Chapter 2

2.1. Introduction:

The term ‘literature review’ implies a thorough and exhaustive examination of previous studies carried out and other published works in topic of research under investigation. The Review of literature presented here intends to endow the researcher with pertinent information as to formulate a sound research design and make legitimate decision regarding tools for the investigation in the process of the study. Literature review is normally conducted in order to identify what is already known and what remains to be exposed in the subject of interest. Since effective research is based upon past knowledge, literature review is considered to be a crucial stage for eliminating duplication of work that may have been done earlier as it provides a foundation for conceptual framework, insights into methods and procedures, suggests operational definitions to major concepts and also throws light on interpretations of findings. The present study has two main topics of investigation – the information seeking behaviour and the use of electronic and/or digital information resources in the context of engineering college libraries. So before attempting to the review, a treatise on the subject is presented here so that the focus on review is well directed.

Information seeking is a goal-directed requisition and acquisition of information as a consequence of an information need from the available information carriers or channels. Information carriers may include a variety of channels, a variety of sources within channels, and a variety of messages contained within these sources (Johnson et al., 2006). Borgman (2000) defined information seeking as a continuous process, involving active and passive behaviours, and formal and informal communication. He pointed out the cycle of creating, using and seeking information can be viewed as series of stages which
people move back and forth, and they may be actively, creating, using and seeking information concurrently. Therefore, information seeking behaviour refers to the pattern of response to information need by person or group of persons.

2.2 Information seeking Behaviour in General:

Wilson (1981) noted that information seeking results from the recognition of some need perceived by the user. The behaviour may take several forms such as demanding information from the library or from other people who know. If an individual user could indicate what is needed under specified conditions, his problem might well be on its way towards a solution; therefore, information seeking activities include ways in which people articulate their need for, search for, and use of information. Studies on information needs and seeking are a central part of research in information studies. These studies have been conducted from the 1940s, but the focus was on information systems, which, has been called the system-oriented paradigm. In those studies, the aim was to obtain knowledge to support organizational development and administrative decision-making. The approach has however been criticized because of insufficient theories, concepts and research methods, and because it has not taken into consideration the needs of the information seekers (Dervin and Nilan, 1986; Wilson, 1994). At the end of 1970's and in the beginning of 1980's researchers began to realize that questions on information needs, seeking and use could not be seen only from the systems point of view. As Dervin has pointed out, information seeking is situational bound and constructed by the individual. Librarians and researchers should, therefore, move away from the system-centered approach to a more user-centered approach (Dervin and Nilan. 1986).
2.3 A Model of Information seeking Behaviour:

Weiler (2004) observed that first model for study of information-seeking behaviour in the general population was developed by Krikelas in 1983. This model suggested the steps of information seeking as follows: (1) perceiving a need, (2) the search itself, (3) finding the information, and (4) using the information, which results in either satisfaction or dissatisfaction. Weiler believes that this model lacks complexity and flexibility necessary to adequately address the topic.

Ellis, et al. (1993), and Ellis and Haugan, (1997) attempted to propose and describe the characteristics a general model of information seeking behaviours based on studies of the information seeking patterns of social scientists, research physicists and chemists, engineers and research scientists in an industrial firm. Ellis's elaboration model describes the features of information seeking activities as generic. These features are named and defined as below:-

- Starting: Deciding to undertake the search;
- Chaining: Following citations backwards and forwards in time;
- Browsing: Casual, relatively undirected search;
- Differentiating: Discriminating among potentially relevant items;
- Monitoring: Regular scanning of sources for items of interest;
- Extracting: Taking information from sources;
- Verifying: Identifying potentially useful citations correctly;
- Ending: Completing the process; and can be summarized in the diagram below:

![Diagram of process model](image)

Figure 2.3: A Process Model based on Ellis’s characteristics by Wilson (1999)
Kuhlthau (1993) in the empirical research on students’ information seeking behavior developed a general model of the information search process (ISP) which consists of 6 steps as follows:

1. The initiation stage, when users recognize the need for information and conversely, their lack of knowledge.
2. The selection stage, when users identify and select a general topic.
3. The exploration stage, when users orient themselves to the topic in order to form a stand/point of view.
4. The formulation stage, when users select a focus or perspective for the topic.
5. The collection stage, when users gather information related to the focused topic.
6. The presentation stage, when users complete the research and prepare the finalized work.

Kuhlthau found that after choosing the subject, students tend to proceed immediately to the information collection stage and skipping the refocus exploration stage. They then moved on to the next stage of formulation, which would serve to guide the subsequent search for information. Contrary to this, most students immediately began to collect information, prematurely using strategies such as exhaustive listing of sources or detailed copying of passages. Kuhlthau states, students experience the Information Seeking Process with interplay of taught, feelings, and actions. Wilson (1999) believes the strength of Ellis' and Kuhlthau’s models are that they are based on empirical research and have been tested in subsequent studies. The models of information seeking behaviour which currently exist are usually based upon different assumptions. These theoretical models, including both those based on empirical research and reflections of experience, help researchers in examining the information seeking behaviour of individuals since it may be very different from what librarians think the users do, and can assist librarians in
creating a library and information skills instruction which responds directly to their user’s needs.

Drawing mainly on the information-seeking processes identified by Ellis, (1989) and Kuhlthau, (1991), within an overall conceptual framework based on Wilson’s model, the synthesized model describes a pattern of information seeking behaviour that includes eight generic stages: initiation, exploration, monitoring, categorization, sifting, selecting resources, collecting, and ending. The two initial stages and the last three stages of the search process are drawn from Kuhlthau’s information search process model, while the interim stages, named in this model as monitoring, categorizing and sifting, largely parallel the interim stages of Ellis’ information-seeking model.

The synthesized model also incorporates the dimensions of location and format of information resources, addressing the need identified by Wilson and more recent studies (Cool, 2001; Cool & Spink, 2002) to address contextual factors when examining information-seeking behaviour. Previous studies into information-seeking among social scientists and academics in developing countries have indicated that the nature of the information environment and the availability of different types of resources are particularly significant in this respect.

Several studies have also provided evidence of the ways in which the information-seeking behavior of social scientists is being changed by the availability of information technology and electronic resources. A review of early studies of information-seeking among social science researchers (Folster, 1995) concluded that this group placed little value on computerized services and information sources, preferring to use printed books and journals. More recent research, however, has provided evidence that social science faculty make extensive use of electronic resources in their research, and that information
technology is having a major impact on their patterns of communication and information-seeking behaviour (Costa & Meadows, 2000; Meho & Haas, 2001; Yi, 2007).

