CHAPTER II

REVIEW OF LITERATURE

The literature has been reviewed with the basic objective of bringing together any research or conclusion that deals with IT and its impact on the library user community in general and Corporate library users in particular.

Literature thus reviewed has been presented in the chronological order under the following headings.

1. Impact of IT on the information seeking behaviour of Library users in General

2. Impact of IT on the information seeking behaviour of Academic Library users

3. Impact of IT on the information seeking behaviour of library users of various profession

4. Impact of IT on the information seeking behaviour of Corporate Library Users

2.1 IMPACT OF IT ON THE INFORMATION SEEKING BEHAVIOUR OF LIBRARY USERS IN GENERAL

Ojala, Marydee (1986) viewed that Online Searching was a changing and evolving part of the Information industry during the late seventies and early eighties and stated that end users who had access to microcomputer,
wanted to use it to the fullest and enjoyed online searching. When speed of information delivery is important, the database, which could be accessed from the user’s desk, was more likely to be used than the library (1).

Borgman (1986) while reviewing information retrieval studies on why online catalogues are hard to use, found that users of online catalogues and information retrieval systems encounter the same problems in usage and that many of the same factors underlie their behaviour. Information retrieval behaviour appeared to be influenced by a number of factors viz., training, experience, system features, the nature of the search topic, individual characteristics etc. Proposed a series of research questions and suggested a number of potential interim solutions for alleviating some of the problems encountered by users of information systems (2).

Duncan (1997) reported after speaking to leading information experts in the world to find out what it’s like in the front line of the information revolution that John Cox, Head of Library Automation at University College Cork, Ireland, felt that electronic information resources had been generally well received by users and awareness of, and enthusiasm for, electronic advances varied greatly among users (3).

Wake, Rosemary (1998) suggested that the Internet was changing the conditions of privileged access to information sources and publishing and opening access to the research arena to a wide range of potential investigators. The role of publishers and the printed word was changing as well as the need
for information users to accept established sources of authority. Looked into
the possibilities and impacts of the Internet from the perspective of the
information provider and suggested the need to establish the basis of more
dialogues as a step towards enabling the widening social community to
engage in substantive debates in a more permeable world and to create new
tools for internet use (4).

Nahl (1998) confirmed from the review of survey studies of Internet
users since 1993 that a greater percentage of people were becoming online
citizens, and professionals were integrating more online components into their
work process. He further stated that there was intense interest in humanising
the online environment by integrating affective and cognitive components. He
concluded that research in human computer interaction was evolving a user
centered methodology for system design and instruction that focused on
integrative, affective and cognitive user variables to increase productivity,
creativity and human growth (5).

Milewski, Allen and Smith, Thomas (1998) reported from their study
on the role of perceived item credibility in a World Wide Web (WWW)
search task that the users viewed the WWW as a medium of moderate
credibility. It was perceived as less credible than television or print news, but
more credible than talk radio or internet newsgroups. They reported to have
found that both the judged relevance and credibility of items could influence
their selection from the set of search results. Interpreted that users first culled
items most relevant to their task, and explored those that seemed most
relevant and stated that it was not clear how users judged credibility in the current WWW setting (6).

Coles et al. (1999) examined use of electronic sources by public library users, especially CD-ROM and discussed reasons for use and non-use CD-ROM, looked at the types of CD-ROM databases used in library in general and the nature of searches carried out (7).

Marcella, Rita and Baxter, Graeme (2000) reported in their second stage of the Citizenship Information Research Project by personal doorstep interview that access to computers in the home was limited and only 12.6% of the respondents had access to the Internet at work. The majority felt that they would be prepared to use computers to vote, debate, make their own feelings known and obtain official information. Older, disabled, lower class and less educated respondents and those living in rural areas were less willing to use computers (8).

Eason, Ken et al., (2000) analysed the twenty two month transaction log of SuperJournal using K-Means Cluster Analysis and classified a spectrum of user behaviour with electronic journals into a typology of eight patterns of user viz., the searcher, the enthusiastic user, the focused regular user, the specialised occasional user, the restricted user, the lost user, the exploratory user and the tourist. Examined the background and experience with SuperJournal of each type of user and reported that the contents and ease of use of a system were perceived by the user as the most significant factors affecting patterns of use. Users’ perceptions of both factors were affected by a
range of intervening factors such as discipline, status, habitual approach towards information management, availability of alternative electronic journal services, purpose of use, etc. Demonstrated the need for a service to meet the requirements of users with these varied patterns (9).

Eve, Juliet and Brophy, Peter (2000) presented the results of *Value and Impact of IT Access in Libraries (VITAL)* Research Project, which set out to test methodologies suitable for providing evidence to support the role libraries have begun to play in delivering electronic services to the public in the UK, that libraries were becoming increasingly important locations for accessing ICT to support a range of activities, from formal study to job seeking to building and maintaining social networks using the Internet. Patterns of usage would probably continue to vary across the UK as the needs and priorities of different in urban and rural areas, where patterns of library use reflected the age and occupation of users and thus their different priorities. In Birmingham the pattern of a younger, more educationally active library user population emerged, where people associated the library with access to ICT, and used these services. Conversely, Cumbria library users reflected a pattern of more traditional use, with higher numbers of older users, giving more significance to book related services. Evidence suggested that libraries were popular locations for ICT facilities and that support for fulfilling this role was very high amongst public library users, whether or not personal use was made of the services on offer. Public libraries were still in their infancy with regard to providing and developing electronic services and had some significant challenges to face, particularly in the areas of sustainability and widening
access to currently excluded groups, but the enthusiasm and vision was certainly there. The service did have the potential to deliver the key aspects of the government's agenda in tackling social exclusion, in providing ICT facilities within communities, and in supporting learners (10).

