) made an attempt to study the impact of online journals. They found that 58 percent of respondents browse e-journals through search engines. 77% of the respondents prefer to access e-journals for preparing lecture note. It is important to mention that 88% of the respondents use e-journals.

Anie (2011) showed that lack of searching skills ranked first among inhibitors for both genders (106.1% for males and 91.4% for females). This is because ICT is not fully implemented and embraced in tertiary institutions in Nigeria. Some students own laptops but use them to watch films or listen to music. Frequent interruption of electricity supply ranked second. The "Power Holding Company of Nigeria" (PHCN), which is responsible generating and distributing electricity, has not been able to ensure a steady supply of power. This has also deprived the students from effective use of the digital library especially at night.

Mercer (2000) discussed the meaningful data which are often difficult to obtain as some publishers and vendors supply little or no data or only information they feel supports the purchase of their products. As it becomes increasingly difficult to afford all digital content, librarians must be able to measure digital use of e-journals and books in order to make the best purchasing decisions for their institutions. Librarians must develop their own solutions as well as solutions in collaboration with publishers so that better evaluation of digital content use can occur.

Bauer (2001) described two indexes, the Electronic and Print Usage Indexes, created at the Cushing/Whitney Medical Library at Yale University that can be used easily by librarians to clearly demonstrate usage trends in their libraries. The indexes show that in 1998-1999, patron usage of electronic resources more than doubled, whereas print use declined.
Peters (2002) states that the e-resource usage statistics contain a wealth of information, but mining that information from the massive amounts of data can be time consuming, expensive, and dangerous. Recent national studies in the USA and efforts to standardize the gathering and interpretation of e-resource usage statistics show promise for accelerating the adoption and diffusion of reliable, meaningful usage information. The article concludes with some speculation about the overall value and long-term potential for e-resource usage statistics.

Davis and Solla (2003) analysed the e-journals download in American Chemical Society electronic journal downloads at Cornell University (Ithaca, New York) by individual IP (Internet Protocol) addresses. It highlights include usage statistics to evaluate library journal subscriptions; understanding scientists' reading behavior; individual use of articles and of journals; and the relationship between the number of article downloads and the number of users.

Mahe (2004) explained the integration of the use of electronic journals in the scientists' information habits beyond usage analysis, and based on the analysis of the larger context of information activity. The aim of this approach is to propose a model of description applicable to other fields than our restricted field of study. It is not a fixed model as the electronic area enables researchers to move more easily from one level to another and thus to take advantage of the more appropriate opportunities. Each of these levels we have described here corresponds to a particular attitude towards published scientific literature and the researchers' integration in a more or less open scientific network. Eventually each of these levels corresponds to a certain way of integrating the use of electronic journals in these particular attitudes: an industry level mostly based on pay-per-view access; a university level,
based on consortia and site licenses, and punctual document supply; and an open access level, based on self-diffusion among peers.

Duy and Vaughan (2006) examined relationships among different measurements and found that electronic usage correlates with print usage and that local citation data are a valid reflection of total journal usage but Impact Factors are not as valid.

Botero et al (2008) analyzed the comparative findings of two studies undertaken at the University of Florida Libraries comparing online journal usage statistics derived from COUNTER-Complaint publishers. The analyses conducted in 2005 and 2006 were not intended to be rigorous scientific studies. Instead, the statistical assessments were intended as tools for determining trends in the costs and use of online journals at the University of Florida. The studies also explored the relationship between the large publisher online journal packages (so called Big Deals often licensed through consortia arrangements) and online-journal usage, and the effects of Big Deal packages on library budgets. Results showed that full text downloads increased purchase of electronic resources had a definite effect on the entire library materials budget and on the process of collection development. the studies also showed a significant use of the titles not previously offered to library patrons and being received through the bundled packages. The two studies showed that, despite a growing percentage of the materials budget being spent on online bundled packages, the Big Deal at the UF Libraries was Good Deal if measured by overall use and by price per full-text download.

Guruprasad et al (2009) analysed data of the full text e-journal use patterns during the period 2005 to 2007. They concluded that for the full text downloads data, the years and the publishers are not independent. This
Chi-Square test was carried out for only those publishers for which the data was available for all the three years.

2.6 IMPACT OF ONLINE JOURNALS

De Groote and Dorsch (2001) showed print journal usage decreased significantly since the introduction of online journals. This decrease occurred regardless of whether a journal was available only in print or both online and in print. Interlibrary loan requests have also significantly decreased since the introduction of online journals.