Although some researchers have found evidence that social scientists in developing and developed countries share common characteristics in their information needs and seeking behaviors (Romanos de Tiratel, 2000; Lleperuma, 2002; Patitungkho & Deshpande, 2005), other studies have indicated that the information environment in developing countries often imposes constraints or other influences on the information-seeking behaviour of social scientists. For example, a major problem often faced by researchers in developing countries is the relative lack of availability of social science research material in their native language, or relating to similar social environments. It may also be more difficult for social science researchers in developing countries to keep up to date with international developments in their specialist areas, or to obtain access to sufficient research material which has been generated in a non-Western context for background to their own research, making informal networks and communications particularly important (Francis, 2005).

2.3.1 Information Seeking in Electronic Environment:

Information seeking behaviour is one of the heavily researched topics in Library and Information Science (LIS) and literature is scattered widely across various disciplines, hence a comprehensive review of the entire studies is difficult. Even though a handful number of studies have been carried out on the topic only a few have attempted comparative studies. It also provides useful suggestions for carrying out the investigations at hand. The literature search enabled the investigator to have information about similar studies carried out earlier. While searching the prior references on the topic the researcher has consulted Library and Information Science Abstract (LISA). E-LIS
(E Prints in LIS), an online OA archive for Library and Information Science, DLIST (Digital Library of Information Science and Technology) and other relevant sources and websites. A select bibliography of studies done on Information seeking Behaviour of users in electronic environment and on related issues were prepared. Having studied these documents in detail, a summary of selected studies has been prepared and presented here for the purpose of presentation; these studies are grouped under six headings.

2.3.1.1 Information seeking behaviour:

The study by Rupp-Serrano and Robbins (2013) explores the information seeking-behavior of academic education faculty from twenty public research universities. The study highlights about the electronic resources and emphasize the importance of electronic scholarly journals and databases provided along with the printed books to meet their information and research needs. The investigation carried out on how frequently education faculty access information to stay up-to-date on current developments in the field.

A Study on Information Seeking Behaviour of Post Graduate Students of SPMVV Tirupati by Prabhavathi (2011) reveals that, the library plays a significant role in promoting the better use of information sources and services, but at the same time, the teacher plays an important role in coordinating and scaffolding students learning activities towards a comprehensive inquiry process. In addition to supporting students, it is also necessary to offer teachers new conceptual devices for understanding the potential and challenges of collaborative inquiry learning and to provide support for practical pedagogical implementation. The starting point for effective information seeking with technological support is thus embedded in a sound theoretical understanding of the information seeking process, as it is intertwined with meaningful pedagogical practices.
Rubina, Bhatti (2010) conducted a study on Information Needs and Information Seeking Behaviour of faculty members at the Islamia University of Bahawalpur. The study highlights that; information seeking may be motivated by various factors such as personal, professional and entertainment. However, the successful operation of a library depends on the large extent on the choice of library collections that should be in accordance with the needs and requirements of users. It also recommends that, the library personnel should focus in assisting the users to develop a very good image towards the library. The senior level librarians particularly the reference librarian should assist the teachers to improve their information-seeking and find the types of information they need.

Jamali et al. (2008) investigated two aspects of Information seeking Behaviour of Physicists and Astronomers at University College, London. The scope of the study was limited to the techniques adopted by the academics for keeping up-to-date and methods used for finding articles. One hundred and fourteen people (114) (47.1%) responded to the survey. A self-administered web-based questionnaire was used for eliciting data from the Ph.D students and staff of the Department of Physics and Astronomy at University College, London. Study shows that even though similarities exist among academics of Physics and Astronomy with regard to ISB, there are considerable differences also. The study outlined the need for and the importance of looking deeper into subject communities within disciplines for a better understanding of the information behaviour of scientists.

Nicholas and Huntington (2007) found the differences in information seeking behaviour between scholarly communities. They argued that, it would be a mistake to believe that it is only students information seeking that has been fundamentally shaped by huge digital choice, easy access (24/7) to scholarly material, disintermediation, and very powerful and
influential search engines. Virtual scholar research has shown that a considerable number of users exhibit a bouncing/flicking behaviour, which sees searching conducted horizontally, rather than vertically. Power browsing and viewing appear to be the norm for many; reading appears to be undertaken only occasionally online, probably undertaken offline and some cases not done at all.

**Borrego et al. (2007)** studied the analysis of the use behaviour of e-journals in the field of Chemistry at University of Barcelona. It was found that, a small group of IP address is responsible for the more data usage in most of sessions. The data was provided by publisher for an extensive use of thirty one journals of American Chemical Society at the University in 2003. The results of the study proved that, in most of the sessions, the use of electronic information is higher than the information on paper in terms of article downloads and viewing the abstracts and dispersion with respect to small group of IP address.

**Lohar et al. (2007)** have carried out a study on the use of library facilities and information resources in first grade colleges in Shimoga district, Karnataka. The data was elicited through the questionnaire method from a sample size of four hundred faculty members from thirty degree colleges in Shimoga district. The main aim of the study was to know the use of library by faculty members for academic interest. The findings of the study revealed that, the majority of college libraries in Shimoga district are not having adequate and well organized library resources. A survey on the impact of E-Resources on the Information Seeking Behaviour of health science faculty at University of Ghana was investigated by **Sulemani et al. (2007)**. The survey documented on the faculties preference between print and electronic resources, and the specific database of full-text journals that they found useful. The investigation
revealed that, an access to internet by health science faculty had an impact on their Information Seeking Behaviour.

The Information Seeking Behaviour and the problems encountered in seeking information by the teachers and postgraduate students of the Rajagiri College of Social Science, Kerala was studied by Antony (2006). The study showed that, a major problem was faced due to lack of time for both teachers and students in obtaining required information. A major portion of the student community (53.2%) didn’t use non-book materials, while teachers (58.3%) use non-book materials. The study also proved that Information Seeking Behaviour of students and teachers vary primarily because of their different needs and requirements. However, the teachers and students were satisfied with the facilities and services provided by the library.

Bawden (2006) has reviewed various concepts put forth by Wilson in the article. “On user studies and information needs” published in 1981. The literature based conceptual analysis has been adopted in the paper with Wilson’s paper as the study point and evaluated the significance and the later developments in the issues were dealt in the articles. The Significant effect on the development of information science has been proved from the study as it dealt with several key issues including the nature of information itself, information behaviour, information needs, and information seeking models.