Withey, Richard (2003) argued that the effect of using digital channels for information retrieval could be characterised as changing people from "users" to "consumers" and more particularly "promiscuous consumers". He concluded that overall, the move in consumer information gathering habits, especially among young people, had been away from print and into electronic, and away from one or two trusted sources to the over sampling of multiple sources (11).

Nicholas, David et al., (2003) provided intelligence as to how the new digital information consumer behaved when seeking information, advice and services online, whether this was via Web, digital interactive television or touch screen kiosk. They sketched the key characteristics of the newly information enfranchised general public (the digital information consumers) from their various studies. Portrayed that the digital consumer as all conquering / powerful, short on attention, promiscuous, untrusting and above all interested in speed of delivery. Argued for a fundamental rethink of the concept of the information "user". They concluded that the Web, search engines etc. were creating a level playing field and a homogeneity, which result in academics behaving more like the general consumer and the general consumer behaving more like an academic (12).
Nicholas, David et al., (2003) evaluated the impact of *Big Deal* agreements, on the online searching behaviour of users of the *Emerald* digital library Web site, which provides access to more than 150 journals in the fields of business and information science, through deep log analysis, with the purpose of mapping online information seeking behaviour of the digital library users and to see whether those signed up to a *Big Deal* arrangement behaved any differently from others. They reported that they differed in general, and were surprised to find the strong consumer traits of the library’s users (13).

2.2 IMPACT OF IT ON THE INFORMATION SEEKING BEHAVIOUR OF ACADEMIC LIBRARY USERS

Kochen, Manfred et al. (1981) reported from their study to assess the influence of online bibliographic search capabilities on students engaged in tasks requiring literature searching with an experiment group who were aided with online bibliographic searches and control group who used conventional methods that the successful retrieval of bibliographic references was construed as an integral part of the research effort by subjects in both the online and the offline groups. Computer assistance provided in managing and organising the information did not necessarily increase the quality or quantity of references. While online subjects were found to spend less time searching literature, there appeared to be negligible reported change by these subjects along the lines of (a) alteration of final product quality (b) confidence in approaching future tasks similar to that at hand or (c) the extent to which the service aided the user in making intellectual insights and contributions.
Suggested from the findings that online bibliographic search capabilities would not make a major difference to many students in improving the quality of their scholarship or their productivity nor a major cause of many potentially productive scholars or students engaged in scholarship becoming productive. Suggested that students might need considerably more experience with online searching and/or more help and coaching before they were confident that online searching would be as, or more, responsive, sensitive, and useful, than conventional literature searching (14).

Rouse, William B et al. (1982) while studying human information seeking behaviour in an experimental environment called DBASE (Data Base Access and Search Environment) considered the human computer interface in terms of basic human factors and human machine interaction in online searching of bibliographic citation networks. Based on two experiments conducted among graduate students of engineering or related fields, they concluded that the type of question and the structure of the database could influence strategy chosen and results obtained when seeking information in computer readable databases and beyond the type of search question and database structure, differences among individual searchers could influence strategies and results (15).

Morehead, David and Rouse, William (1982) presented Rule-based and Decision theoretic approaches to modeling the search tasks and developed a progression of models based on their earlier DBASE studies, discussing Models of human information seeking in searching online bibliographic citation networks (16).
Summers, Edward et al. (1983) reported from their study that their respondents indicated their frequency of use of computer or retrieval systems as a source of information on a four point scale which received a mean of 1.30 and ranked 13\textsuperscript{th} (17).

Marcus, Richard (1983) conducted controlled experiments to compare the effectiveness of an enhanced CONIT intermediary, that connected three different retrieval systems \textit{(NLM ELHILL [MEDLINE], SDC ORBIT, and DIALOG)} but presented to the user what appeared to be a single, common system, with that of human expert intermediary search specialists. Some 16 end users, none of whom had previously operated either CONIT or any of the connected retrieval systems, performed searches on 20 different topics using CONIT with no assistance and with help of human expert intermediaries. They reported that sometimes CONIT and sometimes the human expert were clearly superior in terms of such parameters as recall and search time. They further reported that, in general, users searching alone with CONIT achieved somewhat higher recall at the expense of longer session times. Concluded that advanced experimental intermediary techniques were capable of providing search assistance whose effectiveness at least approximated that of human intermediaries in some contexts (18).

Bremer and Leggate (1985) reported from their intensive study of medical library users of Oxford teaching hospitals and the University science departments, identifying three distinct users types and ‘rich picture’ descriptions. Concluded that the Researcher appeared to value online retrieval services higher than preclinical researchers, the practitioner-researcher valued
and used online retrieval services, especially MEDLINE, more than the medical practitioner and the medical researcher (19).

Ellis, David (1989), while breaking down the information seeking patterns of a variety of academic social scientists into six characteristics, reported that for his subjects online searching of databases represented a quick alternative to manual searching of secondary services, and on the question if they had ever had an online search undertaken for them, the opinion of the utility of such searchers was mixed. In general there seemed to be greater satisfaction with the results of the search when the individual was unfamiliar with the area and was trying to find a quick way into the literature, particularly if that literature was diffuse. Computer based searchers were not perceived as trouble free ways of information searching. Those who had carried out online searches frequently underlined the difficulties that they had experienced, often making some attempt to explain those difficulties in terms of the limitations of the system viz., nature of the systems used, from poor searchers, terminological problems, or lack of suitable sophisticated alternative to their other information seeking activities. However, even in cases where the results of the search were not thought to have been satisfactory the search itself proved useful, either because the alternative would have been an exceedingly tedious and time consuming manual search, or because the search proved useful for identifying material from which the individual could proceed to follow other information seeking activities such as following chains of references. It was clear that computer based searches were undertaken at the start of a project, and with the intention of providing
some references from which the individual could proceed to other information seeking activities, particularly chaining (20).

