Chapter 5: Information Seeking Behaviour

5.1 Introduction:

Information is universal and has become a part of everyone’s life. It is required even for a common purpose and it may be in any form like information required for daily routine work, call from friends, weather forecasts etc. Every person needs to update his knowledge for various reasons and he tries to collect information required in the field from different sources. Generally academicians, professionals, scientists and researchers need information to update their subject knowledge and they refer the published and unpublished resources for obtaining information. This information can be obtained from the library through consulting books, journals, newspapers, thesis, case studies, project reports etc. Information is power and has immense benefit to knowledge society.

5.2 Information:

According to Shannon and Weaver (1949) “Information is any stimulus that reduces uncertainty”. In the views of Chen and Hernon (1982) information is “all knowledge, ideas, facts, data and imaginative works of mind which are communicated formally and/or informally in any format”. Information thus covers facts that consist of data, knowledge or wisdom. Facts are the things that are true and known to be happened or already existed. Data is the smallest element of information and represented in any language and in any form like symbol or mathematical signs etc. It also represents people, objects, events and concepts. The knowledge is an organized set of statements of facts or ideas presenting a judgment with some specific reason. It is an experimental result which is transmitted to others through the medium of communication in some form.

In brief data is a raw fact, whereas information is statement or product of analysing data to state some facts. Information on a particular area or concept collected together generates knowledge which could be applied in practice. The definition of wisdom is termed as the ability to judge what is true, right lasting or insight (Farlex Free online dictionary). It can also be expressed as an individual quality which comes to one through
acquisition of sound knowledge and also through experience acquired due to age. This trait comprises the ability to see far ahead into the future and select the right alternatives from the available sources. It is the highest form of knowledge which cannot be transferred but can only be acquired. Information is used for decision-making and it is based on data collected and analysed.

The sources of information are different and grouped into primary sources covering periodicals, research reports, conference proceedings, patents, standards, thesis, trade literature etc. which provides nascent primary and first hand information to user community. Whereas secondary sources covers compilation of published information through primary sources and consist of indexing and abstracting periodicals, reviews, trends or progress reports, annuals, handbooks, encyclopaedias, dictionaries, textbooks etc. the tertiary sources are in the form of yearbooks, directories, biographies, guides to literature, lists of research in progress etc. which are useful for the users. Information is made available to the society through various sources and forms (print or non print/digital). Information need from the view of information science is a vague awareness of something missing and as culminating in locating information that contributes to understanding the meaning (Kuhlthau 1993). It is also described as Analogues State of Knowledge (ASK) (Belkin et. al. 1982) or a gap in individual’s knowledge in sense-making situations (Dervin and Nilan 1986). Information is regarded as wealth and everyone needs it for different purposes. The pinpointed information helps users to build the castle of advanced knowledge. Information is very useful for decision making in any field and at all the levels.

5.2.1 Information: Properties

Information is used by everyone with specific application and has distinctive properties (Scarrott 1994) like:

- Information is not consumed due to usage but it generates new and innovative concepts.
- It can be shared simultaneously without any loss of information.
• It is a democratic resource which can be consumed and is required by both rich and poor, literate or illiterate.
• Information is dynamic, ever growing, expanding and continuing.

Information can be difference you perceive in your environment or within yourself. (Case 2002). It is concluded that information is vital and needed by everyone to contribute to knowledge. Every human being is in search of information for various purposes.

5.2.2 Information: Need

The concept of term “information need” has been coined by Robert Taylor (1962) an American information scientist (Dave 2012), whereas Brittain (1970) expressed the meaning of need as “need expressed by the user or need which user cannot express or immediate need or future or deferred or potential need etc.” In short the need is simply defined as what user requires for his work, it may be for research, education, or updating knowledge or any other definite purpose. “An information need is a recognition that your knowledge is inadequate to satisfy a goal that you have” Case (2002).

Thus, information is any fact needed to take decision or fulfilment of need. Information need forces user to seek information. The need of information is continuous for users and is needed to keep the users aware of new or latest developments in the field of interest, analyse the state of art of the topic etc. Information has value and is needed by everyone as per requirements of the task.

5.2.3 Information: Types and Qualities

According to Shera (1973) there are six types of information:

1. **Conceptual information**: It relates to ideas, theories and hypothesis about the relationship which exists among the variables in an area.
2. **Empirical information**: It relates to data and experience of research which may be drawn from oneself or communicated through others.
3. **Procedural information:** This is the data which is obtained, then manipulated and tested through investigation.

4. **Stimulatory information:** It is motivated by oneself or the environment.

5. **Policy information:** It is focused on the decision making process.

6. **Directive information:** It is used for co-coordinating and enabling effective group activity.

The qualities of information as listed by Rojas (1982) are accessibility, comprehensiveness, precision, compatibility, timeliness, clarity, flexibility, verifiability, fair and quantifiable etc. Thus, information is comprehensive, which can be used and accessed for generating new knowledge. Precise, accurate, and competitive information is required by researchers or users of the information.