Chudamani et al. (2006) discussed the importance of preparation before service in their paper. The investigation revealed that, the information use of the Information Seeking Behaviour scientists can be predicted as it is an essential component to properly plan and implement the information system as the Scientists are extraordinary diverse group of professionals and attribute common to all scientists in the use of information. The study chooses this attribute and examined the Information Seeking Behaviour of scientists by
reviewing selected literature. Further, the study proposed a model for information use based on the studies on the relationship between task performance and information searching by end users.

**George et al. (2006)** investigated on the Information Seeking Behaviour of graduate students of Carnegie Mellon University. The study was carried out to determine the graduate students Information Seeking Behaviour and the use of information for their scholarly activities. A sample of 100 students representing all disciplines was selected and data was collected by means of in depth structured interviews. The study showed that graduate students information gathering activity begins with teachers’ direction and recommendations. Convenience, lack of sophistication in finding and using resources, course requirements affects their information behaviour. Another finding of the study was that even though internet plays a major role, students continue to use print resources. Study also revealed that there is significant variation in Information Seeking Behaviour across disciplines and between programmes. Interesting finding of the study was that the libraries influenced students Information Seeking Behaviour.

**Naushad Ali et al. (2006)** examined the teachers’ attitude towards the central library services at Aligarh Muslim University. The main intention of the study was to examine the teachers’ opinion pertaining to overall collection, facilities and services of their library. It also aimed to know the frequency and the purpose of using the library and required factors for promoting library services. As a tool Questionnaire method was adopted for the study. In the survey two hundred and ten persons responded to the study. The study proved that the majority of the teachers are aware of the reference services, circulation, and newspaper/periodical services of their library but not aware of the Inter Library Loan services (ILL). The teachers use the library facilities for teaching purpose
only. Majority of the teachers are not satisfied with the library and suggested to go for computerization of its activities and services.

A topic of interest on how information retrieval was associated with users search behavior was done by Rose, (2006) to analyze the development that involved in user interface aspects of information search. From the Boolean query to unrestricted queries are observed in the web seeking information. The relevance ranking produced more relevant in the Natural language questions. The variety of search behavior such as information seeking goals, the cultural and situational context of search task and suggested the interfaces that can be redesigned to make searching more effective for users are analyzed in the article.

Information needs and use pattern of faculty members of College of Agriculture, Vellayani, Thiruvananthapuram, Kerala was presented by Sarala et al. (2006). The scope of the study was limited to core agricultural departments of the college. Seventy eight (65%) faculty members responded to the questionnaire. Study showed that textbooks and other monographs were the most preferred information sources followed by primary periodicals and to keep updated with current developments they consult latest issues of learned journals. International network of scientists exists and they were active in exchange of scientific and technical information.

Ellis et al. (2005) explored the Information Seeking Behaviour of English literature researchers in the Universities of the United Kingdom on the context of information revolution. The study aimed at research scholars’ attitude towards internet and its impact on their publication as reported by the investigator. The main objective of the study was to determine the extent of the impact of E-Resources on the ISB and attitudes of English researchers. Researchers’ experiences in use of different types of e-sources in English literature are identified to explore it. The data was collected from the researchers of
selected nine universities in United Kingdom for the study through mailed e-questionnaire and total of sixty researchers responded to the survey. The result of the study showed that e-medium has an impact on the research of English literature.

**Krishnamurthy (2005)** conducted a survey on information seeking behaviour of teachers, scholars and students of Indian Statistical Institute, Bangalore found that classification scheme adopted in Indian Statistical Institute Library is affecting Information seeking behaviour of users. The study revealed that 60% of the respondents use the documentary sources that are convenient to use compared to electronic sources.

Information Seeking Behaviour of the faculty members in six Rajbhat Universities, Bangkok, Thailand was analyzed by **Patitungkho et al. (2005)** through Questionnaire method for data collection. A sample size of two hundred and sixty (86%) faculty members from seven main disciplines such as Humanities and Social Science, Science & Technology, Arts, Education, Management, Agricultural technology and Industrial technology are took part in the survey. The study proved that most of the faculty members (82%) seek information for preparing lectures and sufficient number of faculty members (57%) prefers textbooks. Findings of the study indicated that 24% record materials in English and 47% of the respondents’ record materials in Thai. Meanwhile ERIC CDROM database was consulted by 42% of respondents. However, several problems like lack of information, incomplete information and time are faced by the respondents at the time of seeking information.

Information needs choice and access to information and problems faced by the faculties in Manipur, India was surveyed by **Purnima et al, (2005)**. As a tool the Questionnaire method was used to elicit the data. A total of nine hundred and seventy college faculties and sixty five university faculty members are participated in the survey. The results of the
study revealed that most of the faculty members are not aware of the emerging technology trend, digital resources, e-journals and Information Service Library Network (INFLIBNET) services and majority of faculty members seek information for academic activities as well as for writing papers. The study draws the attention of librarian who has a major role in influencing standard education.

Choukhande et al. (2004) analyzed the information needs and use patterns of faculty members and research scholars in various departments belonging to different disciplines in colleges/departments affiliated to Amravati University. To identify the data and for data collection a Random sampling technique was used to get the samples through different tools Questionnaire, interviews and observation method. One thousand two hundred persons are participated in the survey. The survey results opined that most of the users prefer text books/handbooks as their information source and lack of knowledge in use of library services was the main difficulty in accessing information. In the context of use pattern, most of the users prefer books, trade catalogue followed by bibliographies, index and abstracts. The study clearly shows that, academics of the university face several difficulties in accessing information through electronic sources and they require access skills in using the available resources of the library.

Callinan (2005) investigated on Information Seeking Behaviour of undergraduate biology students: a comparative analysis of first year and final year students in University College, Dublin to confirm their study that, at degree level found difference between stages for the use of books by students. Almost 40% of first year Biology students did not need to use library books for course-work whereas approximately 4% of final year Biochemistry students indicated this to be the case. A large number of first year students indicated using websites for their course-work that those using library books. Less
number of first year students approximately 1% indicated using journals articles for course-work in comparison to 48% of final year students. When compared to the first year Biology students, a higher percentage of final year Biochemistry students indicated using all of the sources of information listed in the questionnaire except newspapers.