Marchionini, Gary (1989) reported from the exploratory study on elementary school children searching a full text electronic encyclopedia on CD-ROM that, in general, young novice users could successfully use a full text, electronic encyclopedia with minimal introductory training. Subjects were equally successful on the open and closed task, but the open task took longer to complete and required more moves. Although the system provided powerful search features, most novices accepted the system defaults. User strategies were heuristic in that they were highly interactive rather than planned. The subjects were able to identify key facts of the tasks but had difficulty formulating effective queries. Many, especially the younger searchers, used sentences or phrases as queries, reflecting an ill defined mental model of the search system, a kind of hybrid between a print encyclopedia and an interactive computer program. System feedback was used to reformulate a query, and voluntarily by using terms found in the text of the articles. Older, typically more successful, searchers exhibited a better balance between lookup and examine moves, actually favouring examine moves overall. Although it was likely that expert searchers could locate relevant information in a more direct manner using carefully planned strategies, this type of database might lend itself to highly interactive, heuristic searching. Knowing that computers were interactive because they had experience with computer assisted instruction, they sought information from this system by initiating dialogues rather than controlling it by issuing
commands. It might be that full text systems such as this electronic encyclopedia were inherently compatible with novice users' simple, interactive information seeking behaviour (21).

Curtis, Karen et al. (1993) investigated the information seeking behaviour, including use of major bibliographic tools by medical, pharmacy, nursing, and science faculty at the University of Illinois at Chicago and assessed the impact of availability of locally mounted databases. Reported that over 70% of all faculties used Index Medicus or MEDLINE. There were statistically significant differences between colleges in their use of mediated and enduser searching of MEDLINE. Colleges exhibited significant differences in use of Current Contents, PsycLIT, ERIC, Cumulative Index to Nursing and Allied Health Literature, Chemical Abstracts and Science Citation Index (22).

Smith (1993) reported from three surveys on the effect of new technology on searching habits in industrial and academic institutions that the main impression gained was that engineering institutions tended to take a wider viewpoint of the technology than the other types of institutions surveyed, seeing searching as just part of the picture. Online searching was frequently found to be more fragmented, different areas often being conducted by various departments such as marketing department, rather than being the sole province of an information specialist. Great interest was shown in the problem of combination of text and graphics. Showed instances of students in Business Schools and Departments having access to CD-ROM which included software for analysing the data or loading to spreadsheets. Despite
distinctive differences, overall comparisons were drawn as to the effect of the new technology on searching habits in the three types of institutions. While DIALOG and DATASTAR were found to be the hosts most used by academic and chemical institutions, in engineering institutions ESA/IRS came into prominence. It was also noticed that in the case of chemical companies, hosts biased towards chemical, pharmaceutical or patent databases were also seen. STN was found to be quite heavily used by chemical companies, as were Orbit, Telesystems Questel and IMSbase. 90% of respondents in chemical companies considered that communications software had some or considerable impact on budget, intermediaries or end users, while 43% of respondents in engineering institutions and 39% in academic institutions expressed such an opinion. 26% of engineering institutions used networking, while majority of academics had access to the Joint Academic Network (JANET). Less than 50% of chemical companies used optical disc technology in library applications. 22% of engineering institutions used and appreciated optical disk technology quoting British Expertise in Science and Technology (BEST) and INSPEC full text as being useful acquisitions. 82% of academic institutions used CD-ROM and found them invaluable for end user searching. Respondents from each type of institutions generally agreed that CD-ROM searching, although had its limitations, was far more relaxing, and far more fun than online searching. 30% of academic institutions indicated that Downloading and manipulation software had an effect on searching (23).

Hsieh-Yee (1996) surveyed junior academics at two universities and found that online catalogues to be the most commonly used information
channel. Students searched the online catalog file and the databases containing most recent literature more frequently than other databases, and had positive views about searching the system (24).

Barry (1997) reported results of the Information Access Project examining the effects of information technology, the electronic library and Internet on the information seeking behaviour and research behaviour of academics in higher education that electronic bulletin boards and email were used in 80% of research projects in conjunction with traditional methods. Discussed the changes in the information activity, changed boundaries and speeding up of the work of research community, increased visibility for researchers, improved access to current information etc. (25).

Jiao and Onwuegbuzie (1997) reported from their study on Library anxiety among American college students that the students who used computer indexes and online facilities tended to have the highest level of library anxiety with respect to five antecedents and suggested that unless effective interventions were implemented, anxiety might continue to worsen as libraries become more automated (26).

Curtis et al. (1997) found that use of the print Index Medicus among faculty was in transition. While 30.5% continued to use the print resources, 68% of faculty accessed MEDLINE through electronic means. Faculty preferred accessing electronic databases from their offices to library. Health sciences faculty used a wide variety of database, in addition to MEDLINE, to fill their information needs. Most faculty did not take advantage of their
in-house or electronic training sessions offered by librarians. On the Internet front, 51.6% of health sciences faculty used email and 48.1% used the World Wide Web. Faculty used tools such as Gopher, FTP, and TELNET less than either email or the Web. Fewer than 20% of all faculty subscribed to electronic discussion groups between 6.7% and 9.4% of all faculty had their own home pages on the Web.

