CHAPTER- 2
STUDIES ON INFORMATION SEEKING BEHAVIOUR:
REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

Any research study takes the advantages of the knowledge which has been
accumulated in the past as the results of the constant human endeavor. Careful review
of the nascent literature published in various media on the problem being investigated
is thus one of the important steps in the planning of any research.

Literature review is concerned with the survey of a particular work or a work
published in a particular field or topic. It demonstrates one’s knowledge in a particular
field. Justifying the reason for one’s research it allows a researcher to establish his
theoretical framework. The need for literature review has become inevitable as it
provides a handy guide to the particular topic being taken up. It provides the latest
information for the relevant work and a comprehensive knowledge to a researcher.

Information seeking behaviour is one of the important key concepts of user’s
study which covers various facets like information, need, use, access pattern,
behaviour in different environment, etc. The study of information need and uses were
very limited till the early second half of 20th century. A significant change occurred
since 1966 and it has been growing and making headway. A review of ‘information
need and uses’ was conducted annually and contained in the Annual Review of
Information Science and Technology (ARIST). It helps in updating with the major
developments. The growth of literature reporting information needs and uses
continued in the field of science and technology in
1971 in various universities and became a major area of research. Most of the studies on it are found to be conducted in all branches of knowledge, science and technology, social science and humanities area as well. The study such carried out ranged from individual study to high level group study.

2.1 PURPOSES

The purposes of the present literature review are:

a) To understand the problem under study;
b) To summarize the literature in a field;
c) To identify gaps and also to interpret new ways to interpret;
d) To avoid unintentional duplication of well established findings;
e) To define the limit of the study;
f) To make the objectives of the present study more clear and concise;
g) To explore the studies related to work or topic taken up to understand the relevant work; and
h) To understand the latest developments in the field of study so as to help in designing the study.

2.2 MAJOR STUDIES

Some of the important major studies which had contributed and impact on the users study are briefly highlighted in the following sections.

2.2.1 Study by John Hopkins University

A series of studies were conducted by the American Psychological Association (APA) of John Hopkins University in 1970s. The studies were mainly conducted on the psychologists by the Centre for Research in Scientific
Communication which was founded in 1966. This centre conducted a number of studies on information needs and uses since its formation.

2.2.2 INFROSS study

In 1967, Bath University, England had conducted the project Investigation into the Information Requirements of Social Scientists (INFROSS). The project studied about the social scientists of England. It emphasized exclusively on the information needs and uses of references, indexes, abstracts, library catalogues, and bibliographies and on the use of books and references.

2.2.3 Study of University of Sheffield

Centre for Research on User Studies (CRUS) has been established with the financial help of British Library Research and Development Department. Several studies were conducted by this centre since its formation on information needs and behaviour in humanities. It had also carried out several projects.

2.2.4 Updated INFROSS Study

Slater conducted a study on Social Scientists’ information needs in 1988 (as asked by the British Library). Slater gave an updation to the INFROSS study. His study was small but was a qualitative study of social scientists. In 1990 also, he conducted another study on applied social scientists in United Kingdom and gave certain recommendations as per the study.

2.2.5 Medical College of Ohio Study

Jonathan Hartman, Reference Librarian, Medical College of Ohio, Toledo conducted a research on Information needs of Anthropologists covering seven universities in the 1990s and the paper was published in 1995. It discussed about the ways for locating the information of value to them and about the information sources they used.
2.2.6 Nilsen (Scientist’s) Study

Nilsen’s conducted a study on Social Science Research in Canada in connection with Government Information policy in 1998. He researched the use of the statistics Canada and focused on its changes to electronic formats with the change in information policy of Canadian Government.

2.2.7 Scientist’s Study (Meho,L.I and Hass,S.W.)

In 2001, Meho and Hass conducted a study on information seeking behaviour and use of social science faculty studying stateless Nations. It is one of the latest study or research conducted on social scientists. It focuses specifically on the usage of government statistics in social science research.

2.3 SCOPE AND COVERAGE OF THE REVIEW

The present review has covered 154 (one hundred and fifty four) literature which are directly or indirectly related to the topic under study. Literature published during 1970-2009 have been covered collected from various sources such as journals, conference/seminar proceedings, e-journals available under UGC-INFONET Digital Library Consortium, other articles from various academic websites, chapters in the edited volumes, etc. Review of these studies has been covered different aspects of the users study which have been divided into the following sub-sections:

- Literature study
- Information Needs
- Information Access/Use Pattern
- Information Seeking Behaviour
- Bibliometric Study
- Information System
2.4 LITERATURE STUDY

Few among the researchers are found to be interested in studying literature related to use, need and information seeking behavior as the following review indicated.

Stone (1982) reviewed literature on the information needs and use of Humanities Scholars in University. The same has shown that the literature was piecemeal, at times confusing, and provided guidelines to librarian. Dervin and Nilan (1986) reviewed studies on information needs and uses in ARIST for the period of 5 years of the 1980’s and set the outcome of user studies in the field of library and Information Science and related field. A short review of researches on information needs of scientist have been done by Zumer and Knjiznica (1994). The studies began shortly after World War 2 and now they are becoming more specialized. The review of studies related to the information needs and communication behaviour of scientists by Yang (1998) aimed to explore the factors that influence their needs and methods of problem solving. Convenience of information access has a direct effect on the efficiency of a scientist’s research. An awareness of this should lead librarians to improve collections and user services for the benefit of scientists. In a study on Web Search Behaviour, Hsieh Yee (2001), has reviewed the studies conducted between 1995 to 2000 on web search behaviour, analyzing the report on Children and Adult on their information seeking behaviour which have shown that 57% of internet users search the web each day and internet has become one of the most powerful information sources for many users.