Information seeking behaviour of faculty members of Government Arts College in Cuddalore district, Tamilnadu was surveyed by Suriya et al. (2004). The study was carried out to gauge the reading habits and varying interests of the teaching staff members in their field and also to explore library use pattern. Questionnaire method was employed to elicit the data that was supplemented by additional data gathered from other sources. A total of 160 persons were responded to the survey and the study showed that teaching staff members prefer to search the information by subject and more than one 25% of the respondents do not use computer based services.

As part of doctoral study, the information needs and search behaviour of pure science research scholars in University of Kerala was discussed by Geetha (2003). Unstructured questionnaire was used to gather the data and questions were reposed personally. Total survey populations of 159 scholars who have responded to the query has proved the information sources in pure disciplines at University of Kerala library are inadequate and needs immediate attention to improve the system. Also, the study showed a variation in the use of different sources by the pure science research scholars of different disciplines.

Murphy (2003) conducted a study to gain a clear understanding of how interdisciplinary scientists seek information and how these scientists manage their time in regard to information gathering habits. Questionnaire method was adopted for the study. One hundred and forty nine (55%) scientists responded to the study. Results of the study indicated that many scientists have some difficulty in keeping up with research in their
field of study with regard to time. Study also showed that interdisciplinary researchers have developed unique information gathering habit to seek out relevant information.

**Tadasad et al. (2003)** carried out a study on the Use of Internet by undergraduate students of PDA College of Engineering, Gulbarga and found that, on an average the students spent more time for attending classes, studying, and watching TV compared to using library, attending practical classes, using internet, and listening to Audio/Radio. Study clearly revealed that attending theory and practical classes, and studying were the top priorities for the students in view of the ensuing examinations. Remaining hours are used for watching TV and listening to Audio/Radio. On the other side the use of internet and library resources had a low preference.

A study 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 seeking behaviour was presented and a theoretical framework for human information coordinating behaviour was also proposed by the study.

A comparative study conducted by **Tripati and Prasad (2001)** on the information seeking behaviour and the use of information sources in physical sciences and Social Sciences have shown several methods and sources followed by them in seeking information for giving emphasis on various types of information and bibliographical sources used by the scientists.

**Ellis, (1997)** identified on the information seeking patterns of engineers and research scientists of Statoil’s research centre in Trondheim, Norway. An Interview method was employed on the respondents to elicit data, and 23 respondents were interviewed. The
study provided a clear picture on the nature of their communication behavior and the role of information seeking in relation to the performance of work tasks. Also, the study proved that, even though the behavioral characteristics of the research scientists and engineers were same there is significant difference in their seeking patterns.

Wilson, (1995) in his paper entitled “Information seeking behaviour: designing information system to meet clients needs” provides some basic information on Information Seeking Behaviour. The author clearly observed the differences between needs and wants; between perceived needs and expressed needs of the users. As pointed out by him, the Information Seeking Behaviour can be understood in two senses; a continuous activity in a generic sense or a highly spasmodic sense of event driven phenomena. Finally, concluded that understanding the information seeking habit of user is possible and highly relevant to creation of effective libraries and information services.

2.3.1.2 Electronic Resources:

The innovation in information communication technology has influenced libraries to serve better and adapt to the changes. The libraries also changed drastically with service provision, collection development, human resource planning and training. The librarians also have changed their mind set towards service and the management of libraries.

One of the major development in the libraries and information services in the last 10 years has been the introduction and spread of electronic information sources (EIS). The progress in information technology has offered today’s information seekers different opportunities to access to information resources in an increasing array and format.

Kumar (2013) carried out a study on information seeking behaviour of faculty members of the BPS Women’s University. Questionnaire method was adopted to get the results from the respondents. The significance of the study reveals that, the faculty members use
Google search engine for searching information. The large number of faculty members says that some of the information was not available on the internet. Also, the study shows that the large number of faculty members sought information for teaching purpose, to keep up-to-date knowledge and also for research work. The respondents used several methods to seek information and prefer to consult the subject peers in their field.

An investigation by Hema et al. (2013) designed to navigate the different aspects of ICT based resources use behaviour of college students, research scholars and teachers. The study proved the purpose of use, awareness aspects, experience on use and usefulness of ICT based resources.

Natarajan (2012) described about different types of E-Resources and their usage. The study has discussed about the information seeking behavior of teachers and students and also the involvement of library professionals in providing different types of E-Resources to its users at their place has discussed in detail. The study has been concluded as, the availability of E-Resources support the users to access the content at anytime, anywhere to pursue their research without any hassles.

The survey carried out by Ansari et al. (2010) on use of Electronic Resources among Academics at the University of Karachi found that, up-to-date information, getting current information through electronic resources are the best channel for research and academic work. Use of these electronic resources, but due to technological problems and lack of training they are not properly used. While a majority of academics are quite satisfied with electronic resources they regard them as less reliable. Users considered electronic resources produced by an authentic organization or website to be authentic and reliable. They found that, electronic resources are mostly used for research and lecture preparation.
Bennett et al. (2010) explored that, engineering faculty use Table of Contents (ToC) and journals browsing to support current awareness and other information-seeking needs. Their results show some distinct patterns across the academic ranks of Assistant Professors, Associate Professors, and Professors. The respondent’s age correlate with their activities, but settled instead for an assumption of general correlation of age, experience or habit, and academic rank. Perhaps rank is as strong indicator of browsing behaviour as age, since the faculty of the same rank is engaged in similar research behaviour. The study found that Assistant Professor are still finessing their research focus and assessing the place of their research within discipline. Middle level category of teachers is most likely to have highly-focused research interests and to be aware of related work conducted by others. Higher level careers like Professors are more likely to acknowledge the universe of research beyond their core awareness.

The study by Ge, X (2010) states the degree to which specific electronic resources are significant to the social sciences and humanities researchers. The study determines the electronic information resources played an essential role in these researchers information seeking pursuits. Among the eight types of internet information technologies rated the Web, databases, and e-journals are ranked first, second, and third in importance, followed by online catalogs and e-mail. Social science researchers use electronic information resources more often than humanities researchers. Doctoral students and Assistant Professors (both academically junior) have a higher sources than their senior colleagues. All the participants surveyed as more utilized the electronic resources for their research at some point of time in the research process, and will continue to employ them as a means of gathering information. Easy access to information anytime and anywhere is important to those researchers, making them desire even more electronic information resource availability. The study also explored the degree to which Elli’s model remains relevant in
the age of electronic resources and confirmed that the characteristics proposed by Elli’s model continue to play viable roles in research activities.