On comparing between their 1991 and 1995 studies they further reported that there were a number of dramatic changes in faculty’s use of electronic resources between 1991 and 1995. In 1991, print Index Medicus was the method of choice for locating literature of 55.3% of faculty in medicine, 62.8% in nursing, and 63% in pharmacy. By 1995 use of print Index Medicus had dropped to 30.5% (32.1% in medicine, 36.4 in nursing, and 18.3% in pharmacy). In 1991, 48.2% in medicine, 69.8% in nursing, and 39.1% in pharmacy used the mediated search services offered by LHS for searching the MEDLINE files, and by 1995 only 19.4% (20.1% in medicine, 25% in nursing and 11.7 in pharmacy) used this service. These data described a shift in the method faculty used to access the MEDLINE databases between 1991 and 1995. The emergence of end user search systems had given the faculty the ability to do their own searching and as a result they have made less use of mediated search services. The comparison between 1991 and 1995 surveys showed the impact of the campus technology initiative. The 1991 survey found that 58% of faculty in medicine, 45.5% in nursing, and 38.3% in pharmacy reported no active campus computer account. By 1995 only 14.4% of faculty (14.3% in medicine, 6.8% in nursing, and 5% in pharmacy) said
that they did not have an active campus computer account. By every measure, faculty used electronic resources in higher percentages and used a wider variety of electronic resources in 1995 than they did in 1991 and such increased use of electronic resources was attributed to increased number of locations where access was possible. Opined that Internet access in faculty offices, laboratories, and homes added greatly to the convenience and ease of obtaining information. They concluded that as faculty make increasing use of end user search systems to do their own searching from homes, offices and laboratories the number of mediated searches would decrease (27).

Tenopir, Carol and Ennis, Lisa (1998) observed that Journal collections were gravitating to digital formats due to users’ desires and libraries attempted to redirect budgets. They reported accelerating demand for linked digital full text after the search of an online or CD-ROM bibliographic source. They quoted a librarian as saying “Patrons now seem surprised if a source is not full text. They keep asking what button to push in Psycinfo to get the full text”. The popularity seemed to reflect the reluctance to use hardcopy indexes and abstracts once electronic files were available (28).

Tenopir, Carol and Ennis, Lisa (1998) again reported from their survey of academic librarians that new technologies changed the expectation and attitudes toward the research process for both librarians and users. Heightened expectations from students and to a lesser degree, from faculty were noticed by many librarians. They concluded that more sources, more options for sources, higher patron expectations and more reliance on new technologies created an environment that never seemed to rest (29).
Pelzer, Nancy et al. (1998) reported from their survey on Veterinary Medical Students at Iowa State University on how they used the Veterinary Medical Library in general and how they sought information in an electronic environment. Compared the result with the one conducted a decade ago to determine the effect of growth in electronic resources on student library use and information seeking behaviour. Reported that when students went beyond textbooks and handouts to seek current information, a major shift was seen from the use of print indexes and abstracts in 1987 towards the use of computerized indexes and other electronic resources in 1997. Almost 60% of the students reported using the Internet for locating current information. Overall use of electronic materials was highest among a group of students receiving the problem based learning method of instruction. Most of the student surveyed in 1997 indicated that electronic resources would have some degree of importance to them for future education needs (30).

Wake, Rosemary and Saunders, Sam (1998) reported from their survey of authors of papers in the collection of Education-Online website that majority of respondents reported using the Internet more to locate research findings. Searching seemed to be a personal activity rather than delegated to research assistants or librarians. Although 45% had used intermediaries, occasionally, all of them also searched it themselves. Only one of 48 respondents who had actively used the Internet to discover research findings said that Internet had not changed their information seeking behaviour. For many the Internet had brought considerable changes. On the changes in information seeking into three broad impressionistic bands, 12 were ‘high’, 16
'middling', and 19 'lower'. Overall, changes in their own information seeking behaviour were evident to almost all respondents though for some these were very much greater than for others, for most, the Internet had become a familiar source of information (31).

Bell (1999) concluded from the research into the impact of user behaviour on searching outcomes conducted at Paul J Gutman Library, Philadelphia University with the objective of determining the influence of the emotive aspects of searching of two search interfaces: Telnet and World Wide Web that although Web interfaces might provide a more supportive search setting particularly less experienced searches, there was no evidence they contributed to better search outcomes. The findings reinforced the importance of end user training. Quality search outcomes were dependent on basic knowledge of search system features, familiarity with the search techniques required to obtain certain kinds of information, and the acquisition of a comfort level with a database system. An interface alone, although it might provide a more or less supportive search environment, failed to guarantee successful search outcomes (32).

Bracke, Marianne Stowell and Critz, Lori Jean (2001) believed that the behaviour and expectations of undergraduate users had changed to find full text information online that was retrievable with a minimum effort. The information literacy movement did not suit their specific needs and suggest re-envision instruction in order to more individualized system of instruction (33).
Shaw, Wendy (2001) reported from the study of the use of Internet by academics in the discipline of English literature that while most of them used Internet for information seeking purposes, the overall feeling was one of neutrality towards the Internet. Concluded that the two greatest influences of the technological advances had been word processing and electronic mail. They offered upbeat opinion about E-lists (34).

Pothen (2001) critically discussed some of the preliminary findings of the Justeis Project set up by the Joint Information Systems Committee (JISC) to monitor and evaluate user behaviour in information seeking and use of information technology and services in UK higher education. Questioned the findings that students were making minimal use of subject gateways and other finding resources, suggested that many users give incorrect responses because they did not understand the specialist terminology used by researchers, so that usage might not have been measured accurately. Discussed the importance of information skills and the extent to which students learnt from teachers and lecturers rather than librarians about electronic information services (35).