Johnson (2004) states that the introduction of electronic journals and electronic versions of journals has made serials collection management more complex. Libraries may want to offer a particular journal in both print and electronic formats, but find that it is often not financially feasible. More publishers are charging separately for the print or electronic versions or charging a higher price for both bundled together. As budgets become tight, librarians have to choose between one format or another. In order to make the decision about what format to purchase, librarians need to know the format preferences of the users. To determine these preferences, library professionals can use several methods, such as user surveys, usage reports, and educated guessing.

Ritchi and Genoni (2007) explored the evolving balance between the use of print and electronic sources for answering reference questions. A case study of reference questions received at the Northern Territory Library is undertaken, by auditing data held in the online reference information management system, Ref Tracker. Over 620 questions are categorized according to the sources used in responding to those questions. Results
indicate that print and electronic sources are both important to the reference service at the Northern Territory Library.

Nazim and Devi (2008) undertaken a case study to know the trends of open access publishing in India. Results found that among the top 25 open access publishing countries, India ranks 12th for the overall number of journals, but drops to 18th for journals with online content. Although, its occupied 5th position in the list of open access journals. At present India ranks 12th in the list of countries with registered interoperable archives in the Registry of Open Access Repositories (ROAR).

Borrelli, Galbraith and Brady (2009) examined the use of geology journals at Washington State University (WSU), before and after electronic access was provided, to determine if the use of the print collection increased as in the previous studies at WSU of three other science disciplines. The number and source of articles cited by WSU geologists from 1998 to 2004 was also examined to determine the impact of electronic access on citation patterns. The study showed that the changes in the use of individual titles were research driven. By 2001, geology users were using print and e-formats equally. Geology print use in 2002 was virtually the same as that of 1998, but electronic usage had increased dramatically but in 2003 print use declined. As geology users became more familiar and comfortable with e-access. The method of library research changed, which led to an overall increase in the number of citations, individual articles, and titles appearing in their publications. The titles included in the geology collection for any given year are impacted by large or ‘big deal’ package purchase. However, if providing an increased breadth of offerings was a deciding factor, those big deals, with increased title selection, might be a favorable option and more likely to be supported by subject specialists.
Bollen et al (2005) in their study, journal impact rankings were compared to the Institute of Scientific Information’s Impact Factor (ISI IF). Results indicate the although social network metrics and ISI IF rankings deviate moderately for citation-based journal networks, they differ considerably for journal networks derived from download data. These results furthermore raise questions regarding the validity of the ISI IF as the sole assessment of journal impact, and suggest the possibility of devising impact metrics based on usage information in general.

De Groote et al (2005) studied online journals impact on the citation patterns of medical faculty at the University of Illinois at Chicago (UIC). That study looked at whether researchers were more likely to limit the resources they consulted and cited to those journals available online rather than those only in print. Searches by author affiliation were performed in the Web of Science to find all articles written by faculty members. The number of journals cited per year continued to increase from 1993 to 2002. It was possible that electronic access to information (Online databases) had a positive impact on the number of articles faculty would cite.

McDonald and John (2006) indicated that print journal use was a significant predictor of local journal citations prior to the adoption of online journals. Publisher-provided and locally recorded online journal use measures were also significant predictors of local citations. Online availability of a journal was found to significantly increase local citations and for some disciplines, a new access tool like an Open URL resolver significantly impacts citations and publisher provided journal usage measures.

Bhata and Kumarb (2008) stated the results of citation analysis of research articles from scholarly electronic journals in the field of library and information science published during the years 2000 to 2006. Results showed
that 81.49% of articles published during the period had web references. Out of 25,730 references, 56.54% of references were print journal references and 43.52% of them were web references.

2.7 PATTERNS OF E-JOURNAL USE

Davis (2002) analyzed annual electronic journal usage data for the North East Research Library (NERL) consortium for 2000 and 2001 for the Academic Press IDEAL aggregate package. Patterns indicated a high degree of skew in use of the journal collection a small number of journals formed the majority of total use. Each institution illustrated a unique usage pattern, with some institutions using (proportionally) more or less of the collection. No institution used every title, and some titles were used very infrequently by the consortium as a whole. Title ranking showed high congruence between 2000 and 2001. Titles not subscribed in print received about ten times less use than locally subscribed titles.