### 5.2.4 Information: Explosion and Information Overload

The knowledge society is using the information and generating new knowledge. The information explosion is so high that information is doubling within couple of years and becoming difficult to manage and is the main cause for information overload which is witnessed in the knowledge society. In addition to this, the usage of information technology in publishing information has added more load on the users. Jungwirth (2002) rightly indicated that nearly 1000 books are published internationally everyday and printed statistics indicated by him shows that printed knowledge is doubled every five years. Due to digital publications the growth rate is being reduced to few years.

Information overload is generally considered as a situation in which an individual’s efficiency in using information in his work is hampered by the amount of relevant and potentially useful information available to him. Information technology is considered to be a major cause of information overload. The information explosion and use of ICT has made the situation of users more complicated and complex for searching and getting desired information. The information seeking habits of users have changed and puzzled them due to unawareness of proper information sources and methods of extraction of data. Information users need training for searching proper information from e-resources.
5.3 User Needs and User’s Expectations from Library:

Users are important factors for libraries, without which an information system loses its complete purpose. In a library set-up it is very important to understand who the users are, what their needs are and how those needs can be satisfied using the library. If people are not using the library resources it means that they are not been taken care of or they are not aware of the availability of information in the library. In some cases user has been a much neglected element in the whole information business, but in the earlier and recent times emphasis on user need has been laid by conducting various use and user studies. The user is termed as user, consumer, patron, client etc. but they are synonymical used in library profession.

Heidi (1999) classified the user component as follows:

- **User**- This term is generally employed to refer to clients of information services and libraries and in case of research studies it refers to participants or respondents.
- **Client**- This term expresses a particular type of professional relationship.
- **Customer**- This term is associated with a business model of service provision in which financial transactions are involved.
- **Patron**- This term depicts images of wealthy benefactors and guardians.

An attempt was made by Gorman (1983) to suggest a new term which describes information seekers using the libraries as ‘libraree’. The users can be categorized according to type of work they do, systems they belong or their professions. Libraries of the past provided bulk services to the people. The stock was acquired and organized to serve the requirements or needs of an unspecified majority. The services offered were mainly either taking it or leave it as the libraries had no alternatives. It was impossible to serve the individual needs. The users were given help only when they asked for it and it was also limited.

Line (1998) has defined expectations of user’s from the library and few of them are summarised as:

- An attractive building with suitable light and facilities required by users
• Long opening hours of libraries
• A variety of area for study purpose (individual space as well as space for group study)
• A coffee shop where one can relax, refresh, mix with other users and library staff
• Easy and good access to information in library,
• Simple and speedy procedures for circulation
• The ability to access a variety of media from one workstation
• An easy to use catalogue which is easily accessible
• Speedy access to the resources not held in the library
• A shelf arrangement that aids borrowing
• Friendly behavior of staff with users

The expectations of users defined by Line (1998) are true in case of traditional libraries as well as technology based libraries. But apart from these expectations, few more could be added to the list after analysing the trends as under:

• The collection in library must be developed based on user needs and according to mission and vision of institute.
• More information services based on print and e-resources
• Guidance from library staff to search proper information sources
• Increased usage of e-resources need orientation of information literacy for both users and library staff
• Economical ways for collection development using different models
• Users need pinpointed information within no time from different sources

There is a need to design a system in libraries for developing proper collection and services to be provided to users based on their needs. It is not possible to satisfy all the users but the facilities provided can be easily made available and can be used by everyone according to their own preferences. In addition to this user centric services can also be introduced using online searching of e-resources. To re-engineer the practices in libraries librarians have to observe and understand the user needs. The library can also construct a profile of its user’s interest and match it regularly against the available
databases. Librarians need to listen and learn to find out the requirements of the clientele and make provision of information sources accordingly. This can be successfully achieved only if libraries measure their performances and undertake ISB studies and user studies.

5.4 User Studies and Surveys:

In the early years user studies “research was conducted which later shifted from studies of library and documentation use to user behaviour or the information behaviour, information seeking behaviour.

The term user study means a study of user’s need for information. The purpose of user study is to make an attempt to discover patterns of use and levels of awareness of users towards library services and facilities, to determine success or non-success of services and to identify what adjustments are needed in service strategy. According to Busha and Harter (1980) “User studies are often instigated as attempts to understand justify explain or expand library usage and consequently to gain more knowledge about the process of communication in so far as libraries and their clientele are concerned”. According to Kamaruddin (1992) a user study is a systematic study of information requirements of users in order to facilitate exchanges between information system and users. Pao (1989) grouped user studies in three stages:

1. User oriented studies
2. System use oriented studies
3. Utility oriented studies

User oriented studies focussed on characteristics of users and Pao (1989) considers points in this study are: age, educational level, task description etc. System use oriented studies drive their data from the system. The transactions between users and the system are investigated and examined like loan through ILL, number of online searchers performed. Utility oriented studies are reflected to information use and its impact. The purpose of user study is:
• To identify the needs of users
• To identify the resources and services needs of users
• To identify strength and weakness of library resources
• For collection development
• For proper resources collection.