Herman, Eti (2001) concluded from literature that ready availability of a technology did not guarantee its immediate take up and exploitation, and unless it promised some personal advantage it would not change well established practices. A researcher’s acceptance or rejection of novel methods of information gathering depended on their suitability to personal circumstances, experience, individual capabilities and specific preferences. The electronic systems and methods for acquiring information were perceived by researchers as a means to an end, to be chosen when it seemed that the
information need that arose could best be fulfilled in this way, and if deemed suitable to their individual inclinations and capabilities. He concluded that there seemed to be little doubt that technological readiness played an important part in researchers’ move to the electronic era. For him it was not very clear whether the technologically developed environment brought greater acceptance of novel information seeking methods, or perhaps it was the other way round, with information needs driving the provision of appropriate technology infrastructure. Increasing adoption of electronic resources did not mean that all researchers were ready for them, and not even that those willing to accept some of the novel technologies were prepared to have them replace altogether traditional modes of communication and information gathering (36, 37).

King, Donald W and Montgomery, Carol Hansen (2002) provided the use perspective to determine whether the migration to the electronic collection an effect on information seeking and reading patterns of faculty and research students. They found that amount of reading remained high, outcomes from reading continue to be favourable, particularly from library provided articles. While 42% of faculty reading was from library provided articles, faculty still relied heavily on reading from personal subscriptions, most of the library provided reading was from electronic articles and readers spent much less time locating and obtaining library provided articles when they were available electronically (38).

Rudner, Lawrence et al. (2002) provided insight into the on line journal readership and their needs and interests using a short readership survey and
content analysis of most frequently accessed articles from two education journals. They reported that these journals reached a wider audience than many print journals. Readers reported that their primary purpose of the visit was to assist with class assignments and report preparation (39).

Chu, Heting (2003) reported what users and potential users thought about e-books from the survey on students that a third of the survey participants had used e-books in the past, mostly reading computer based e-books without special readers. “Available around the clock” and “searchable” were both chosen and ranked as the most important reasons. Those who had never used e-books mainly thought that e-books were “hard to read and browse” or “need special equipment”. However, about half of the non-users of e-books had planned to examine some e-book titles in the future (40).

Uddin, Mohammad Nasir (2003) reported the level of Internet use by university academics that Internet use by academics was useful for some common needs and that the academic rank of users was an important factor in determining the priority of needs. Suggestions were made to overcome barriers to adequate use of Internet resources and for increased use of the Internet (41).

Belefant-Miller, Helen and King, Donald (2003) reported along with their 1993 study findings that the e-mail was clearly the most popular use of Internet of University of Tennessee at Knoxville (UTK) Faculty. They spent 78.2 minutes per week using network for purposes other than e-mail,
accessing it most frequently one to five times per day, less than 25% had used numeric or other databases, but all faculty had used bibliographic databases. Increase in computer access did not result in a wholesale shift from paper to electronic databases (42).

2.3 IMPACT OF IT ON THE INFORMATION SEEKING BEHAVIOUR OF LIBRARY USERS OF VARIOUS PROFESSION

Cooper, Michael (1983) examined the usage patterns of the ELHILL retrieval program of the National Library of Medicine’s MEDLARS system, based on sample analysis of the frequency of various commands and command options, classified messages issued by the system, and investigated searcher error rates, suggested that several areas where query language and the system design could be improved. Concluded that some commands and some print parameters could be eliminated as Print parameters seemed to cause user problems and consolidation of the numerous options might reduce confusion and the capacity of ELHILL to handle large retrieved sets could probably be removed and to make user searching more efficient (43).

Sewell, Winifred and Teitelbaum, Sandra (1986) investigated end user searching of National Library of Medicine online databases during eleven years through transaction logs, questionnaires and follow up interviews and reported that the volume of searching was directly related to the convenient placement of the terminal in the work place. Slightly fewer than half of all potential searchers actually searched for themselves. Practices of pharmacists and pathologists did not differ in important ways. Non-mediated searchers felt
that they needed answers more promptly than those who obtained mediated searches. End users performed very simple searches, mostly using only the ‘and’ operator. Problems with techniques were fewer and more easily solved than those with the vocabulary and content of the system. The major problems, with the most powerful capabilities of MEDLINE – subheadings and explosions – sometimes caused substantial loss of references, but in relatively few searches. One-on-one teaching was most popular, with trial and error the most frequent procedure used in actual learning (44).

Gravois et al. (1995) reported from their study on information seeking practices of Dental Hygienists that many owned or had access to a computer yet rarely retrieved information pertinent to the practice of their profession through database searching. Word processing was most frequently used application. Computer applications used within the employment settings were primarily for business rather than clinical functions and concluded that these results were similar to other health profession studies (45).

Nicholas, David (1996) while evaluating the online searching behaviour of end users against librarians found that in some respects end users conformed the picture that information professional had of them viz., they did search with a limited range of commands, most of their searches produced no results, and search statements were simply constructed and suggested that otherwise, they could be very quick and economical searchers. There were variations between individual end users, and it was often possible to find an end user group that matched an information professional group on one aspect of online searching or another. The online behaviour of end users was very
much related to their general information seeking behaviour and to the fact that they were not trained (46).