King et al (2003) explained the readership surveys at three universities with different levels of electronic journal implementation demonstrate how transition to electronic journal collections affects use patterns of faculty and staff. The University of Tennessee was in a transitional phase when the survey was done (2000), the University of Pittsburgh had acquired a large electronic journal collection, but with some duplication with print journals (2003), and Drexel University had migrated to nearly all electronic journals (2002). Although faculty use of personal print subscriptions remains significant, electronic personal subscriptions are used only infrequently by faculty even though this is an option available to them. On the other hand, electronic journal use is very high when available in library collections.
Boyce et al (2004) found a very substantial shift over the past few years in favor of directed online searching and away from browsing behavior. They suggested little change in reading patterns before and after the introduction of electronic access. They estimated the range of journals consulted by the typical academic researcher had grown from at least one article per year from 13 titles in the late 1970s, to 18 in the mid-1990s, to approximately 23 titles by 2001. Their analysis revealed the extent to which electronic formats had displaced print.

Franklin and Plum (2004) presented results from Web-based surveys of more than 15,000 networked electronic services users in the United States between at four academic health sciences libraries and two large main campus libraries serving a variety of disciplines. Results showed that at the four academic health sciences libraries, there were approximately four remote networked electronic services users for each in-house user. Sponsored research accounted for approximately 32% of the networked electronic services activity at the health sciences libraries appeared to use networked electronic services most intensively from on-campus, but not from in the library.

Tenopir et al (2004) carried out a study to determine how medical faculty members use scholarly journals, whether there is a pattern among types of users. Results showed that medical faculty read a great deal, especially compared to scientists. The most frequently reported principal purpose of reading was to support their primary research (30% reading). The majority of reading came from recently published articles, mostly from personal subscriptions. Medical faculty continued to rely on print journals (approximately 70% of readings) versus electronic journals. Age of faculty did not appear to influence the choice of print or electronic format. Medical faculty read more articles than others on average and need information
digested and verified in a way to save them time. Convenience and currency were highly valued attributes.

Liu (2005) studied reading behavior in the digital environment. The study showed that a screen-based reading behavior was emerging for reading electronic documents. That behavior was characterised by more time spent browsing and scanning, keyboard spotting, one time reading, non-linear reading, and reading more selectively, while less time was spent on in-depth reading and concentrated reading. Annotating and highlighting while reading was a common activity in the printed environment. However, that “traditional” pattern had not yet migrated to the digital environment when people read electronic documents.

Tenopir et al (2005) surveyed the members of the American Astronomical Society. They identified how astronomers use journals and what features and formats they prefer. Astronomers like other scientists, continued to invest a large amount of their time in reading articles and placed a high level of importance on journal articles. They used a variety of formats and means to get access to materials that were essential to their work in teaching, service, and research. They selected access means that were convenient—whether those means be print, electronic, or both. The availability of electronic journals system from their primary professional society had surely influenced their early adoption of e-journals.

Tenopir et al (2007) carried out a study to describe the journal reading patterns of pediatrician members of the American Academy of Pediatrics (AAP). Results showed that pediatricians read journal articles primarily for current awareness and most often rely on quick reading from print journals for current awareness. Reading for research, writing, and presentations were more likely from library-provided electronic journals.
Convenience and purpose of reading were key factors that explain reading patterns of pediatricians. Print personal subscriptions were convenient for current awareness reading, while electronic journal system were convenient for reading for research because they provided access to a broader range of journals. Pediatricians read many current articles very quickly and from many different locations. Pediatricians under the age of thirty-five were more likely to use Personal Digital Assistant (PDAs).

Bravo et al (2008) studied the patterns of use of electronic journals in Spanish University Library. Nonetheless, the overall figures for downloads were not particularly encouraging. The use of Science Direct was much greater than that made of the other suppliers in relation to the size of the package that distributor made available. The large universities didn’t always have greater numbers of downloads than institutions of smaller size. Although there was no clear pattern of usage, there were observable preferences on the part of different universities for given packages. All the universities had welcomed the Big Deal model. Although many of the titles under contract were not used by the academic communities, it was worth emphasizing that a considerable spread of use was noted and the most famous titles were not always those most frequently used. Users consulted numerous serials that their institutions had never held in printed format.

Manhas (2008) analyzed the patterns of use of Internet and electronic resources, the Internet skills of the dentists, and problems faced by them while using the Internet and electronic resources in dental colleges and hospitals of Punjab, India. The results showed that the most popular method of acquiring the necessary skills to use Internet and electronic resources was via trial and error method. Most of the respondents access the Internet from the college or workplace, while 19.3% also access from home. 42.6% of the respondents used the Internet and electronic resources for finding
health/dental sciences information, followed by patient care. E-mail had been chosen as the most popular Internet service and e-journals as the most popular electronic resource. 36.7% of the respondents found overload of redundant information on the Internet was the main difficulty in using the Internet. A majority of the respondents fully satisfied with Internet Services and electronic resources and stated that the Internet and electronic resources could not replace the physical resources (print resources) that it only supplemented the print resources.