In a literature review on information seeking behaviour of academic scientists in electronic age Milar, (2002) has observed the use of scholarly journal as the most important channel of communication for them. In that study many barriers and advantages were acknowledged and drawn more and more scientists
into the electronic information world. Maceviciute (2006) has explored the published research works on information needs in Lithuania and Russia from 1965-2003 retrieving data from the abstracting Journal Informatika-59 analysing Lithunian and Russian libraries or the internet. In a qualitative review of the literature on personal health information seeking Stravri (2006) has discussed about the establishment of personal Health Information Seeking of the patients and health education on Information seeking activity.Khongtim, (2006) has reviewed studies on information seeking behaviour on internet by different users’ community showing how people search the required information from the internet. The study also has shown that using different strategies the users are able to get the required information, however most of them felt the need for instructions and training in that regard.An analysis of the literature published in Spain, during 1994-2004 has been made by Aurora and Francisca (2007) to assess the information needs and users. Spanish journal and the papers of Conferences held in Spain in the field of information needs and uses during 1990-2004 were taken into account. The review has revealed that in Spain, information needs and users were not a well-developed area and no change in the orientation towards a user-oriented model.

2.5 INFORMATION NEEDS

Literature on information needs is many to cover. Some selected such literature are being reviewed in this section.

A synoptic view has been presented by Neelameghan (1977) studying on Information Needs and Information sources of Small Enterprises discussing problems while providing and accessing information. The study has shown that information services like Referral services, Current Awareness services and specialized services are helpful to the entrepreneurs. In another sample analysis on Meeting the Information needs of Research Scientists of INSDOC’s document
supply services Yadav and Karanjai (1978) has discussed about the operation of the service and other needs as felt by the scientists. Streatfield (1978) has discussed about the information needs and services of 18 English social services department which has been visited by the project INISS staff. Wilson, et al (1979) reported the findings of the second phase of the project INISS on Information needs of local authority of four Social Services Departments using structured interview with 151 numbers of staff. Relating Information needs to learner characteristics in higher education has been studied by Ford (1980) which identified information handling skills, assessment procedures, information accessing system as needed for accessing to wide range of information sources. Salman (1981) in a study has provided the conclusion of the analytical case-studies on information needs of the eight developing countries of the world namely-Columbia, Costa Rica, Jordan, Kenya, Republic of Korea, Malaysia, Morocco and Nigeria. The study was undertaken by the UNESCO and the United Nations Interim Fund for Science and Technology for Development (IFSTD) to determine the real needs and options for access to information in these countries. In an attempt Karki (1982) analysed needs of Indian industries and identifies the industrial information frequently sought which is based on survey by using queries received by the industrial information service of the Publications and the Information Directorate, New Delhi. Analysing the Information needs and users in Education, Summers, et al, (1984) has identified the relationship between education position & purposes in seeking information and sources of information used taking into account the public school educators in British Columbia. In a case study Maheswappa & Trivedi (1986) discussed the information needs of India Food Scientists evaluating the services provided to them at CFTRI, Mysore. The study was conducted using Questionnaire method which covered 100 scientists. The findings of the study have helped to those involved in planning and execution of effective information services in the field of food science and technology. Raina (1987) studied on Information needs and
publishing habits of Geoscientists considering the two main technical services rendered by Wadia Institute of Himalayan Geology (WIHG) library. Questionnaire and face-to-face interviews were adopted in the study which have made suggestions for fulfilling required information of Geoscientists. Studying on Satisfying Reader’s Information needs in a Nigerian Research Institute Apeji (1988) has described the development of effective information dissemination mechanism as suitable to the user’s information needs in the library of the Rubber Research Institute of Nigeria. Two set of questionnaires were designed for the librarians to collect data. In a survey by Borah (1990) on the Social Science Information needs of extension education Scientists and Students of Agricultural University has shown that extension education Scientists, teachers and post graduate students have collected information from different sources. The study also found use of unpublished dissertation as a main source of information by the students. Korah and Devarajan (1991) has studied the information needs and use pattern of 69 Rubber Scientists of Rubber Research Institute of India, using questionnaire. The study has suggested different relevant aspects like use of foreign language journal, user education programmes, build up dissertations and theses and introduction of modern services.