User study is a complex process as it holds studies of information needs, information use, ISB, use of information sources and channels. Accessing information needs and ISB is the base for designing information systems and services. Information provider cannot provide information unless he knows or identifies need and expectation of users.

The “Centre for Research on User studies” defines user study as a “multidisciplinary art of knowledge being the study of the behaviour of users (and non-users) of information systems and services.” User studies are basically concerned with analysing people, their attitude, priorities, preferences and behaviour. The main steps involved in user studies are selection and formulation of research problem, working hypothesis, literature search, overall design or planning the strategy of the study, sampling and sampling strategy or plan, data collection, measurement and scaling techniques, interpretation, generalization and realization of objectives, preparation, writing, presentation and dissemination of research results etc. Thus, user studies are considered as attempts to understand justify, explain or expand library information sources and services usage.

Information sources are more complex and expensive and beyond reach to stack at one place. The traditional collection is in print form and services based on it are reference service, current awareness services and selective dissemination of information. These services are to be supplemented by just for you services instead of just in case or just in time. The increased use of technology and availability of e-resources in all sectors including LIC is experienced and has forced both users and librarians to shift the practices. The basic challenge for library professionals is to convince and convert traditional users into users of internet-based resources, e-resources and services based on these media. Thirunavukkarasu (2011) indicated the future of libraries and pointed out
that college and university libraries face enormous challenges and opportunities to manage the user demands and expectations. As campuses move into the information age, mission and role of the library is being redefined. The amount of information libraries need to acquire continues to increase but it is not sufficient to fulfill user needs inspite of heavy investment on the collection development. The users require information from the library, which is current, accurate, relevant, comprehensive and useful. This can be successfully possible by incorporating end-user’s survey or analysis of needs and users, in any type of libraries.

The term user study has been defined variously by different information scientists. According to Vikas (2004) user studies or use studies could be concerned with study of information processing activities of the users. Empirical studies on the use of demand or need for information is usually called user studies. In fact a study, which is focused on users to understand directly or indirectly their information needs, use behaviors and use patterns, is termed as user study. The term user studies are referred to library surveys because studies of information needs or information use behavior focus upon a wider range of information sources and channels rather than simply libraries. User studies comprise the study of people’s need for and use of information. A user study may be defined as the systematic study of information requirements of users in order to facilitate meaningful exchange between information systems and users. User studies basically cover aspects like user behavior, use of literature and information sources consulted, etc.

The reasons for conducting user studies are:

1) To identify the actual strengths and weaknesses of library resources and services
2) To identify the levels and kinds of user needs
3) To identify faculty and student priorities for use of library resources and services
4) To identify the limitations or problems in use of information resources
5) To improve the organization and planning of library services.
6) To find out the information seeking attitudes of users
7) To find out users requirement and expectations from the library, in terms of type, quality and range of services to satisfy their needs.

The different types of user studies put forth by Wilson-Davis (1977) are as follows:
• Library oriented studies: investigates use of individual library or information centers.
• User oriented studies: studies based on how a particular user group obtains information needed to conduct of any work.

Categories of user studies discussed by Menzel (1966) are also summarized below:

• User studies: tries to find out the relative use of different channels of information in response to various questions.
• Behavior studies: these studies are carried out to find the pattern of overall reaction of the user community to communication system without any reference to any specific information receiving event. In such studies communication behavior of users are studied.
• Information flow studies: This types of study views the pattern of flow of information in the communication system (From manuscript to print and publication).
• Channel studies: involve a thorough study of a particular information channel used by scientists or users. The channels may be primary or secondary or tertiary resources.
• Critical incident technique: this type of study takes a particular incident in the information seeking activities of a scientist and studies that incident critically. It tries to find out how and when the incident occurred, what information need arose, what steps were taken to meet the need, whether the user was satisfied with the information obtained and whether the results of information collected may affect his work.
• Dissemination studies: It studies the type of information produced by the users, how the information reaches them and it’s utility.

These views regarding use studies clearly indicate that the purpose is to identify the use pattern of users while searching information. These studies analyses the use pattern of information sources by the users.

**5.5 Methodology of Conducting User Study:**
When planning to conduct a user study for a library, various steps are considered. A basic planning model for user study is similar to a general model of scientific method of inquiry found in any social science. The steps in user study as given by Laloo (2002) are presented in the following diagram which highlights the steps to be followed while conducting user studies.

**Figure: 5.1 Model of Scientific method**

Model of the Scientific Method

<table>
<thead>
<tr>
<th>State general problem</th>
<th>Conduct literature search</th>
<th>State specific problem</th>
<th>Design methodology</th>
<th>Gather Data</th>
<th>Analyze data</th>
<th>Report results</th>
<th>Polish &amp; ramify results</th>
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**Stages of planning a user study**

1. Problem definition  
2. Goal identification and needs assessment  
3. Definition of the scope of programme  
   - Budget provision  
4. Literature review  
5. Programme development  
   - Strategy  
   - Tactics  
   - Testing  
   - Implementation  
6. Programme evaluation  
   - Analysis  
   - Publication  
7. Redefinition of problem and identification of new research areas.