Nicholas et al. (2009) reveals in their study that, student digital information-seeking behaviour in context study showed a distinctive form of information seeking behaviour associated with students differences between them and other members of the academic community. Students constituted the biggest users in terms of sessions and pages viewed, and they were more likely to undertake longer online sessions. Undergraduates and postgraduates were the most likely users of library links to access scholarly databases, suggesting an important “hot link” role for libraries. The study fills that gap.

The advancement of information communication technology (ICT) has studied by Kumar and Singh (2009) that ensured the importance of Internet and other electronic resources such as CD-ROM, DVD-ROM etc. in the learning resource centre (LRC). The authors stressed upon the competencies of LRC staff to handle the problems properly that are associated with the use of computers.

Carlock and Perry (2008) study on group of selected faculty members to find their perceptions and use of e-books (electronic books) for their teaching as well as for the research purpose. The latest addition to the existing information formats is gaining quick popularity in the e-Books are concerned. This study also highlights the main advantages of e-Books compared to traditional print format books.

In another study on the Use of Scholarly Electronic Journals at the Indian Institute of Science (IISc) was attempted by Moghaddam et al. (2008). They found that, the electronic journals provided through the network are useful and sufficient for their research work. The results suggested that 24 hours free access to electronic resources at the user’s desktop leads to increased acceptance and use of scholarly electronic journals.
This has emphasized on their service that need to be maintained and continued in future at IISc library. It also, stressed upon the successful service that can be used as a model for other institutions in India as well as other developing countries.

**Haglund, Lotta and Olsson (2008)** in their observational study performed at 3 universities in Stockholm, Sweden to prove that almost all the researchers used Google for everything, in which they were sure that they can manage on their own as they depended heavily on any urgent access to electronic information. The researchers had very less contact with the library and little knowledge about the value and competence level of librarian. One of the important final conclusion is that “librarians have to leave the library building and start working in the research environment, as well as putting some thought into the fact that library use is considered complicated, but Google (etc,) is easy and this study will influence changes in library services in both near and in a more distant future”.

**Salman and Hasim (2008)** reported that, Internet is the information tool for all the age groups for information seeking in the ICT environment. The descriptive findings of the study on internet usage by Malays living in Kota Bharu, Kelantanana, a semi-urban town in the North-East of peninsular Malaysia was chosen. The findings of the study clearly highlights that the nature of use of internet varies from younger to the older. Several factors may include for arriving at a decision on the assessment of information seeking behaviour of individual and or a group of individuals.

**Sharma (2008)** gives an idea about design an integrated common digital gateway and use of the same which is mandatory to all. The modern libraries in academic environment are conglomeration of printed books and journals as well as electronic resources where both
forms of the documents can be stored, retrieved and delivered as and when required by the user.

Nicholas et al. (2007) study highlighted that, the entire information environment in future will be marked even to allow for inaccuracies in measurement outlined, bouncing behaviour. The finding provides ammunition for all those people who have expressed concern about the consequences of widespread and unfettered access to information in our information environment increasingly regulated by search engines.

One more study by Giannis Tsakonas and Christos Paptheodorou, (2006) indicates that usefulness precedes usability, when the users have to state a preference. It is obvious that this property is closely related with the context of work and the content that Electronic Information Services (EIS) that provides. Therefore EIS stakeholders should ensure content quality and provide features that enhance topical and situational relevance to the intended audience. Future studies based on the triptych framework and its interaction approach may further enlighten us about user’s conceptualizations possible applications of the triptych framework on specific EISs could also demonstrate differences between them and illustrate different conceptualizations depending on each one of them.

Sarasvady et al. (2006) in their study argued that, there is an increase in the use of electronic resources and awareness of using E-Resources for teaching and research as well as to update their knowledge in the field. In this study, authors found that, the young users are inclined for electronic journals particularly for study, research and careers, where as senior level participants use them for both teaching and research. Further, the study says that, the concept of electronic journals among young readers attracted them,
which would not only be due to their high level of knowledge with modern technologies, but also to the fact that they are more active in carrying out their research.

Library users in human information behavior by Steinerova and Susol (2005) claimed that library users appreciate easy access and well organized form of information with an emphasis on electronic sources.

In the changing academic environment the libraries should develop their electronic resources along with the existing print resources. But, it is difficult with a limited budget to develop the electronic resources as stated by Cholin and Karisiddappa (2004) recommends the consortia approach for the academic libraries as a remedy.

Jiao and Onwuegbuzie (2004) study proved that application of library technologies has had a very good impact on the way library resources are being used. Although, many students continue to expertise high levels of library anxiety, it is likely that the new technologies in the library have let to them experiencing other forms of negative affective states that may, in part, a function of their attitude towards computers. The study investigates whether student’s computer attitudes predict levels of library anxiety.

Herring (2002) an exploratory study found that E-Resources are heavily used in a drastic level to apply these techniques into today’s phenomena of researchers. A radical change is taking place in information seeking behavior and information resources use as researchers become more comfortable and familiar with the resources available through the Internet. Online resources offer an exciting alternative to and an expansion of traditional research sources and tool. By understanding how scholars use these resources, librarians and other information professionals will be able to provide enhanced service to their users.
Talja (2002) specified understanding e-journals and database use patterns are as more used, however, the best option seems to be started from the discipline level and to use a similar comparative approach, as used in this study. In future, both qualitative and quantitative methods can be fruitfully used to develop a fuller understanding of field and subject specially variation in search strategies, and how these are related to domain size, are the relevant criteria.

A study on Electronic resources and their management by Ashcroft and McIvor (2001) stressed more and suggests that the management of e-journals is easy and concurrent access to them is only depends on how the library adopt the new technology and the computer skill that acquainted by the library staff.

2.3.1.3 Digital environment:

While seeking information in digital environment different behaviour has been witnessed among different groups of users. In this context sufficient numbers of studies are carried out on different aspects all over the world.

Harris (2013) study explains at the concept of ‘digital libraries’, and the collections and services of digital libraries, in comparison to ‘traditional libraries.’ The brief genesis of the idea of digital libraries and a discussion about digital library is discussed. The rest of their study report examines the differences between traditional libraries and digital libraries with regard collections development and services offered to the users.

A study on the paradigm shift that emerging from technological developments are emerging as reflected by Raval (2013). Author opined on the modern ICT tools and effectiveness and efficient services of the academic libraries of the Century. The limited mode of common man’s focus of information culture has shifted to subject experts and limited modes participative domain. The challenges associated with are acquiring,
organizing, making available and preserving the information. In his concluding remarks stress on growth of the internet that, author is very expressive on internet which has made significant revolution in all the areas of science and technology. Meantime, the Libraries and librarians have to be changed otherwise; it is difficult to provide good service to students and researchers.