Choguill, et.al. (1992) studied the Construction and Housing Information needs in the third World. This survey has determined the future information services and five guidelines for future database development. Kolozs (1992) uses a questionnaire survey to identify the information needs of the vocational secondary schools teachers. Teachers need information related to the subject they are teaching and the need for teaching information are the two main findings of the study. The study also mentioned their satisfaction to special literature and half demands are able to be met by the school library. The survey conducted by Butterwick (1994) is on business information needs in Northern Ireland has shown about the most interested topics to business, the internal facilities available
while accessing information, attitudes to business information provision, sources of information used, ranked list of sources used, information gathering habits, spending on information and preferred media. Analyzing the data that were collected on information needs during internet training from students at Indiana University, USA within the year from 1993 to 1994, Hert et al. (1995) has identified the sources used while determining the needs and events which influence the needs. The study also mentioned many suggestions for internet trainers. Research conducted by Agrawal and Chakraborty (1995) has discussed about the Information needs and use pattern of Earth Science Scholars of Banaras Hindu University using questionnaire method. The study revealed the need for increasing the collection, implementation of various services, resource sharing, organize user-education programme in the library, etc. While studying the status of tribal libraries in the USA as identified by Native Americans Patterson (1995) the information needs of the tribal members has also been identified. The information needs as identified by tribal members include about employment, vocational training, legal and civil rights and health. Devadason and Lingam (1996) in a study has identified the information needs for designing information system to provide effective information services. While gathering of information one should follow step by step procedure for careful selection and blending of several techniques depend on the users as the study shown. In the study on information needs and seeking behaviour of extension specialists and technical officers of National Agriculture Extension and Research Liaison Services in Nigeria, Izah (1996) has revealed that variation in searching for information, interaction with colleagues and search pattern affect their Information Seeking Behaviour. The Information needs and sources of information used by the primary health care workers in the Upper East Region of Ghana covering nurses and midwives have been investigated by Apalayine and Ehikhamenor (1996). The same has established that they need certain information for their work and preferred socio-cultural information sources. The study appraised the government of such
information needs and to look into it, so as to solve problems for them while obtaining information. A survey on Information Needs of the companies in the rural areas of the North East of Scotland was conducted by Marcella (1996) using questionnaire, interviews and case study methods. The same has mentioned about the information providers available to the rural businesses, the use pattern of such agencies, the respondent’s nature, information needs, and difficulties faced while accessing information and their attitudes towards information technology. In another study Dilon (1997) describes the information needs of the secondary school teachers in the rural New South Wales, Australia. Three aspects of professional development needs for use of and access to professional information are also mentioned here. The study has revealed that Librarians have played a great role in providing information needs to secondary teachers and the computer network as a means to overcome the problems of teachers and geographical isolation. In a similar project, Oosthuizen (1998) has determined the information needs of 206 teachers from 42 primary and secondary schools in the orange farm area in South Africa. The study suggested to have a mobile library service for the teachers working in the area. Niongmeta and Ehikaminor (1998) carried out a survey about the needs of health care information from 200 health professionals in Cameroon using questionnaire. The survey pointed out the requirement for health information for awareness, diagnosis and effective patient management and about new drugs. Raddan and Smith (1998) identified the information needs of refugees residing in UK to develop strategies to meet these needs. The information and feedback were obtained from participants at a conference held to discuss the preliminary results through questionnaires and letters sent to libraries, information centres and chief librarians. While studying the Information need of the Totos, a Sub-Himalayas Tribal Community, Chakrabarti and Basu (1999) revealed that the Information needs of a community depends upon its economic conditions and there are different factors for development of a community like information on political conditions’ relationship with the community, the electoral process and
government needs for infrastructural resources, etc. In a conceptual investigation on Information needs, Mahapatra (2002) analyzing the factor needs, affecting needs, types of information needs and environment aspects have revealed that they are responsible for developing a system approach of information needs. While carrying out a study adopting questionnaire with respect to information needs of sericulture scientists in India, Manjunatha and Asundi (2004) noted that the Apex body (Central Silk Board) has to be made responsible for formulating of policies regarding development of sericulture information services in the country. In a study on Personal anticipated information need Bruce (2005) has described the role of personal information collections as the feature of personal information management. It also examined the literature of information needs and Information seeking behaviour which enable to formulate 5 (five) propositions that elaborate the concept information needs. Studying on the Nature of Information needs and strategies for their investigation in youngsters Shenton and Dixon (2005) has revealed that the information needs of young people play an important role in the development of information services for this group. Wilson (2006) on user studies and Information needs has shown that the investigation on information needs within use study has discussed the issues of user studies and information needs within information Science and problems faced like failure to use appropriate definition. Using Questionnaire Safahich and Singh (2006) assessed information needs of international students at the Malaysian University. The study found students using library to meet their information needs though the library usage was generally low. In the recent study conducted by Amin and Shima (2007) using questionnaire on Information need and information seeking behaviour of Professional at Irankhodro Axle Manufacture Company in Iran has examined the role of (a) the library and librarians in the searching process and (b) new information environments in the information seeking process. In a research study on what is enough? Satisfying information needs, Prabha et.al. (2007) has shown how the users know the right time to stop about searching the information. The
study adopted group interview to investigate required information needs of the faculty members and students and also discussed the academic library user describing both qualitative and quantitative criteria. In a report submitted by Yadamsuren (2007) on the study of information needs of Mongolian Scholars using in-depth interview and survey certain indications have been thrown out. The study which covered 134 researchers from 15 different research institutions of Mongolia had strongly recommended to strengthen the local information and library services to suit the information needs of the researchers. Bigdeli (2007) studied Iranian Engineer’s Information needs and seeking habits in an agro industry company in Iran adopting Questionnaire using Likert-type question covering 150 respondents. The result has proposed that the librarian should follow Zipf’s principles to serve their clients. Identifying three important dimensions of need like sociological, cognitive and ecological information needs in a case study on information needs of NGO development workers in the northern region of Ghana conducted by Nikoi (2008) has shown the information behaviour of non-governmental organizations. The same was based on qualitative study conducted between 2001 and 2005.