Mohamed Thaheer et al (2008) presented the findings of the survey about the use of e-resources by the users of Aalim Muhammed Salegh College of Engineering, Tamilnadu. It shows that the male users are more interested in accessing e-resources. Most of them use internet at daily. Majority of the users use the e-journals for knowing latest information in the specialized subject. Most of the students find lack of training in using internet. Nearly 65% of the users are fully satisfied with the facilities available in their library.

Tenopir et al (2009) examined how faculty members locate, obtain, read and use scholarly articles. Data were gathered using questionnaire periodically since 1977. Many questions used the critical incident of the last article reading to allow analysis of the members of readings per year per science faculty member continued to increase, while the average time spent per reading was decreasing. Electronic articles accounted for the majority of reading though most readings were still printed on paper for final reading. Scientists reported reading higher proportion of older articles from a wider range of journal titles and more articles from library e-collections. Articles were read for many purposes and readings were valuable to the purposes.
2.8 LIBRARY CONSORTIUM

Chauhan and Prem Chand (2007) observed that there is great need to more to publicize the UGC Infonet Program. Most of the participants have not used e-contents that are subscribed by UGC-Infonet Consortium. They concluded that user statistics are a vital part of evaluating. The usefulness of any product, use statistics for each university will be distributed periodically.

Melih Kirlidog and Didar Bayir (2007) in their paper provided some insight into the sharp increase in scientific publications originating from Turkish academic and research institutions in the last few years. Although it is difficult to gauge national scientific productivity, the number of publications in electronic databases that index thousands of scientific journals can give some indication. Web of Science is one of these, and it is provided to the Turkish academic community along with several other databases by the national library consortium. Based on the Web of Science data, a comparative analysis was performed to investigate publications originating from Turkey and other countries. The analysis revealed a sharp increase in publications from Turkish institutions in the last few years. Considering the highest publishing 30 countries out of 190, the increase between 2001 and 2003 is 53.48 percent for Turkey, followed by 34 percent for China and 26.87 percent for South Korea.

Karasozen (2008) stated that increased in the usage of electronically licensed databases by ANKOS (Anatolian University Libraries Consortium) is explained with reference to COUNTER compliant e-journal collections. The diversity of usage among the universities and the cost-effectiveness of electronically available databases with the consortium is explained, taking into account the special characteristics of Turkish university
libraries, the rapid increase of students and newly established universities, as well as the growth of scientific publications.

Jeyaprakash (2009) suggested that increased availability of computer systems and direct links to e-journals from the member institutions library OPAC may be considered. Month wise usage reports for e-journals could be measured using logs on file system by the consortium to prove the statistics being provided by the publisher or aggregators concerned to support future e-resources building.

Sasireka et al (2011) concluded that the digital resources in the virtual world represent a large investment of people’s efforts and wisdom. Electronics journals are real mechanisms for democratization of knowledge and information. They are more dynamic and interactive. Similar to the bundling concept of printed journal in the form of volume and issue numbers, whereas an electronic journal has the possibility of becoming a database.

Walmiki et al (2010) conducted survey on digital library consortium by the faculty members of Karnataka state universities. They found that 39.79% of faculty members are aware and use the UGC-Infonet Digital Library Consortium resources whereas 35.99% are aware but do not use and 24.22% are not at all aware the resources. Majority of non-users belong to social science and humanities and those who have not undergone formal computer training. Major problems faced by the users are lack of knowledge to use, insufficient internet nodes, slow bandwidth and lack of relevant information sources. About 37% of the faculty members were aware of and participated in user education programs conducted by their university library.
2.9 INFERENCES

The following inferences have been identified in current approaches to e-journal use:

- Most of the studies are often limited to individual institutions. However do not take into account the institutional context, such as local information communication technology (ICT) policies network connectivity, infrastructure etc. Neither are differences in the social organization of disciplines taken into account.

- Studies are often limited to a particular domain of the institutions. Such studies enable an in-depth understanding of the patterns of and reasons for e-journal uptake in individual fields, but are over ambitious in their claims for generalizability across other disciplines.

- Comparative studies tend to be based on broad disciplinary groupings, such as the physical sciences, health sciences, social sciences, and humanities. Studies of this nature provide a broad picture of current usage patterns. However, they produce idiosyncratic results that do not adequately reflect epistemological activities within the knowledge producing communities that they attempt to represent.
Studies focus on use, rather than non-use, which skews patterns observed within and across disciplines and makes it difficult to develop comprehensive descriptive or explanatory frameworks.

From the review, it can be seen that both the user study and availability of infrastructure facility on e-journals among engineering institutions has not been attempted.