(Source: Information needs, Information seeking behaviour and users, pp115)
The user studies were later popularly known as information seeking behaviour studies. There is a need to assess the terms and their importance. The following paragraphs highlight the information, information need, information seeking and information seeking behaviour concepts etc.

5.6 Information Need and Seeking:

Nicholas (2000) information the information needs in which he pointed out that information demand is base of information need, information demand is request for information required and is the base for seeking information. Users then consult information sources or information systems to get information. Demand is expectations of users. The ICT, web, internet sources have raised the expectation of users from libraries which are also termed as information systems. In general information need covers need, want and demand. Humans play variety of roles and activities in their life and for performing any activity information needs vary as per the role of performance. In the process of information seeking the factors involved are internal, external, unreached and aborted etc. Information needs also involves skills to access information. Crawford (1978) pointed that different factors of information need include discipline/field/area of interest, availability of facilities to seek new ideas. But Wilson correctly opined that information needs depends on:

- Nature of organisation
- Organisational information need
- Work carried out in organisation
- Personal information needs

In general view information behaviour is a broader term in which interaction with information source, information channel, information seeking process are involved. Thus, ISB in short is purposive seeking for information to satisfy some goals and objectives. "Information behaviour" is currently preferred term (for user’s studies) which is used to describe the different ways in which human beings interact with information. It is the way in which people seek and utilize information. In the views of Bates (2010) information behaviour used in library and information science refers to a sub-discipline
that engages in a wide range of types of research conducted in order to understand the human relationship to information.

As rightly explained by Wilson (1994) the concept of ISB has been initiated from the user studies to understand the needs of users. The information seeking can also be termed as information gathering. From the views of Line (1998) all people or individuals seek and use the information in different ways. Much of our daily life is spent in information gathering. The simple process of looking at people is also termed as information gathering. “Information seeking is a conscious effort to acquire information in response to a need or gap in your knowledge” Case (2002). This covers the process of acquiring needed information to develop knowledge. Most of this forms a part of our daily routine and is performed differently by individuals.

There are no such things like homogenous body of information users. A group of people with same level of education may be working on the same subject at the same time but they use the information in different ways. Some of the group may feel a part of information relevant but others may not. It may also happen that some of them may scan and absorb the vast quantities of material while others may read only a part of it. Some prefer the print media while some of them may find the electronic media more comfortable. Some like browsing while some find it a waste of time and energy. Thus, every individual has his own views while collecting or gathering information.

Information seeking has developed meanings out of several streams. Librarians wanted to understand library users better, the government agencies wanted to understand how scientists and engineers used technical information in order to promote more rapid uptake of new research results, and social scientists generally were interested in the social uses of information in a variety of senses. In recent years, social studies of information technology and social informatics have contributed to this area. Within library and information science, various streams of research are drawn for what they can contribute to understanding of information behaviour of users. Information seeking covers many forms of behaviour like browsing, observing, using informal information sources,
reading, studying, searching formal information sources, subscribing to mass media etc. (Bell 1991, Sahoo and Ramesh 2011).

Information seeking is an aspect of scholarly work of interest to academic librarian to develop collection, initiate services and organizational structures. Information seeking is termed as a natural and necessary mechanism of human existence (Kumar and Satyanarayana 2012). Feather and Sturges (2002) have grouped information seeking into three main periods, the sixties to the mid eighties, the mid eighties to mid nineties and mid nineties till now. In the first period, the focus was on information service and quality, the second period was rich in empirical studies and activity models of information seeking processes, while the most recent period has been characterized by attempts to design comprehensive models integrating information seeking and information retrieval. The beginning of the second millennium was initiated by the use of technology in academic workplaces. It began to offer scholars and other stakeholders in higher education a highly dynamic and interactive digital environment facilitating constant and instant connectivity via the networked computers in their university campus.

The students, researchers and faculties are main users in higher education and in ICT era choice of new information delivery systems, wide array of information sources and channels are available to get information anytime from anywhere. However, such ease of access does not imply that all information retrieved is relevant, sufficient or qualitative. The creation of vast information resources initiated the need to identify and select information resources which are most appropriate. Keeping in mind the use and rapid changing scenario of information technologies, it is necessary for the academic institutes to understand how students and library users make use of information-rich environment available in their academic fields. Wilson (2008) reiterates the importance of research in information-seeking area by stating "It seems likely that the need to understand how people search for and use information services continue to develop, the understanding gained may become more and more important for the effective design of systems and services". Thus information seeking is an essential aspect and there is a need to ascertain the habits of users while seeking information while ISB encompasses information seeking as well as the totality of other unintentional or passive behaviours as well as
purposive behaviours that do not involve seeking such availability of information (Case 2002). Every user or group of users have different styles of collecting information but it is necessary to understand seeking behaviour of user to get proper information to achieve the goal.