2.6 INFORMATION ACCESS/ USE PATTERN

In this area a sizeable number of studies are found to be carried out. Some available literatures in this area are being reviewed here below:

Saha (1978) conducted a survey at IIT Delhi library to find out the use pattern of the library. Based on his findings, some observations relating to the functioning of the library were made to make each services more need oriented. The study undertaken by Satish and Inamdar (1987) on Information use pattern of Rural Development Scientists has shown the nature of use of important source of information by researchers at National Institute of Rural Development, Hyderabad. The same using structured questionnaire covering 93 researchers has
suggested the need for intensive documentation services. Patwardhan and Kumar (1988) surveyed on promotion of information use in industrial environment using the questionnaire method to gather information on user behaviour and needs. The survey result have shown many clues on many aspects and called for the need for a proper design and execution of marketing plan for utilization of TIC resources. In another survey, Devarajan (1989) assessed the information needs, use pattern of information, and information gathering behaviour of the humanities scholars working in the various departments of the University of Kerala. Chandel (2000) while conducting user studies of the two ICSSR institute ‘libraries in Madhya Pradesh (a) Dr. Baba Saheb Ambedkar National Institute of Social Sciences (BANISS), Mhow and (b) Madhya Pradesh Institute of Social Science Research (MPISSR), Ujjain assessed the users’ attitude towards the information available in the libraries and effective services rendered by them to the users. Vijay Laxmi and Maheswarappa (2001) studied on Information use pattern of post-graduate lady students of Gulbarga University, Gulbarga with an attempt to assess the types of information required, purposes of using Information and various methods and services. The study revealed the need for educating the students in the use of Information sources, library, its resources and services. While conducting a survey on the use pattern of periodical by medical practitioners Biradar, et al (2001) has revealed that about 76.67% and 75% of medical practitioners need current information on new procedures and medicine respectively, 56.67% need periodicals through medical associations, 86.67% need current information through seminars, conferences and workshops while 57.67% and 53.33% use e-mail and internet respectively as a main communication media. Study carried out by Manjunatha and Shivalingalah (2003) on Information access in libraries, noted the tremendous growth of information both in print & electronic media. They also opined that present day technology gives the users with wider scopes for seeking information which helps them to possess technical skills. Tenopir, et al (2003), investigated the patterns of journal use by Scientists through three
evolutionary changes while accessing electronic journals and articles. Early phase shows introduction of electronic journals, on evolving phase many scientific Journals were available on CD format, etc and last phase was advancing phase which include searching capabilities advanced features, full text of individual article, core journal, etc. Using a structured questionnaire, Ojha (2004) has investigated the information needs of the newspaper journalists in India. The study has found that the journalists were dependent on source types and personal communication with journalists and the newspaper library within organization was the most useful informal channel. Information as a gap bridging has been studied by Savolainen (2006) using the view point of sense-making methodology. It also showed how people designed information in the context of use studies in that regard. Based on a nation-wide survey of academic in British University, Gardiner and Chowdhury (2006) assessed their information use patterns comparing information behaviour in three disciplines. They used printed information resources rather than electronic resources as the survey result revealed.

2.7 INFORMATION SEEKING BEHAVIOUR

Literatures on information seeking behaviour are too many to cover in the review. The following review shows different aspects on it.