The 21st century has witnessed a metamorphous change for the libraries which is a digital revolution era. This posed a challenge to academic libraries to digitize their services and resources through appropriate Information Communication Technology application in order to remain relevant. Abubakar (2011) study of academic libraries in Nigeria proves that, the libraries are faced with several of problems, such as proper funding, despite that, against all tried to measure up with their contemporaries elsewhere.

Tucci (2011) study confirmed that usage of E-Resources at TCNJ (The College of New Jersey) is ahead with desiring change which has the advance information-gathering habits. The study confirmed that replacement of e-journals along with print journals has not affected the library activities much compared to other engineering college libraries in New Jersey. As a result of that, major engineering and computer science journals are not being accessed by the users. Some of the online databases continue to adopt the changing information environment.

Palmer et al. (2009) examined the Scholarly Information Practices in the Online Environment. The results shed light on studies of inter disciplinary scholars. The finding suggests that certain scholarly activities are more apparent and prevalent or more important in the boundaries or in the sciences.

The empirical research conducted by Xie and Cool (2009) on understanding help seeking within the context of searching Digital Libraries that, help-seeking situations are
determined by users, mainly with their knowledge structure related to the domain of the search tasks, system knowledge, and information-retrieval knowledge. A well-designed and systematically planned digital library may avoid user confusion with the interface. Users need more implicit as well as explicit help. Help-seeking situations also are influenced by the tasks that users intend to fulfil. Some tasks require more cognitive engagement than do other types of tasks to handle with different type of requirements and help.

Barrik (2007) study proved the prominence and popularity of electronic resources because of their easy accessibility worldwide who studied on the e-information seeking behavior of scientists and research scholars of Central Salt and Marine Chemicals Research Institute, Bhavnagar.

Xie (2007) study on user interaction with information retrieval system and their goal and tasks have been transacted in a study conducted on shifts in information seeking strategies in the digital environment. As per the existing general interactive information retrieval models and influential user oriented approaches, the study presented a “Planned-Situational Model” to help the researchers in understanding system role and user approach to support shift in information seeking strategies. Internet is playing a major role and to be used effectively as proved in certain studies covering users of different background and having similar reference groups.

Dollah (2006) has made an attempt to identify the usage of both traditional and digital reference services, user awareness of digital reference services, user satisfaction and need for digital reference service. A libraries move their focus from print collections to digital resources residing in the “cloud”, the library-user relationship has also changed dramatically. Power has clearly shifted from the library to the user and the dependence
relationship has been inverted. It is therefore important to think about how to ensure that users continue to use and value libraries.

A comparative study of the information behavior of academics of British Universities was explored by Gardiner et al. (2006). The scope of the study was confined to three disciplines namely Computer and Information Science, Business/Management and English literature. The study focused on the information behavior in the digital age with regards to the use of internet and search engines by academics from different disciplines with special references and the major problems faced by academics in accessing electronic information. The data for the study was collected by means of a web-based questionnaire survey. Ninety seven persons responded to the study. Study showed that there were no significant difference in the use of search engines between disciplines, and about half of the respondents still make frequent use of printed materials. Study also revealed that the use of library books and electronic books varied significantly when broken down by disciplines.

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.

Wilson (2006) evaluated the nature of Information Seeking Behaviour in the digital information world. Author explored the behavioural pattern with special reference to electronic databases and the World Wide Web. Different models of Information Seeking Behaviour were presented and the difficulties in the process of searching were explored. Study provides insights into the seeking behaviour though electronic systems.
Asemi (2005) carried out a study to understand the information searching habits of internet users at the Medical University of Isfahan. The aim of the study was to investigate the status of information searching nature of the users from five faculties. 180 persons participated in the survey and responded to the study. Study augmented that students use internet significantly and it occupies an important place among various sources. Study also observed that electronic media has not replaced print media.

Borgman and Smart et al. (2005) assessed on the Comparing Faculty Information Seeking in Teaching and Research: Implications for the Design of Digital Libraries. The study revealed an important step towards their goal to understand properly how faculty seek and use information resources in their teaching of undergraduate level courses. Information seeking for research and teaching are definitely complemented and mutually reinforcing. Faculty members are more likely to get useful teaching resources while seeking research resources than vice versa, although the influence goes in both directions. Faculty has extensive requirements for secondary sources and finds the library resources available to be adequate.

A 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. Extensive use of Social Science Information Gateway (SOSIG) in their research area as the powerful tool has also been proved by the study. On the other hand, the study of the users is also found to be carried in web-based environment.

Nyamboga and Kemparaju (2003) studied on the library development and information centers in the electronic age due to transits changing in the digital era especially in the developing country. Keeping this in mind, library should provide E-Resources such as e-journals, e-databases and e-tools, etc., to the library users. However, printed materials
also continue to be extensively used by library users. The future electronic library, virtual or digital should aim at adding value to information resources and providing support and guidance.

David (2002) reviewed on information seeking in an electronic environment concerning Module 3 of the package by taking into account on training package of the ICT for Library and Information Professionals (ICTLIP) developed by UNESCO on South Asia Pacific region for developing countries. The study found that, the ICT application to the Library and Information Services proves to provide required knowledge and skill.

The digital era has brought the revolutionary changes the methods for the organization and automated handling of information. The web documents are significantly different from the traditional versions in their presentation and also the ways to organize and retrieve them. Ghiselli and Padula (2001) suggests the integration of the tools to provide an unified access to remote and heterogeneous archives, the contents of which can be grouped under the same subject and which have been integrated to allow the user to navigate and conduct the thematic searches.

Brown (1999) studied on information seeking behavior in electronic information age at the University of Oklahaoma about its scientists which includes astronomers, chemists, mathematicians and physicists by using electronic questionnaire as a tool. The results of the study show that, scientists accessed to electronic bibliographic databases, most of the scientists accessed print journals rather than electronic journals and felt useful for printed peer-reviewed journal article.

2.3.1.4 E-Resources in Engineering Colleges of India:

The study on Print v/s e-Journal and information Seeking Patterns of Users: A Case study of SP Jain Institute of Management & Research (SPJIMR) done by Umesha Reddy and
Thombara (2010) determine that e-Journals opened up lot of exciting opportunities and potentials for academic libraries. Majority of the users prefer to use the journal in both formats. Print journals are still as popular as e-Journals. Therefore, even in this digital world, e-Journals may not completely replace the existing print version but both will go together to meet the needs of the users.