5.7 Information Seeking Behaviour (ISB):

Information seeking behaviour is the purposive seeking for information as a consequence of a need to satisfy some goal. It involves personal reasons for seeking information, the kind of information which is being sought and the different ways and sources from which the required information is being sought (Leckie, Pettigrew and Sylvain 1996). The early studies on information behaviour were called "use studies" (Davis 1964), the studies of "information seeking and gathering," or studies of "information needs and uses" (Menzel 1966). Gradually, the term "information seeking research" was used to include all kinds of research on people’s interaction with information (Bates 2010). ISB initially termed as users studies was conducted primarily on behaviour of users in seeking information. These studies are useful to analyse the user, his psychology, attitude, the interested subject field, working conditions, his position in the society etc. When the need for information is recognized by an individual, he also knows that the information is not receiving automatically, but has to search for it in a proper method. The information seeking behaviour is study of strategies or processes the seekers of the information resort in order to satisfy the need for information. The action of information seeking behaviour initiates when information needed by the user and approaches to some of the known formal systems like libraries, information centres or some other sources to satisfy needs.

According to Krikels (1983) the term information seeking behaviour refers to “any activity of an individual that is undertaken to identify a message that satisfies a perceived need” Wilson (1999, 2000) defined information behaviour as “those activities a person, may engage in when identifying his or her own needs for information, searching for such information in anyway and using or transferring that information”. Kumar (1990) further emphasized that, ISB is mainly concerned with who needs, what kind of information and for what reason, whether information found is evaluated and used and how their needs
can be identified and satisfied. Kumar and Satyanarayana (2012) as cited by Kumar (1990) the ISB process has following factors.

1. Identifying the objectives
2. Defining the need
3. Assessing information systems
4. Establishing sources of information
5. Information acquisition
6. Use of information
7. Satisfaction or Dissatisfaction

They have further stated that “ISB is the seeking in which the individual may take interest either in manual information system (like newspapers or library) or with computer based systems like the web. Sahoo and Ramesh (2011) have considered ISB as determining factor in designing any information systems or to bring suitable improvements to the existing systems. Nicolaisen (2004, 2009), Dave (2012) described four distinct types of information seeking behaviors: visceral, conscious, formalized and compromised. The visceral need is expressed as the actual information need before it has been expressed. The conscious need is the need once it has been recognized by the seeker. The formalized need is the statement of the need and the compromised need is the query when related to the information system. JISC’s and British Library in their study of the Google Generation (2007) investigated the modern usage of digital information and elaborated six different characteristics of online information seeking behavior like: horizontal information seekers, navigators, viewers, squirreling behavior seekers, diverse information seekers, checking information seekers.

Horizontal information seeking is sometimes referred to as "skimming". An information seeker who skims views a couple of pages then subsequently follows other links without necessarily returning to the initial sites. Navigators, as might be expected, spend their time finding their way around. Wilson (2004) found that users of e-book or e-journal sites were most likely to spend on an average four to eight minutes viewing said sites. Squirreling behavior relates to users who download lots of documents but might not necessarily end up reading them. Checking information seekers assess the host in order to

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ascertain trustworthiness. The bracket of users named diverse information seekers are users whose behavior differs from the above sectors.

5.7.1 ISB: Development of Concept

Beginning with Bernal (1960), hundreds of studies have been conducted to understand the ways researchers use and obtain information for their needs. As described by Line (1971) in-depth studies of information needs of social scientists’ began with American Psychological Association (1963-1969) project in 1963 and INFROSS study at Bath University in 1967. Most of studies focused on large groups and used quantitative methods to investigate the reasons for seeking information, the types of information needed, sources used for obtaining the required information, preferences for and satisfaction with the sources used, and problems faced while seeking information (Folster 1995, Slater 1988). During late 1980s, a shift took place which emphasized the need to understand information-seeking behaviour employing more holistic approaches by using qualitative methods to study small groups (Pettigrew et al., 2001, Wang 1999). The information seeking models developed by Kuhlthau of 1983, 1991, and 1993 are highly cited sources in literature and presented information in search process model. Her basic stress was on how an individual constructs meaning that begins with uncertainty and anxiety and the multiple encounters with information sources and channels. She also included affective, cognitive and physical domains in her models. She finally proposed six stages of information seeking which are task initiation, task selection, perfection exploration, focus formulation, information collection, and search closure. These approaches began with work done by Dervin in 1977, Dervin and Nilan (1986) and Kuhlthau (1983) have resulted in the development of various models to explain the information-seeking patterns of individuals or groups. Dervin (1986) presented information seeking behaviour model which had elements of demand on system/sources approach. This approach referred to the extent different kinds of sources, media, systems, documents, materials or channels were employed. The awareness approach of the same model refers to the level of awareness of users about the sources that are used. Translated into the nomenclature of task/source approach it is essentially a combination of demand/source and awareness approaches. The model stipulates three stages of
determining and analysing the tasks, analyzing or classifying the sources and matching what sources are available for tasks. Ellis (1987, 1989) developed a model of information-seeking behaviour among social scientists consisting of six stages: starting, chaining, browsing, differentiating, monitoring and extracting. Ellis et. al. (1993) extended these stages to two more stages consisting of verifying and ending. Ellis’ model was slightly modified and extended by Meho and Hass (2001), Meho and Tibbo (2003). They explained different stages of starting, chaining, browsing, monitoring, accessing, differentiating, extracting, verifying, networking and information managing. These developments have also led to the use of mixed-method approach where both qualitative and quantitative data collection techniques are used to understand the information-seeking behaviour of scholars. Wilson (1999) presented his model of information behaviour and later had it in a substantially improved form in 1999 after including contextual factors that could discern causative effects. In the applied context of information-seeking patterns Tenopir et al. (2008) surveyed faculty members in USA, Finland and Australia from 2004 to 2007 to reveal reading patterns of e-articles by academics in order to measure the purpose and value of e-reading and to demonstrate the value of electronic journal collections provided by the library. Results were found to be useful in comparing that libraries made influence on reading patterns. Al-Suqri (2007), Marouf and Anwar (2010) noted these developments and explained how information-seeking studies could be instrumental in designing appropriate information systems, services and search retrieval capabilities of social scientists.