In a comparative study on Scientists and Social Scientists as Information Users, Skelton (1973) has shown that Scientists and Social Scientists used the same information sources, used similar method to retrieve information and they did not differ to any large extent in their information seeking behaviour. Analysing the inside of the search process, Kuhlthau, (1991) has studied Information seeking from the user’s perspective. The study has discussed about the users perspective of information seeking and present a model of information search process derived from a series of five studies which investigated experiences of users in information seeking. Beautieu (2003) studied on approaches to users based studies in
information seeking and Retrieval. This Sheffield perspective has shown the development of user-based research in the Department of Information Studies at the Sheffield University over the past period of 40 years and assessed the research questions and main characteristics of projects. The study found that user based studies has link with studies on information used, Information seeking behaviour and design and evaluation of actual retrieval systems. Kakai (1978) studied the Information seeking behaviour of undergraduate Students of Makerere University, Uganda using cross-sectional survey with sample of 104 respondents from the Department of Bio-Chemistry and History. The Ellis six generic information seeking activities were also tested in the study. The characteristics of Information Seeking Behaviour of Area Specialists of School of International Studies of the Jawaharlal Nehru University undertaken by Sethi (1987) have implicated three areas of library working, i.e. collections, material organization and Staff Organization. Research on patterns of Information Seeking in the Humanities conducted by Wiberley and Jones (1989) has shown how they seek Information and ignore on-line databases and rarely consult with reference librarian but depended on archivists. They were found more dependent on formal bibliography and employed it when explore new topics. Using questionnaire Karisiddappa, et al (1989) investigated the use pattern of information of the Indian historians. Focusing on the use of different sources, various approaches to locate information, and problems faced while using the information, the study highlighting about the awareness and advantages of the information services of the National Social Science Documentation Centre (NASSDOC), New Delhi, has suggested the need for proper planning and organization of information services of the centre. Kumar (1990) studying the Information seeking behaviour of Sociologists pointed out that the sociologists information differ from other social scientists and they used information while selecting topics, compiling bibliography, identifying relevant journals, etc. The study suggested that there should be interaction between the library staff and Sociologists to help in bridging the barrier between
them. Saraf, et al (1990) while surveying Information seeking behaviour of research scholars in North-Eastern India covering North Eastern Hill University and Manipur University have shown the development of social science research in these Universities, and found the problems faced by the Scholars and the information needs of the users and their attitude on information seeking were needed to solve the problems. The study also suggested the need of resource sharing among these Universities. NISSAT study on Information Seeking and communication Behaviour of Indian Scientists (1993) has covered 148 respondents chosen from six research institutes and research cum teaching Institutions in Delhi. The same noted that 28% of the scientists visited their library to select & borrow books, more than 26% of them to browse through latest issues of periodical and 21% to browse through new books. Mary (1995) studying on Information seeking patterns of social sciences has implicated the need for development of Reference services. It also identified the importance of journal, use of citation information from journals, colleagues and conferences as information source and use of library resources. Adedibu and Adio (1997) investigated the information needs and information seeking pattern of Medical students at Ladoke Akintola University of Technology (Lautech), Ogbomoso, Oyo State, Nigeria. 70% of them were found to spend 3-8 hours per week in the library for consulting books related to their area of specialization while 68% dealing with library staff for searching their choice books. Information needs of UK rural communities have been investigated by Mercer and Wetherspoon (1998) by conducting a survey through questionnaire. The study has shown the obstacles before the communities while gathering information and information access through IT (Internet and World Wide Web). As revealed by the study the use of information technology has a great trust in providing the information in rural communities. Fidzani (1998) conducted a survey through questionnaire to the 144 students out of a total of 233 part time and full time graduate students in order to determined the information seeking behavior and use of information resources by
them at Botswana University. The study also shown that the students give more emphasis on periodicals and textbooks rather than the library resources and services. The study on Insights into Information seeking and communicating behaviour of 105 academics conducted by Ocholla (1999) in relation to the productivity in South-Africa Universities has found use of local environment as prominent in intra and inter universities information access network and system that could solve the problems of budget on acquisitions. Limberg’s (1999) study on experiencing information seeking and learning has shown the use of phenomenographic method to investigate variation in people’s ways of experiencing phenomena in the world. The study noted three important ways of experiencing Information seeking. In another study Kurrupu (1999) stated that the studies on information needs, information seeking behaviour and methods can be used in designing and developing information systems and services to satisfy the needs of workers in an organisation. It is also opined the findings of such study can be used in deciding the design of information system and services and the impact of it on Information seekers and their behaviour. Marcella and Baxter (1999) conducted a survey on information needs and their seeking behaviour of a national sample of UK population. The survey revealed that majority of respondents seeking past information and using it to forecast future information needs. Three quarters of the respondents are found to use public libraries and between half and three quarter deals with citizens’ advice bureau, post offices, government departments or family or friends. The most popular ways of accessing information were face to face communication and reading books. Only few proportions used computer to access information and public libraries are considered as the suitable place for gathering electronic information. Information seeking as socially situated activity has been discussed by Lueg (2000) focusing on the implications of situatedness in its social & cultural meaning. His study followed some of the varying meanings of the term situatedness and outlined how interpret accounting for situatedness in the context of Information seeking support.
Alemna and Skouby conducted a survey by using questionnaire in order to meet the information needs and information seeking behavior of Members of Parliament in Ghana’s Legislature and concluded that a better understanding of the question is fundamental for achieving their objectives. Accessing Information use by humanists and social scientists has been assessed by Tiratel (2000) in a study conducted at the Universidad de Buenos Aires, Argentia. The same has found no difference between humanities and social science scholars in Anglo-Saxon countries. It also found that scholars in these two areas have similarities in information seeking behaviour. Branch (2000) investigated the Information seeking processes of Adolescents in the context of the value of using think Alouds and think Afters. The same has used Microsoft Encarta 98 evaluation as the method for the study of the information seeking process of 12-15 years old student. Concurrent verbal protocols (Think Alouds and Think Afters) were found to be important to understand how adolescents interact with CD-ROM, encyclopedias. In a study by Wilson (2000) on Human Information Behaviour has shown Information seeking behaviour as the purposive seeking for Information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual Information systems (newspaper or a library) or with Computer- based systems i.e. Web, etc. In a conjectural Approach Mahapatra and Panda, (2001) has explained the theory of information seeking behaviour highlighting the concept, associated psychological attributes, behavioural options and ecological influence, impact of dissonance theory, different methods and categories of information seeking, etc. The different models of Information seeking behaviour and their implications as well have also been emphasized upon. Tripathi, and Prasad (2001) conducted a comparative study on the Information seeking behaviour and the use of information sources in physical sciences and the Social Sciences which shown the various sources and methods followed by them in seeking the information giving emphasis on various types of information and bibliographical sources used by the scientists. Meho and Haas
(2001) in studying the Information seeking behaviour of social science faculty have extensively used citation analysis, and follow-up inquiry. Two questions were discussed – how these faculties locate relevant government information and what factors influence their seeking behaviour and use of such information. The study carried out by Haruna and Mabawonku (2001) on the information needs and seeking behaviour of lawyers in Lagos, Nigeria have shown that many lawyers need the latest decisions of superior courts as their most professional information needs. Knowing recent legislation, Information on national and international seminars and conferences and information on application of legal know how have been given importance. It also felt the library as the most consulted information source, however librarians’ role was unsatisfactory in this regard. Singh’s (2002) study on Information seeking behaviour of the 70 farmers of Punjab using questionnaire of Narli Village has discussed about the farmers using different types of information sources like seeds, fertilizers, etc. The study also revealed that the information need of the large farmers have much greater reliable than the medium and small farmers. Study conducted by Spink, et al. (2002), on Multitasking information seeking and searching processes has shown people seeking and searching information retrieval (IR) system for information in multitasking purposes on more than one topic at the same time. Incorporated multitasking information behaviour was presented and a theoretical frame work for human information coordinating behaviour was also proposed by the study. “Serendipity” in the context of information seeking as something of a paradoxical concept has been empirically studied by Foster and Ford (2003). The same has presented an analysis of a larger study concerning the information seeking behaviour of interdisciplinary scholars considering the nature of serendipity in information seeking contexts and interpret the notion of serendipity as a phenomenon arising from both conditions and strategies. A Survey was undertaken by Buba and Ocheivi (2003) about information needs and gathering behaviour of medical doctors in Maiduguri Nigeria. In all 158 medical doctors
were used for the study. The response rate was about 70.2%. Medical doctors are found to need information through e-mail & internet facilities. Many doctors do not have access to local database which are supposed to have important impact on their information gathering behaviour. Ikoja - Odongo and Ocholla (2003) explained the information needs and seeking behaviour of the artisan fisher folk and extension agents at major lakes in Uganda. The impact of information use and different kind of methods for accessing information and the role of government departments in fisheries were also taken into account in the study. Jebaraj (2004) studied on information seeking pattern in Sudharsan Engineering College (SEC) library through analytical study and using records maintained in the library for collecting the data. The study found that the role and responsibility of library towards users was needed through various extension activities. The assessment made by Jurvelin and Inwrison (2004) has discussed the research on information seeking directions at a general level by analysing and argumenting on the past research. The same presented a general model of Information Seeking and retrieval used to derive nine dimensions needed to analyse information seeking and retrieval. Study conducted by Yitzhaki and Hammershlaq (2004) on accessibility and use of information sources among 233 computer scientists and software engineers in Israel focusing on academy versus industry has shown the comparison on access and use of information sources. Mail questionnaire was used as tool for collecting data and response rate was 33%. The study has shown about the different sources used and information patterns of the two groups under study. While studying on creative interface design for information seeking Lee (2004) has shown the relationship between creativity and information seeking, implications for interface design with design features that might support users Information seeking behaviour. Based on the model, the study proposed approaches to design, implement and evaluate a prototype with design features to support information seeking discussion of ongoing work. Research on Information seeking behaviour of the formal sector Entrepreneurs in Uganda by Odongo and
Ocholla (2004) using interview has assessed the information needs and uses of 602 informal sector entrepreneurs from a variety of trades in Uganda. It also noted that the modern models of information transfer was developed based on textual media and ICT which has impact on the entrepreneurs information needs and suggested need for information repackaging and the use of appropriate media for information provision. The pattern and concept on Information seeking behaviour has been discussed by Krikelas (2004). The study has presented the elements of user studies and linked with a model of Information seeking behaviour. While ascertaining the Health information seeking Behaviour in Adolescence Gray, et.al. (2005) has discussed about the use of Internet as a health information source available to adolescences and the convenient access to a large level of information on different subjects. The same included a series of 26 single genders focus groups with 157 English speaking students aged 11-19 years from the UK and US. The study revealed that internet as an important place among the adolescents repertory of health information sources. In a study of the Information seeking behaviour of the faculty members of Rajabhat Universities in Bangkok, Thailand Patitunngkho and Deshpande, (2005) has shown that 41% of the respondents consulted knowledgeable person in the field in the process of seeking information, 82% seeking information for preparing lectures, 54% of the them used text books. Internet had almost been universally adopted using Google search engine by the respondents. Johnson, et. al. (2006) compared two conceptions- fields or pathways of individual information behaviour and found that it was implied different relationship between actors and information environments. The operationalisation of these conceptions was based on different analytic treatments of the same raw data. The study conducted by Seth and Parida (2006) on the information needs and their seeking behaviour of a particular community i.e. SC/ST with reference to higher educated persons in Orissa has shown the useful sources of information acquired by them and suggestions for great improvements of these communities. It
also revealed that the progress of the people of these communities in higher education is not satisfied.