Baldwin and Rice (1997) reported from their study of the information seeking behaviour of Securities Analysts that developed and tested a model that individual characteristics and institutional resources influenced the information sources and communication channels that use of these sources and channels influenced outcome of activities, and that individual characteristics and institutional resources both directly and indirectly influenced the outcomes. They found that out of one hundred security analysts surveyed, 96 respondents used personal computers at work and 63 respondents used personal computers at home. Ninety six respondents used computer driven quantitative models when doing research on a company or industry. Seventy Four respondents used commercial databases when researching a company or industry. Of these seventy four respondents seven used Textline, seven used Data Stream, seventeen used Nexis and sixty six used other databases. Fifty four of the respondents searched the commercial databases themselves followed by thirty six Research Assistants, five secretaries, nineteen by library staff. Forty nine respondents said that they had seen changes in their information seeking patterns as a result of computers. Thirty one always used a computer. Fifty five respondents liked some information pertinent to their research to see computerised (47).

Brown (1999) while assessing the information seeking behaviour of Scientists in the electronic information age based on a survey concluded that the information seeking behaviour might be influenced to some degree by
what was available for their use through the University of Oklahoma (OU) library system. Yet, several of the scientists looked beyond the collection at OU and found their needs were well served by electronic databases provided by organisations such as the Institute for Scientific Information and the Los Alamos National Laboratory. The scientists were embracing electronic bibliographic databases and would like to see the access to and the capabilities of these expanded. The data presented seemed suggest that a primary goal of science libraries should be to obtain access to as many appropriate electronic bibliographic tools and databases possible (48).

Majid et al. (1999) reported from their study that respondents visited their library for searching OPAC and scanning periodicals and noted that it would be interesting to study the effect that remote searching of OPACs, contents of periodicals and bibliographic databases might have on personal library visits (49).

Nicholas et al. (1998) reported their research findings on the study on impact of the Internet on information seeking behaviour in the media that Internet was low in use of many organizations and highlighted deep information conservatism in journalist profession in UK (50).

Wales (2000) reported from the survey of Veterinary Practitioners in UK that 29% used computer for information seeking activities. There was no significant difference between patterns of computer activity by practice type, size, or age group. 66% percent used Internet for work related purposes and a further 11% for non-work related purposes. It was found that the 31 – 40 age
group was the category using the Net the most (73%), followed by 41 – 50 age group (67%) and 51 – 59 age group (60%). Around 79% of respondents had email Address and the majority of them used email for work related communication. CD-ROM were used mainly for ‘staying current’ by 78% of regular users. Regular CD-ROM users overwhelmingly (89%) preferred to search CD-ROM rather than delegate the search. The rank order of preferred communication media were: email, paper documents in the post, Internet site, fax, telephone, floppy disk and audio cassette/other. They observed that many respondents might be using Internet and/or databases but were not high up at all in the overall scheme of veterinary information seeking (51).

Nicholas, David et al. (2000) reported from their survey of Journalists and Media Librarians that Internet use was light amongst traditional journalists due to poor access to Internet and good access to other resources. Older and senior journalists and New media journalists were the main users of Internet along with media librarians who were significant users. Searching World Wide Web was the principal Internet activity. Newspapers and official sites were favoured and searches mainly of a fact checking nature (52).

Costa, Sely and Meadows, Jack (2000) while examining the effects of using information technology on the communication of research by Social Scientists in Brazil reported that major changes in communication habits were occurring. These were already well advanced for informal communication and were beginning to appear for formal communication. Differences had been found between Economists and Sociologists, with the former more active in their use of electronic facilities. On the one hand, there were clearly
communal pressures on researchers to use electronic means of information handling and communication and on the other hand, there was institutional pressure on the research environment, by way of electronic facilities. The growing importance of IT, especially of Internet, was said to be introducing change in the social science community. Electronic facilities were seen as extending access to information and so helping to overcome local deficiencies in traditional information sources. One significant impact of information technology seemed to be an increasing democratisation of the international research community (53).

Mahe, Annaig et al. (2000) reported from their case study on how French Scientists were making use of Electronic Journals in their work at Jussieu Campus, that the researchers' practice was influenced by a whole range of intertwined factors viz., communication habits in the discipline, sharing of information, status, working environment and context, and other subjective factors such as personal or inherited working habits, greater or lesser individual motivation or reluctance etc. There was apparent reluctance among the Biologists and Mathematicians. Among Biologists this seemed to be connected not only with deeply ingrained working habits relying on print, but also with technical limitations which prevent them from fully realizing the advantages of electronic resources and with the fact that they did not feel at ease with information technology as a tool. There were similarities between biology and earth sciences, where electronic journals did not have advantages that fully justified their use. Irrespective of the level of motivation for or interest in electronic media, printed documentation remained important. A
shift towards electronic journal use was definitely emerging, though rather hesitantly, owing to a largely insufficient knowledge of this medium (54).

Hertzum and Pejtersen (2000) reported from their investigation on engineer’s information seeking practices based on case studies in two product development organizations that engineers search for documents to find people, search for people to get documents and interact socially to get information without engaging in explicit searches. In one case, use of electronic, with access to desktop computer, as well as paper based corporate archive was an internal source of information. In another case, the organisation’s Intranet was an internal source of information which provided a picture of the employees in their search for people and outlined how computer systems could support search for people (55).

Chandrakumaran Nair (2001) reported from his study on Oncologist working at Regional Cancer Institute, Trivandrum, India, that modern technologies in information storage and retrieval have greatly influenced the information seeking behaviour of the oncologists (56).

Haruna, Ibrahim and Mabawonku, Iyabo (2001) while examining the information needs and seeking behaviour of Lawyers in Lagos, Nigeria revealed that a small portion preferred using electronic databanks to seek information and a majority indicated that they would use them if they were more widely available. Concluded that electronic sources like Internet and databases were rarely consulted (57).
Hallmark, Julie (2001) reported from their study of Academic Meteorologists that the Academic Atmospheric Scientist visited the physical library much less frequently than in the past, substituting library Web pages as a major source and observed that they might have difficulties obtaining data and software described in published research as the complex models in meteorology were heavily data driven, and atmospheric scientists deal with challenges and frustrations surrounding the acquisition, storage, and use of software and data sets (58).