5.7.2 Factors Affecting Information Seeking Behaviour:

Line (1969) defined the factors that affected information requirement of users namely age, experience, background, qualifications, seniority, solitary, or team work, persistence, thoroughness, motivation, willingness to accept help from others, awareness of sources, media of communication and storage etc. Thus, he cleared stated that ISB is influenced by factors noted above. An individual adopt different ways in order to satisfy an information need, which depends on certain factors and certain points which have to be considered when an individual decides on a certain course of action and it includes:
• Access to the source.
• Money matters the most which has to be considered
• Time involved is also an important factor
• The source whether it offers the answer to their problem
• Whether they will understand what the source provided as answer

There are other factors also affecting the ISB viz. social, political, geographical, educational etc. Social factors: a desire for information on such topics like information on fashion, music which may be openly available and looked upon in certain societies while in some societies it may be looked behind closed doors.

Political factors: The dictatorship political system may define the information on defence, freedom of speech and expression as forbidden to a particular group while non-availability of such information may motivate a person to resort to underground means.

Geographical factors: The geographical location of an individual also determines the means adopted by a person for searching information.

Educational factors: The educated and uneducated may seek information differently.

A major emphasis on study of information needs of social scientists occurred in England in late 1960s. The investigation into information requirements of social scientists (INFROSS) was sponsored by the Office of Scientific and Technological Information (OSTI). The purpose of the study was to identify shortcomings in the traditional system of information acquisition in order to design improved information systems. The major conclusions of the study were:

• Social scientists placed a high amount of importance on finding references.
• Most of the formal information came from journals.
• They depended on informal channels such as consulting colleagues and experts for much of their information while library catalogues and librarians were of little use. In fact users have to consult the librarian to seek the desired information from various sources.
5.8 Information Searching vs. Information Seeking:

Information seeking relates to how people interact with information, how and when they seek information and what uses they make out of it. Seeking information from paper and online resources, many problems have been encountered and skills are needed to succeed in the specific acts associated with locating information either in a paper or online resource. Bates’ articles on information searching tactics and search techniques (Bates 1979) promoted greater attention to the complexities of identifying sources and working one’s way through resources to locate the desired information. A long line of research addressed that both search success and desirable design features in information systems to promote ease of use (Cochrane et al, (1983), Fidel, (1984), Hsieh-Yee (1993), Marchionini (1995), Spink (2001). Browsing is normally seen as most unstructured method of information searching as described by Bates (2007), O’Connor (1993) and Rice (2001). In brief, information searching means hunting for information and browsing relates to unstructured information searching whereas information seeking is the process involving many activities together for getting and using information in a systematic manner.

5.9 Information Seeking Behaviour: Review of Established / Existing Models:

A model of ISB is a framework or a flow diagram for explaining the process or method of information seeking by the users. To study and understand background for current research study and developing ISB model for management libraries in ICT era there is a need to review different established models created by the eminent research scholars. Among the different models established for ISB, few prominent qualitative models are selected, reviewed and studied. The brief discussions on these models are narrated below. The models selected for analysis are:

1) Wilson’s model of information behaviour (1981)
2) Norman’s cognitive model of information seeking(1988)
3) Ellis’s Information Seeking Model (1989)
5.9.1 Wilson’s model (1981):

In this model, the author explains the process of information seeking which is highlighted in the following diagram:

*Figure 5.2 Wilson's Model of Information Behaviour*

![Diagram of Wilson's Model of Information Behaviour](http://informationr.net/tdw/publ/papers/1999JDoc.html)

This model suggests that the process of information seeking arises mainly because of a need which is recognized by an individual who wants to satisfy the need and hence
makes a demand for formal or informal information sources or services which results in success or failure to find relevant information. If the user is successful in seeking the required information he makes the use of the information to satisfy his need either partially or fully. If the user fails to satisfy the need for information he may have to reiterate the search process. The model also shows that the process of ISB may involve other people through information exchange and if the information derived is useful.