2.7.1 Model of Information Seeking Behaviour

Some models have been developed on information seeking behaviour users, the applicability of the same has also been analysed by the researchers also. The following review shows certain parameters on that.

Meho and Tiboo, (1999) in a study on modeling the Information seeking behaviour of Social Scientists has shown that David Ellis’s Information seeking behaviour model of social scientists which includes six generic features: starting, chaining, browsing, differentiating, monitoring and extracting. Sixty faculty members from 14 countries were interviewed by e-mail and five faculty members were conducted face to face interview for reality check purposes. The study also confirmed that Ellis’s model was applicable with research and practice. A possible hybrid approach as a new approach for studying and building information seeking models has been considered by Turnbull (2003). The same has mentioned the methodological diversity which represents an emerging methodological trend in web Information seeking studies as it allows the possibility of combining smaller-scale examinations of user information needs and searching with new data collection methods such as large-scale datasets of web use. Towards designing a general model of information behaviour a study was carried out by Godbold (2006) on beyond information seeking which has presented new models of information behaviour that extended the Information seeking. The same found that other models of behaviour and these models tend to confine to depictions of Information seeking. In order to defeat the notion of sequential stage, a model of multidirectionality was explored in that regard. Chudamani and Nagarath (2006) studied towards designing a model of information use behaviour by scientists discussing about the library services like computerized OPAC, e-mail based
reference service, etc. provided at many levels and varieties. Web-based services like E-journals, CD-ROM collection search, bibliographical database services provided in the library were also discussed.

2.7.2 Information Seeking Behaviour in Digital Environment

Different behaviour has been witnessed among different group of users while seeking information in digital environment. A good number of studies are found to be carried out all over the world on different aspects in this regard.