Singh, Surya Nath and Garg (2002) reported from their study that Biomedical information users depended on computer facility for various purposes viz., state of art reports, article writing, general awareness, report preparation, answer to specific queries, lecture notes, clinical practice, decision making especially epidemic and emergency cases. Concluded that though they received their information through conventional and non-conventional sources still preferred computer based services (59).

Guha, Bimalendu (1995) reported from the study on the use of MEDLINE CD-ROM database in some Delhi libraries and reported that the respondents preferred CD-ROM search to Indus Medicus because (a) it was quicker (b) it provided abstracts also (c) literature search work could be easily delegated to information workers/others (d) provided better retrieval due to in-depth indexing/free term search facility and (e) other reasons. On the vital question of retrieval efficiency of MEDLINE, the experience of the users was that, on an average they could retrieve only 47.9% relevant items, 34.3% not so relevant items; 22.4% irrelevant its, and 13.4% uncertain items (60).
2.4 IMPACT OF IT ON THE INFORMATION SEEKING BEHAVIOUR OF CORPORATE LIBRARY USERS

Warder, Carolyn (1981) reported from a survey of primarily first time and remote site users of online search services that were available from the Corporate Research and Development Library at General Electric that searches yielded a high percentage of relevant citations for most users. A further correlation between the users' responses to broad relevance categories and their presence at the terminal during the search reconfirmed the importance of interactive feedback between the user and the search intermediary in improving search precision. The study identified significant timesaving by the users. Most respondents endorsed the cost effectiveness of the service, particularly those involved in ongoing research projects or starting a new project (61).

Hoskin, Adele et al. (1982) presented the growth and decentralization of the library of Eli Lilly and Company along with the growth and diversification the company. They reported that the use of online databases enabled the library to increase its productivity. The librarians could respond faster and more completely to the scientists' requests for information. Online database searching accounted for about 60% of the reference questions, using an average of two databases per search. Most laboratory scientists were not familiar with the procedures for accessing the several databases that were available. Users looked forward to desktop access to the library's holdings from a terminal in the lab (62).
Erickson, Linda and Pruett, Nancy Jones (1989), reported from their planning assessment at Sandia National Laboratories to implement end user searching. Based on a test of DIALOG Corporate Test Project in which a Test group of fourteen technical users selected from among volunteers to test in order to decide to provide the service at the Library, they stated that 11 of 14 users said they would want the service. The test group estimated that between 10% and 25% of the technical staff who would want the service. One of the possibilities of end user searching was the potential to fill unmet needs for information. The test group searched 51% of the time for information they would not have "bothered" the library about. Reported the user comment that "when information was rapidly accessible, questions start being asked which otherwise would be ignored" and that "many of his coworkers would not have gone to the reference library even though they did have questions". Many in the DCC Test Group found information with DCC that they would not have found otherwise (63).

Matarazzo, James and Prusak, Laurence (1990) reported from a survey of corporate managers of 164 US libraries and information centers to assess the value placed by senior level executives in their libraries, that while print materials still showed good value, databases provided key value to library users. Almost 80% of survey respondents cited database searching as a key library services. End users, especially those with computer knowledge, often saw need for an intermediary to do the searchers (64).

Handman, Pamela (1991) while describing the design and functioning of ISCLine, a menu driven information system developed by Cetus
Corporation's Information Services Center for company wide use, reported that ISCLine was used by a cross section of company employees at all levels and from all departments. The primary use of the system was reading the current day's news. Many read the news daily and some even had their secretaries printed out the news first thing in the morning. Further reported that after the addition of news option about five months after ISCLine was introduced, the system's use increased dramatically. Employees had reason to go into ISCLine and once they did, they began to use the other options more. It was found that ISCLine was attracting employees who had not been previous library users (65).

Cloyes, Kay (1991) surveyed the users of Caterpillar Inc, Technical Information Centre, Illinois in order to find out the user needs and benefit of library services and reported that online catalogues and searching, had relative low usage in 1988, but showed significant growth by 1990. Online searching, such as DIALOG, was used frequently by librarians to handle reference requests, but was not generally a service that users requested. In-house databases had been available since 1986, so the change in number of users from 1988 to 1990 indicated the growing use of online searching (66).

Smet (1992) reported from a survey of Innovation Engineers of a large company to investigate the information behaviour that less than 5% of the respondents preferred electronic carriers altogether for information gathering. On information production and dissemination behaviour, the electronic channel scored 16% of daily use, but was still low taking in account of the electronic oriented environment of their education and company they were
working in. On information storage, 8% used a storage system on computer. In ‘Critical Incident’ information behaviour against everyday technical information problems, more electronic sources were tried, 19% as opposed to 5% while information gathering (67).

Pangannaya and Ramakrishna (1993) while studying the information gathering habits of R&D personnel of few large scale industries reported the use of databases by 5.05% of the respondents (68).

Auster and Choo (1994) investigated how CEOs in the Canadian Publishing and Telecommunications industries acquired and used information about the business environment and reported that the least frequently used sources were conferences/trips, government officials, and electronic information services. In terms of accessibility, electronic information services were ranked eleventh among other things. Broadcast media and electronic information services had the lowest mean quality scores, implying that information they provide was seen to be less relevant and reliable. For electronic information services, perceived environmental uncertainty, perceived source accessibility, and perceived source quality accounted for 48% of the source use variance (69).