5.9.2 Norman’s Cognitive Model of Information Seeking

A cognitive account of the standard model derived from Norman's influential model of general task performance (Norman, 1988, Hearst 2009) is presented below. The model given by Norman depicts a broad perspective on how people operate in the world. According to his model, a person must first have a basic idea of what they want and the goals they want to achieve. Then they mentally prepare their own model of the situation and decide on some kind of action to be taken which will affect them, other related people or objects with the aim of achieving their goal.

Figure 5.3: Norman's Cognitive Execution-Evaluation Model

Norman divided actions into actual doing (execution) and then checking (evaluation) the results. After taking an action, a person must assess what kind of change occurred and if there were any changes and whether these changes had a positive impact on achieving the desired goals. Norman also suggested that less knowledge a person has about their task, the less they might be successful in formulating goals and assess results. Recognizing a
need for information is akin to formulating and becoming conscious of a goal. Formulating the problem and expressing the information need through queries or navigation in a search system corresponds to executing actions. The examination of the results to determine whether the information need is satisfied corresponds to the evaluation part of the model. Query reformulation is needed if the distance between the goal and the state of the world is too large.

**5.9.3 Ellis (1989) and Ellis, Cox and Hall (1993) ISB Model:**

Ellis investigated the behaviour of researchers in the field of physical, social science, engineers and research scientists by conducting semi-structured interviews using a grounded theory approach and focused on describing the activities carried by them rather than expressing them as process. From the initial investigations conducted by Ellis the results derived six key activities which were held during the information seeking process. Later few more studies were conducted in 1993 which focused on academic researchers in other disciplines also and two more activities were added to the existing model.

The activities given in this model are:

- Starting- means employed by the user to begin information seeking e.g. asking a colleague who is knowledgeable.
- Chaining- following footnotes and citations in known material or ‘forward’ chaining from known items through citation indexes.
- Browsing- semi-directed or semi-structured searching.
- Differentiating- using known differences in information sources as a way of filtering the amount of information obtained.
- Monitoring- keeping up-to-date or current awareness searching.
- Extracting- selectively identifying relevant material in an information sources.

The revised model had two new additions which have been listed below:

- Verifying- checking accuracy of information.
- Ending- tying of loose ends through final search.

The model is diagrammatically shown as:
5.9.4 Kulthau’s information seeking model:

According to Kulthau (1993) the whole process of information seeking consists of the following stages:

1. **Initiation**: Awareness of need of knowledge/information. This is the stage when a person becomes aware that he wants some knowledge or he is short of some understanding.
2. **Selection**: In this stage general topic is defined. The general areas to be investigated are selected.
3. **Exploration**: This is the stage of investigation of information on the problem in order to extend personal understanding. Some inconsistent information is encountered at this point.
4. **Formulation**: At this stage a focus is developed and it is the turning point of the whole process when feelings of uncertainty diminish and confidence begins to increase regarding the subject in hand.
5. **Collection**: This is the process to gather information pertinent to the focused problem. The information is gathered and the interest of the user is increased.
6. **Presentation**: The task is to complete the research and resolve the problem. At this stage the search is complete and new understanding is gained.

In the process of information seeking the users refer to various forms of available information resources. The students and faculties of management institute libraries actively seek current information available through the newspapers, journals etc. either
printed or online sources and other accessible sources like the internet. The role of libraries in management institutes is a platform where costly information materials, print or electronic have to be procured for the use of students and faculties. The role of libraries in the procurement process becomes visible. Various expensive databases have to be accessed to get up-to-date information for users.

5.9.5 Wilson’s Revised Model for ISB:

This model was revised by Wilson (1996) Niedzwiedzka (2003) after taking into consideration research from various other fields including decision making, psychology, innovation, health communication and consumer research. The new terms used in this revised model are ‘intervening variables’ which represents the barriers whose impact may be both supportive of information use as well as preventive. The stress coping theory tries to explain why some needs do not invoke information seeking behaviour while the risk/reward theory tries to explain the sources of information which may be used more than others by a given individual. The social learning theory embodies the concept of self-efficacy which is the conviction that one can successfully execute the behaviour required to produce required result. The revised model had a few additions as depicted below in the diagram:

*Figure 5.5 Wilson revised model*

(Source: http://informationr.net/ir/9-1/paper164.html)
5.9.6 Foster's Non-Linear ISB Model

Foster's non-linear model of information-seeking behaviour (2005) represents a shift towards a new understanding of this subject area. The model is based on findings of an interview-based naturalistic inquiry on information seeking behaviour of a sample of 45 academics and postgraduate researchers representing many disciplines (Foster 2004). It comprises three core processes like Opening, Orientation and Consolidation in addition to three levels of contextual interaction: Cognitive, Internal and External. The process of “Opening” includes breadth exploration, networking, keyword searching, browsing, monitoring, chaining and serendipity, as shown below. The “Orientation” process consists of defining a problem, building a picture and identifying the shape of existing research. “Consolidation” refers to the process of having enough knowledge, redefining and incorporating the same. It is also the stage of verifying and finishing the task.