While studying on computer system and subject knowledge in novice searching of full text multiple databases Jacobson and Fusani (1992) has recognized that user’s information needs has an influential factor in the process of their information seeking. As a universal assumption “man should actively seek knowledge” has been shown in the study on information seeking in electronic environment conducted by Marcionimi (1995). The need for skill mediation and intervention and digital library as dynamic systems have been revealed by Jacobson and Ignacio (1997) while studying the influence of electronic information system on teaching methods and its curricula. Using electronic questionnaire, Brown (1999) studied information seeking behaviour in electronic information age at the University of Oklahoma about its scientists which cover astronomers, chemists, mathematicians and physicists. The findings of the study observed that majority of the scientists:- (a) accessed to print journals rather than electronic journal, (b) accessed to electronic bibliographic databases and (c) felt importance of printed peer-reviewed journal article. Taking into account the training package of the ICT for Library and Information Professionals (ICTLIP) developed by UNESCO South and Pacific Region, for developing countries, David (2002) studied on information seeking in electronic environment concerning Module 3 of the package. The study has discovered that the ICT application to the Library and Information Services enables to provide the required
knowledge and skill. Barik (2007) while studying the electronic information seeking behaviour of scientists and research scholars of CSMCRI, Bhanagar has shown the prospect and popularity of electronic resources because of their easy accessibility worldwide. User interaction with information retrieval system and their goal and task have been transacted in a study conducted by Xie (2007) on shifts in information seeking strategies in the digital environment. Based on the existing general interactive information retrieval models and influential user-oriented approaches, the study presented a “Planned-Situational Model” to help the researchers in determining system role and user involvement to support shift in information seeking strategies. Internet is found to be used extensively as shown in certain studies covering users of different background and having similar reference groups. Observing the information seeking on internet, Bruce (1998) covering 200 persons invited through their e-mail addresses selected from such directory of five Universities in the State of New South-West, has shown how far user are satisfied with internet on seeking information. Internet as a channel of information has been observed by Savolainen (1999) while studying its role in information seeking using quantitative and qualitative data collected through 23 themes interviews in Tampere and Finland covering 2360 persons of 10-74 years on the use of IT in Finish household. The study revealed E-mail and www as frequently used services. The survey carried out by Bennett (2005) has focused on the use pattern of internet by Physicians and its impact on Medical practice. Internet may have conquered a place for itself without throwing aside traditional printed and other information resources as shown by Voorbgil (1999) in a Dutch Academic User Survey covering 1000 students and academic in Netherland. The survey conducted using questionnaire and three focus group interviews also have shown the use of web by them to seek general, factual, ephemeral or very specific information. Study on potentialities in the use of internet by Social Scientist conducted by Ramesh and Raju (2003) has shown the use of internet by them as a Searching tool in their research activity. Effective use of SOSIG in their research
as the powerful tool/weapon has also been revealed by the study. On the other side, the study of the users is also found to be conducted in web-based environment. The explanatory study done by Hill (1997) about the user’s strategies in an open ended system of the www as a tool for information retrieval is an initiative in this regard. Pre search survey, think aloud protocols, audit trials, search questionnaire and stimulate interview were used as tools for collecting information for the study. Discovering several strong regularities of web user surfing patterns, Huberman, et al (1998) in a study developed a mathematical law of surfing that determines the probability distribution of the depth i.e., the number of pages of users’ visits within a website. Studies conducted by Fidel (1999) and Andrew, et al (1999) has focused on information seeking behaviour on the web by school students. While former studies establishing a situation where information on web affecting information seeking behaviour, the later has found children ignoring online help. The quantitative study of Jenkins, et al (2003) examined the pattern of information seeking on web in four groups of nurses with different combination of domain expertise and web expertise. The study has shown the distinct differences in searching patterns related to expertise. Another study of Rich (2004) identified a range of information seeking and web search behaviours in the home environment. While making an analysis of longitudinal search log data on intranet user’s information seeking behaviour Dick and Taline (2006) discovered differences between searchers on the public web and in intranet users. However, no difference between sexes while searching their desired information has been revealed by Hupfer and Detlor (2006) studying gender model to the web environment. The analysis made by Kellar (2006) has ascertained the environment of user behaviour during web information tasks. The information gathering tasks and the fact finding tasks of the 21 (twenty one) participants covered in the analysis were found to heavily been used by Google. Women group is found to be taken into account by some researchers to assess their information seeking behaviour (Choo and Marton, 2003) and search for Women’s information
(Westbrook, 2005). The www has been identified as a part of the students learning process as shown by Dalgleish and Hall (2002) in their study conducted through a study of interviews with open-ended question.

2.8 BIBLIOMETRIC STUDIES

Researchers are found to give emphasis on bibliometric studies to assess the behaviour of different user communities. Some available literature is being reviewed here.