Mahajan (2009) suggests the various kinds of information required by users in seeking of information. Majority of the users prefers information in both print and electronic form; simultaneously students desire to get more exposure to electronic resources. In this context, library and information centers should provide training to users for the use E-Resources. Libraries and Information centers should know the information-seeking behaviour of users to re-engineer their services and provide information efficiently.

Another study carried out by Kaur and Verma (2009) proved that the majority of users are using electronic journals for their research and teaching purpose. This study concluded that impact of E-Resources is significant and there is a decrease in the collection of print journals. The users access information from the various corners of the campus as well as outside the campus.

Nikam and Pramodini (2007) in their study on the use of e-journals and databases at the University of Mysore, concludes that the advancement of information and communication technologies has changed the behaviour of users particularly in electronic environment. The proliferation of information communication technology and advent of Internet has made dramatic changes in the E-Resources. Further, the study indicates that the use is minimal and the users in the Mysore University campus need a constant support and training to maximize the use of E-Resources.
2.3.1.5 E-Resources in Engineering Colleges of Bangalore Region:

Mulla’s (2011) study explains that the E-Resources and services in engineering college libraries in the state of Karnataka are not up to the mark in the aspects of collection and services as these colleges are facing an acute shortage of man power, infrastructure, and E-Resources. From the study it is proved that, the engineering college libraries are struggling in building digital collection to disseminate digital information.

Kannapanavar and Manjunatha (2011) say that library and information centers’ should equip themselves to modern technology to provide the information to their users. Due to the demand for online resources by the users, it is necessary to disseminate information through the variety of media channels. The organization of information services in engineering college libraries requires a new technology and methods for proper implementation in the interest of end users.

Kannappanavar and Manjunatha (2010) analyzed and confirmed about the use of information, frequency level among Professors, Assistant Professors and Lecturers which are similar which is significant. The resources and usage are correlated. Concluded from the analysis that usefulness of information sources are significant.

Mulla and Chandrashekhara (2006) explained in their study on E-Resources and services in engineering college libraries that, the collection and service infrastructure of the libraries in the study regions are not satisfactory. Engineering college libraries are facing lot of problems in creating digital library content and disseminating digital information, due to the inadequate Information Communication Technology infrastructure, shortage of manpower, less awareness, no user demand and without proper training. Also, the study strongly suggests for immediate attention on the part of respective institutions to get the support from the INFLIBNET would be a very good
alternative in creating an appropriate collection and service infrastructure. The recommends for institution level ICT task force agency consists of IT experts and heads of departments to oversee the implementation may yield good results.

2.3.1.6 User behaviour in Electronic environment:

Gakibayo et al. (2013) assessed in their study on the utilization of electronic information resources in Mbarara University Library by students by addressing four objectives namely; identifying the availability E-Resources in Mbarara University library, determining the extent of the relevance and use of E-Resources in Mbarara University library and lastly proposes strategies to promote the usage of E-Resources by students. The study found that utilization of E-Resources was not only affected by lack of computer skills and information literacy skills but also lack of enough computers and slow internet connectivity. The frequency of use of these resources indicated that a lot need to be done to increase e-resource use.

Chaurasia and Chaurasia (2012) briefed the Information Seeking Behaviour of Students and Scholars in Electronic Environment. The study proves that E-Resources have become the integral part of information dissemination. It is clear from the study that users have accepted changes that invaded as digital reading culture and use of E-Resources. Training among users in the library is a major factor to motivate the factors on the use of E-Resources. The World Wide Web has created the attention of the students as an easy source of accessing information and E-Resources as it is evident from the above study. The study also indicated the guidance in the use of library resources and services was necessary to help students to meet some of their information requirements.

Mobile learning is considered as the next generation of e-learning using mobile technologies. The students awareness of such technology is one of the most focuses for
successful adoption. The study by Alzaza and Yaakub (2011) aims to investigate students awareness and requirements of mobile learning services among Malaysian students in the higher education environment. The study found that the higher education environment now has the necessary mobile technology infrastructure to utilize m-learning. Moreover, the results show that students have adequate knowledge and a good awareness to use such technology in their educational environment.

Electronic information services and the competencies required for providing them are defined in his study by Corbin (2011). The personal, basic, general and special competencies that will be needed are described. Both how the competencies are acquired initially and how they will be maintained thereafter (as well as responsibilities for gaining and maintaining competencies) are also discussed.

Rahiman and Tamizhchelvan (2011) conducted a study on Information seeking behavior of students of engineering colleges in and around Coimbatore revealed that, the library remains the predominant primary source among the students, as it is continuously being dependent by the young engineering students. The other interesting finding is that the information seeking process of students is dominated by the visiting behaviour to library. Students who visit daily mostly access to newspapers, whereas students who visit library monthly indicated that primary purpose of the visit is to borrow books. The study also shows that the libraries and the managements should focus on adding more projects and thesis, online resources, and CDs and DVDs since a sizeable number of students feel that these resources are slightly sufficient or insufficient. Another findings reveals that, circulation service followed by indexing, abstracting and OPAC service are excellently provided, whereas a below margin but a sizable number of respondents feel that collections in digital library, online resources, patents and standards needs improvement.
Engel et al. (2011) study determines the information-seeking behaviour of academic engineering faculty from twenty public research universities. The investigation includes an examination of how frequently engineering faculty seek or access information, how they keep abreast of current developments in the field and find recent journal articles, how often they visit the library in person, and how important library services and resources are meeting their information needs. The responses emphasize the importance of electronic access to current and archived scholarly journals for meeting the research and information needs of engineering faculty. The responses from survey participants confirmed the findings of other studies that electronic access to current and archived scholarly journals and Internet resources are important to meeting their needs. Further research on engineering faculty must be conducted to answer additional questions such as; do the information-seeking behaviours of academic engineering faculty mirror the behaviour of researchers in other disciplines, or do they more closely mirror that of their peers in engineering corporate environments? In this context, further research will help to address these questions and assist librarians in fulfilling the core library mission of supporting the research and teaching needs of academic engineering faculty.

Ansari and Kumar (2010) have observed the information seeking behaviour of college faculty in Uttar Pradesh. They studied on the type of information sources used, preference of information formats, importance and reasons for using certain information sources.