![Figure 5.6 Non-linear model of information-seeking behaviour](http://informationr.net/ir/10-2/paper222.html#Foster)

According to Foster the model's external influences are categorized as social and organizational also covering the time, the project and accessibility of resources. Foster also found the social networking aspect of interdisciplinary experience to be one of the
most significant factors influencing access to information resources. The internal influences refer to prior knowledge on the part of the information seeker, in addition to self-perception and self-efficacy. The cognitive approach, describes the participants' willingness to identify and use information that might be relevant to an interdisciplinary problem. One practical implication of the model is that it suggests a need to revise the teaching of information literacy and library skills, with a move towards a holistic skills programme, including curriculum development and training design. The new model offers a base of framework for educators and library professionals to teach academic and non-academic, expert and non-expert information users in a manner that reflects actual behaviours and real-world solutions rather than the artificial conceptualization of stages. Foster's presentation of information-seeking behaviour as a "dynamic holistic process" and its insightful implications for teaching information skills also indicated that further research is planned to make the study suitable for generalization by adopting a mixed methodology, incorporating both quantitative and qualitative approaches (Foster 2004). Apart from these models Dave (2012) listed out few more ISB models in his study like the Episodic Model developed by Belkin. This model is based on intuition and insight and concentrates on four dimensions like method of interaction (Searching), goal of interaction (Selecting), Mode of retrieval (recognition), and Resource consideration. Information foraging model was defined by Stuart Card and others and is based on thinking that information seekers use clues from summaries, images and links to get information. Elfreda Chatman developed a model “Life in the round Model” and she explained the fact that unless an initial problem arises, there is no point in seeking information. From the review of the above ISB models it could be deduced that all the ISB models have similarities except few elaborated points.

5.10 Web Information Seeking Behaviour:

The present era is the era of information and knowledge revolution. Many electronic resources are available in the library. The increase in information available on the web has also affected the information seeking behaviour of the users. Due to the evolution of computers and internet facilities different type of information sources at different
locations are available at one place (Fidel et.al. 1999) (Das and Patra). Today when people look for information they often go directly to the World Wide Web. The users with no formal search training use graphical web browsers and search engines to find and retrieve full-text documents. There has been a revolutionary shift in the information search and access process. The users face many problems while seeking and evaluating the web-based information (Jenkins et.al. 2003). Web information seeking is an active stream of research which involves studying the searching of the public at large. These studies use transactions log data to analyse large numbers of queries by users of web search engines most notably studies of the Excite search engine (Jansen et. al. 2000, Spink, et. al. 2001). Comparing the results of three such studies, Jansen and Pooch (2001) determined that users pose an average of two queries per session, with the queries consisting on average of only two terms. Queries are simple with very little use of Boolean operators and relatively low use of other modifiers. The number of results typically viewed by users is ten or fewer per session. “Navigators and explorers Model” is also based on internet search methods of experienced information seekers (Navigators) and inexperienced information seekers (explorers). Navigators revisit domains and conduct sequential searches and have few deviations in searches whereas explorers visit many domains submitted many questions for seeking information. Robinson (2010) research suggested that in the process of seeking information at work users rely on both people and information repositories. JISC study of Google Generations listed six characteristics of information seeking behaviour as discussed earlier. Choo et. al. (1998) suggested conceptual models of ISB on the web, which refers to the activities related to assessing, searching and dealing with information sources especially in networked environment. He also created a two dimensional model of ISB on which he combined the elements of Ellis ISB model and Aguiaris four modes of organisation scanning. Few models of ISB covered undirected viewing, conditional viewing, information search and formal search (new behavioural model for information seeking) undirected reviewing covers viewing wide range of sources. Conditional viewing relates to the seeker and views information on a selected topic (browsing, differentiating and monitoring). Information search relates to active search of information (differentiating, extracting and monitoring). Formal search is planned structured and deliberate. The searcher has to
invest time and effort on searching information. The search is called as formal as it follows a method.
These models increased the focus on web searching and internet searching, online databases or offline databases searching etc. these are new data collection and mining tools, techniques, methods adopted by users for getting information in e-forms.

5.11 Chapter Summary:

Information is vital and everyone needs information for different uses. Information seeking behaviors are different from person to person and group to group. Different models have been developed but Wilson and Kulthau’s model are more elaborative discussing steps in ISB. The need of understanding the information seeking behavior of users has always been an area of interest for the information science professionals. The knowledge of users need helps in providing better services and design of information systems. In the emerging electronic environment, knowledge about the information seeking behavior of students and staff on the web is crucial for those wishing to help them effectively meet their information needs online. The summarization of all the models explained by eminent personalities of ISB states that this is a complex process and consists of steps to be followed for seeking useful information. From the study of all existing models it is found that ISB consists of the following steps:

- Feeling need of information.
- Understanding the purpose and objectives (starting)
- Awareness of sources for getting information
- Selection of topic
- Chaining
- Browsing and exploration
- Monitoring
- Extracting
- Presentation

These are represented in the active model developed by researcher in chapter seven.
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