In a citation study Omoruyi (1978) has studied the Social Science theses and dissertations submitted to the University of Ibadan during 1965-70 to understand their Characteristics of Bibliographic citations analysing the periodical references that were cited/coded in the theses and dissertations. The study has shown that the majority of the articles were published in English Language and found that the median age for all references were nine years. Sangam (1989) also studied the information use pattern of researchers in the field of Psychology by analysing citations of the doctoral theses submitted to the Karnataka University during 1982 to 1984. The findings of the study have implications in the development of need based collections in the field of psychology. Kapoor (1990) studied on use pattern of the periodicals and strategy of Research scholars in geography in the Delhi School of Economics. 14 PhD theses were thoroughly scanned and references and bibliographies were also counted. Using questionnaire 18 responses were analysed to know the research strategy of the Scholars. The citation analysis as conducted by Sangam and Biradar (1990) were based on the dissertations submitted in Gulbarga University during 1982 to 1989 in the field of surgery. The findings of the study have implications for the development of need based collection in library and information centres in the field of surgery. While analyzing citations in MD (Neurology) dissertations submitted to the National Institute of Mental Health and Neuro Sciences
(NIMHANS), for the period from 1979 to 1996, Biradar and Vijayalakshmi (1990) studied about the information use pattern of Neurology Researchers indentifying the average number of references as per dissertation and the type of information sources used. The finding of the study has called for developing a need based collections in Library and Information Centers in Neurology. Barooah (1993) carried out a citation analysis of the Indian Journals of Entomology for the year 1989 to know the use pattern of information of entomologists and also identify various information sources. On the basis of the study ranked list of Indian Entomology Journal and Entomology Journals has been prepared irrespective of their origin country. The use of Entomology Journals by the Indian Entomologists was found to be more. In a bibliometric study Biradar (1997) has observed the pattern of information use by Indian Neurological Scientists. It identified the average number of references per dissertation, the use of different sources of information, the obsolescence of literature and list the most frequently cited journals by Neurological Scientists. It also implicated the development of need based collection in library and information centers in the field of Neurology. Another study conducted by Ngah and Sze (1997) had shown the information use and needs of humanities researchers by quantitative analysis of retrieved 100 references, journals, articles, dissertations, conferences and proceedings and books. In this study 60 percent of retrieved items published between 1980-1989 form the pick of study in this area. It also studied about the characteristics of information or sources used and influence over the citation studied. In a citation study Ijari and Kannappanavar (1999) analyse the Indian Journal of Clinical Psychology in order to identify the periodicals’ citations attached to 155 articles in 3 volumes cited by the Indian Clinical Psychologists. Document used, data quantitative, cited journals based on geographical distribution and chronological scattering of citation have been emphasized upon. The study has revealed use of the current literature as the most useful tool by Indian Clinical Psychologistts. Burman (2002) on a document use pattern has analysed twenty Doctoral dissertations and 4752 references in
order to identify IMTECH Scientists; bibliographic form, authorship pattern and obsolescence. It prepared the rank list of highly cited journals and analysed the publication of the country and subject dispersion, 85% citation were from journal literature, half of which originated from the USA, 59% journal citations were from 2 subjects - biochemistry and microbiology. Srivastava (2002) in a citation study on Information use pattern of Researchers in Chemistry has analysed 18,364 citations of 74 doctoral dissertations in order to know the information use pattern in Banaras Hindu University. The study found that the researchers (as a source of information) have primarily depended on periodicals of the subject and its allied subjects and majority of cited periodicals & books were in English language including from foreign Countries like USA, UK, etc. Hazarika (2005) studied on information use pattern of Indian forestry Scientists. In this Bibliographic Study he has discussed about the citation pattern of the Indian Journal of Forestry. It covered 60% citation from journals, 28% from books and monographs and 5% from technical reports and also forestry literature found to be of 17-18 years which were compiled with the Bradford’s law of scattering. A rank list of forestry Journal was made based on the number of citations received which were published from India as well as abroad. Brazzeal and Fowler (2005) taken up a research on patterns of information use in Graduate research in forestry. In this citation analysis of Master Theses at Nissisipi State University has analysed citation from 1999-2003 in order to increase librarians understanding of the sources used by the forestry researchers. Kanungo (2007) studied on Information use pattern of social scientists by analysing the citations of Journal of Asian Studies covering volume 59-63. It also noted that there were 9111 citations from 108 articles contributed by 114 authors within 2000-2004 and discussed the accessibility of on-line electronic sources utilized by the social scientists in the network environment.
2.9 INFORMATION SYSTEM

A few literatures discussing certain aspects of information system are found as the following review shows:

The study conducted by Belkin (1985) has shown the Interaction in Information systems where he discussed about the relation to human interaction in information system. The study reveals evidence of a shift in emphasis from concentration on document or text representations and associated search techniques to the study of users in Information seeking situation. Ucak and Kurbangla (1998), in a study has explained that information systems and information service can be developed with the help of knowledge generated by the user studies. Information need and Information seeking behaviour were mentioned as two complimentary concepts which were affected by many factors. The research results have shown that dependent on their field of research; vary from one discipline to another. On the basis of the outcome of the explorations represented at the conference “Information seeking in context” (ISIC’98) Gaslikova (1999) in an investigation evaluated the practical use for the design of information Computer systems. It also discussed the problems related with the conceptual approaches to the development of information system.

2.10. CONCLUSION

The above review of literature based on the studies undertaken by the researchers in different parts of the world in various aspects has shown us many clues about the users of varied categories. The studies are related with the use, access, use pattern, information seeking behavior, study of the existing system, behavior model, etc. Use of different methods and techniques in the study is also seen in such studies. Researchers have taken into account different categories of users in the activities. Social Scientists are found to be one of important group of users on whom many studies have been conducted to analyse their information
seeking behavior in different information environment. Studies of the social scientists concerning their behaviour in the digital information environment can be considered as an emerging area of study in the field of Library and Information Science. Since recent past, as the review shows, researchers are found to give more emphasis on this area taking into consideration different user groups.

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