Vasappa Gowda and Shivalingaiah (2010) have made a similar study on the researchers in the University Libraries in Karnataka. The results show that, there is a significant difference among the research scholars of various disciplines in the
preferences of various channels of information, modes of literature search, purpose of visit to the library and time spent.

**Okello-Obura et al. (2010)** in their study ‘electronic information seeking among LIS Postgraduate students at Makerere University, Uganda’ explains that advancement of information communication technologies has created an opportunities to explore the knowledge and moving academic libraries from a traditional environment to digital library environment. Also, it may cope-up with the ever increasing demands from the users for remote access to online information resources. Online resources including e-books need to more access for a common man at any point of time at affordable cost. The study predicts that, the libraries of the future will be more of portal as a concept ‘library without walls’.

**Varghese, Rekha Rani (2008)** summarized in their user study as the electronic information environment has facilitates the enhancement of the speed of service, number of users served, and the quantity and exhaustiveness of information provided. The way, in which the people search for information to support research, teaching and creative activities are tremendously changing as new technologies and information delivery system emerges. Libraries and information centers are compelled to plan, organize and disseminate the required information to the users. However, the results further recommends for additional studies to foster a more in-depth understanding of the users of information services.

Information Seeking Behaviour of distance education students of University of North Carolina (UNC) was studied by **Thompson (2007)**. The aim of the study was to identify the library use and needs of these students and to determine the library’s plan of service. Survey was carried out using a web-based self administered questionnaire and the survey
instrument was sent to all enrolled distance students of four departments. Nineteen students (10.5%) responded to the study. The study found that students prefer electronic resources to traditional print-based resources and was highly confident in their search abilities. Students commonly use Google and UNC libraries web pages for their research, but they consult Google more for information.

Butterworth (2006) argues that typically Information seeking and retrieval behaviour is a strongly social, but weakly collaborative leisure activity. Author discusses how these assumptions fit with the existing information seeking and retrieval (IS&R) models and proposes path for future work. The author touches on the browsing behaviour and searching behaviour and has made a sketch of the characteristics of ‘personal history’ researchers.

Nicholas et al. (2007) have employed deep log analysis (DLA) techniques to demonstrate what usage data can disclose about information seeking behaviour of virtual scholars’ academics and researchers. They have studied the information seeking behaviour of the faculty from those digital scholarly journals. This study is mainly to find information seeking behaviour of users in digital environment. Information Architecture for the World Wide Web is very important for the information seekers.

Raza et al. (2006) examined the use of the electronic journals by researchers at Aligarh Muslim University. Authors carried out a study to find out the purpose, level of electronic information usage, place of use, problems faced preference of source and effectiveness of e-journals by researchers. Questionnaire method was used for data collection. Fifty-two research scholars responded to the survey. Data thus collected was statistically analyzed. The study revealed that researchers are aware of the e-journals available in the university. Researchers use the e-journals for their research purpose and also for updating their
knowledge. Majority of the researchers are of the opinion that e-journals will not replace traditional print format and are not satisfied with the e-journals that are available in their subjects.

**Siatri (1998)** compared the Information Seeking Behaviour of academic computer scientists in British and Greek Universities in an electronic environment. The study investigated how electronic information resources and information communication facilities especially those located in the internet have affected the computer scientists in terms of exchange of knowledge and information seeking behaviour. A combination of quantitative and qualitative method was used to collect data. The data analysis and comparison of findings were ongoing.

**Mujoo-Munshi et al. (1997)** studied the information seeking pattern in the electronic environment. Authors theoretically analyzed the seeking pattern in electronic media with respect to various attributes. Study also discussed the two consequences namely physical and intellectual and highlighted their specific attributes, which directly influenced the information seeking in electronic environment. Study points out that information seeking activities were amplified in electronic environment. Study points out that information seeking activities were amplified in electronic media. The increase in information seeking activities was due to the facts like more access points, more iteration of activities, more tools and immediate feedback. Study also point out that the electronic system had its impact on physical attributes of information such as quantity, time, location and format.

Impact of information superhighway on library and information services at Kerala Agricultural University by **Nair (1997)** study concluded that, traditionally library was considered as a place which collects, organizes and makes available books and other printed documents for use. But Internet and information superhighway have come with
solid threats to that function. Unless, librarians are prepared to accept the challenge posed to the profession will become extinct within a short while. Unless, education and research institutions are not prepared to transform their library and information systems and make them capable of existing in the superhighway, maintaining the system will be a resource waste.

Marchionini (1995) is probably first to deal with the subject of information seeking in electronic environment. In his book author explains the information seeking behaviour and changing environment. Bates (1996) made a survey on decades of research on information needs and information-seeking behaviour. The survey study reveals that in 1950s and 1960s the emphasis was on the needs of scientists and engineers and in 1970s the needs were of the social scientists.

2.4 Summing Up:

The 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 varied categories. The studies in the traditional context reveal on the use of the library and its resources. Researchers and teachers mainly depended on primary sources and students and also teachers depended more on textbooks. The library has been the main source of access to information in the general study of information seeking behaviour of the users. The studies on use of catalogue and use of classification systems have been rare even though there are separate studies available on catalogue use studies.

The advent of electronic and digital information resources has primarily changed the seeking pattern from browse and access to search, browse and access. The CD-ROM databases were the first change in this paradigm. Then came online information retrieval
services that amounted to extensive and systematic search formulation and retrieve the resulted document references. The Internet and World Wide Web besides search involved interactions and browsing preceded by search but the search became rather random and not structured like in the age of online or CD-ROM era. So the studies on the use, access, use pattern, information seeking behaviour, and study of the existing system, behaviour model, etc., use of different methods and techniques in the browsing. The studies have been of scientists, technologies and social scientists and also more on the academic community and academic libraries. So the studies are found to be one of important group of users on whom many studies have been conducted to analyze their information seeking behaviour in different information environment. Studies of the social scientists concerning their behavior 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 of different user groups. Another area of study which is lacking here is the studies on the public library users and their information seeking behaviour. There are one or two references found on this account.

Literature reviews are important because they seek to summarize the literature that is available on any one topic. They make sense of a body of research and present an analysis of the available literature so that the reader does not have to access each individual research report included in the review. This is important because there is an increasing amount of literature available for any researcher on Library resources, services, Information Seeking Behavior. The impact of ICT environment, but library professionals, who cannot be expected to read and assimilate all the information on any one topic. Everyone, who works as a professional duly to be up-to-date with recent
developments and ideas that are useful, it is also time consuming for anyone to assimilate process and decide how to implement all this information.