Kennedy (1996) reported the Corporate Library Group (CLG) of Digital Equipment Corporation’s pilot project of a Web based information solution on Digital’s Intranet: the WebLibrary that the WebLibrary became a popular space on the Intranet with the user base increasing leaps and bounds.
It was reported that they had almost 900000 user sessions, twice as many as in the previous quarter (70).

Commings, Karen (1997) presented the effect of hosting *Chevron Petroleum Technology Corporation*’s complete library catalogue of various locations on the Intranet, the internal corporate computer network that the company employees worldwide accessed the library catalogue on the Intranet more than 30000 times per week for searching and sent loan requests. It was reported that the more interlibrary loans were processed as a result of the availability of their holdings on the Web. The email request application for library resources served to alleviate the time zone problems and it was thought that the electronic accessibility was really a step forward, and as more remote locations came online, the library expected more electronic requests for its library and technical reports (71).

Sherwell, John (1997) reported the efforts of Information Management (IM) Department of *Smithkline Beecham*, implementing a policy of delivering more and more information products to the desktop. It was reported that library services was an early player in the provision of databases at the desktop, with access to details of library collections via OPAC. The document requesting system based on a *Windows* client and *Ingres* database was one of IM’s most popular applications, handling 120000 document requests during 1996. It was reported that a new strategy was needed since a more computer literate customer base was starting to demand more information at the desktop. Customers requiring documents for their research were not
concerned whether these were held locally in the library or obtained from outside, as long as they could be delivered (72).

Ellis, David and Haugan, Merete (1997), while modelling the information seeking patterns of Engineers and Research Scientists at Statoil, an international oil and gas company, concluded that, Research Scientists used computerised alert profiles for the monitoring of particular topic more frequently. When approaching a subject field unfamiliar to them, they usually chose retrospective computerised literature searches as a starting point and mainly relied on the library and the competence and skills of the librarians when choosing information channels, especially for computerised literature searching. They made use of the information services provided on the network more frequently than engineers, whereas engineers employed librarians as intermediaries, for computerised literature searches (73).

Hansen, Mary and Curtis (1997) while giving insight into the Chemical Information Service in industry observed that some chemists preferred to do their own literature searching, but their online search skills were often rudimentary. Suggested that one of the challenges for the information professional was to convince the chemist that an intermediary could produce better results, at a cheaper price, than the chemist could. Regarding Internet it was indicated that the general perception was that everything is on Internet and everything on the Internet is free existed at many levels of society. Educating the corporate management, as well as the library clients, about the realities of the accuracy, reliability, longevity, and cost of information found on Internet presented a different type of challenge for corporate librarians.
Also, providing Internet information and/or access encouraged a closer relationship with the corporate information technology or computer systems organisation (74).

Park, Soyeon (2000) addressing the crucial issue of how to support effective interaction of library users with heterogeneous and distributed information resources in digital library environment, compared the usability, user preferences, effectiveness and searching behaviour in systems that implement interaction with multiple databases through common interface and with multiple databases as if they were one (integrated interaction) in an experiment in the Text Retrieval Conference environment. Significantly more subjects preferred the common interface to the integrated, mainly because they could have more control over database selection. Suggested that the general assumption of the information retrieval literature that an integrated interaction was best needed to be revisited, it was important to allow for more user control in the distributed environment for digital library purposes, it was important to characterise different databases to support user choice for integration and concluded that certain users preferred control over database selection while still opting for results to be merged (75).

Stratigos and Curle (2000) reported in their comparative study of end users’ information habits and behaviour concerning the Internet versus Commercial desktop information products that continued low brand awareness for desktop products, low levels of formal instruction for searching, gathering and evaluating information but with high level of user confidence and skills, consistent overall time spent using information with
other studies. For users desktop products had quality, credible sources and they spent more time analysing data and vice versa for Internet users. Users were skeptical and critical about sources of information and used variety of methods for verifying information. Time saving as a biggest impact of desktop and Internet users, internet had a positive impact on their jobs. Internet users were not sensitive to the use of advertising in fee based information products, Internet was a tool for day-to-day research and decision support (76).

It is evident from the literature thus reviewed that most of the earlier studies have been carried out dealing with one or a combination of few aspects of application of IT in Public, Academic, Special libraries and users’ information seeking behaviour thereupon.

Some of those aspects that are studied include Library IT Infrastructure, Users’ attitude towards IT, Access to Computers, Use and Non-use of computers, Frequency of use of Computerised Information Systems, Electronic Information Services and their Use, Use of Print Vs Digital Information Sources, Online Bibliographic Search capability, Online Databases, Online Search Behaviour, Use of Computerised Retrieval Systems, Online Intermediary Vs Human Expert Intermediaries, OPAC, Print Vs Digital Full Text, User Migration from Printed to Electronic Information Resources, Electronic Journals and their use, E-Books and their Use, Use of Internet and its resources, Electronic Environment, Comparative studies of conventional and electronic environment, New and Innovative Information Services and Users’ Response etc.
This study attempts to combine Corporate Library Users’ Information needs and collection, information awareness and channels, use of variety of IT based information resources and IT based Library and information services, Users response and their information seeking behaviour in the changed environment.
2.5 REFERENCES


Available at: http://InformationR.net/ir/6-2/ws8.html


Available at: http://www.dlib.org/dlib/december02/king/12king.html


68. Pangannaya, N B and Ramakrishna, R. Information gathering habits of R&D personnel of selected large scale industries. *International Communication and Education*, 12 (1), 1993, pp. 25-42.


