Chapter -6

INFORMATION NEEDS AND INFORMATION SEEKING BEHAVIOUR MODELS: A CONCEPTUAL FRAMEWORK

6.0 INTRODUCTION

Information is a power and it is a dynamic source for human beings for living a comfortable or wealthy life on the earth. Information is everywhere and is used in all way of walking of life right from buying a pen to writing a research article by the individuals irrespective of status and belief (caste and creed), gender, rich, poor, educated and uneducated etc. It is the best skill than all additional portable and permanent skill that the people grasp from the earth. In the modern day world, people are appreciated as rich and poor not for their skills; but they are appreciated as information rich and information poor. The information rich people are those who are highly skilled in classifying their information needs and apply seeking behaviours so as to use the information from both online and traditional resources efficaciously and gratifying their information needs but the information poor people are missing in their skills in achieving their information needs be fulfilled. Hence, the information helps in contradiction of social imbalance or inequity. But today's world, each and every person must be information literate for assortment or collection of information sources and information seeking strategies, access to information channels and corroborations of reliability of information sources by making sure the relevancy as according to their requirements and use pattern of information for explaining

or solving the problems mutually. This is known as Human Information Behaviour (HIB). Information seeking behaviour is one and only fundamental behaviour of manhood. If we consider this seemingly simple activity, we can see that it fundamentally underpins almost every other activity that we undertake. As there are diverse and mixed group of information users having dissimilar facets in their information needs and information seeking behaviour. Agricultural Scientists are found to be one of the basic components of the information users' community. The behaviour in the practice of seeking information has also been altered with the variation in the nature and features of information and its setups. Nowadays, information is found in various forms of sources and the accessibility of information in digitized form has influenced the Agricultural Scientists in the practise of searching of information as they need to access to such developing and emerging resources.

6.1 DEFINITION ANALYSIS OF INFORMATION

In this techno savvy environment information has grown into one of the basic and important resources and its precise nature is not simply defined or described. But, in the field of information science the concept of information is defined in many diverse ways. The information is as follows:

6.1.1 Information

Shannon and Weaver (1949) defined the term information as 'information is stimulus that reduces uncertainty and a purely quantitative measure of communicative exchanges'.

Ching-Chih Chen and Peter Hernon(1982) defined “Information as all knowledge, ideas, facts, data and imaginative works of mind which are communicated formally and/or informally in any formats”.

Bateson (1972) who had been in the practice of finding a mathematical definition for information for two eras defined it as “any difference that makes a difference to a conscious human mind”.

Miller (1968) defines information as “any stimuli we recognize in our environment”.

According to Webster’s dictionary the word information is derived from Latin word ‘informatio’ which is derived from the verb ‘informare’, which means ‘to provide a method to mind’, ‘instruct’ and ‘teach’.

Webster’s Third International Dictionary defines “Information” as “Facts or figures ready for communication or use as distinguished from incorporated in a formally organized branch of knowledge” or “the process by which the form of an object of knowledge is impressed upon the apprehending mind so as to bring about the state of knowing”.

Oxford English Dictionary defines “Information is knowledge communicated concerning sum particular fact, subject or event”.

Several synonyms or nearby synonymous terms of information have been used in direction to identify and categorize the term information. The terms like facts, data, information, knowledge and wisdom have very small difference between meaning and make confusion between the terms and meanings of these terms are discussed as follows-

- **Facts:** Things that take place true or be real.
- **Data:** A collection of facts and slightest element of information from which conclusion may be drawn. Data are, as such, languages, mathematical or other symbols which represent the concepts or events.

- **Knowledge:** Knowledge is an organized set of statements of facts or ideas in place of a rationale judgment and expertise and skills adapted by a person through experience or education i.e. the theoretical or practical thoughtful understanding of a subject.

In the knowledge field, the link between data, information, and knowledge may be observed as a portion of a continuum in terms of decision making process as presented below:

DATA → INFORMATION → KNOWLEDGE

The three concepts data, information and knowledge are interrelated. To understand their relationship following is the simple examples which are often given by many scholars:

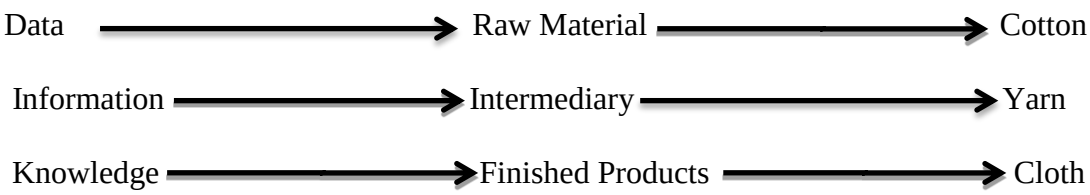

Figure 6.1: Relationship between Data, Information and Knowledge

6.1.1.1 Characteristics of Information

In the present day perspective information has become a dynamic resource and all this resulted due to the different aspects like increase in population, increase in research and research personnel's, vital source for research, increase in standard of living, key factor in National growth and development. In fact, such valued resource will be of no use, if its gathering, processing, storage and retrieval are organized or systematic. Following are some of the characteristics of information-

- It conveys meaning;
- It diminishes uncertainty;
- It is compressible;
- It is substitutable;
- It is shareable;
- It is universal, particularly in physical, chemical and biological sciences;
- It can be connected through communication and;
- It depends upon the user's need.

Therefore, it is clear that information be present in diverse forms and may be transferred from one system to other and it go through a sequence of alteration.

6.1.1.2 Importance of Information

Information has grown into one of the supreme and vital components for our existence. In this present advance world, without any doubt the efficient or effective performance in the field of Industry, Research & Development, Institutions, Government affairs, Individuals etc. greatly depend on the availability and approachability of information at the accurate period of time with adequate quality and quantity. It is important and necessary for an information system to response as according to environmental stimuli to meet the necessities or requirements of user and the information must be of free flow and exchange of scientific and technical information without any difficulties or in other words by providing the effective and efficient information services the information needs of user community meet their necessary requirements effortlessly. At the present time, inthe sector of research activities, the main concern or major area of issues are how use of information, user behaviour in gathering or assembling of information, expressed needs of information,

information supply gaps, types of information requirements to meet different types of user etc.Thus, information has become an essential and vital resource for all economic and social variation of society.

6.1.1.3 Qualities of Information

As information is a main and valuable resource, it must have certain supreme qualitiesalso. According to Rojas some of the important characteristics of information are as follows-

- Accessibility
- Comprehensiveness
- Precision
- Compatibility
- Timeliness
- Clarity
- Flexibility
- Verifiability
- Fee of bias and
- Questionnaire

6.1.1.4 Types of Information

Information can be characterized on the basis of the nature of its usage and purposes for which it is used. J.H. Shera (1972) has recommended six types of information, they are as follows-

i. **Conceptual Information:** It relates to ideas, theories and hypotheses about the relationship which exists among the variables in the area of problems.

ii. **Empirical Information:** It relates to data and experiments of research which may be drawn from oneself or communication through others.

iii. **Procedural Information:** It relates to data which are obtained, manipulated, investigated and tested.

iv. **Stimulatory Information:** It is motivated by oneself or environment.

v. **Policy Information:** It directed on decision making process.

vi. **Directive Information:** It relates to coordination and for enabling effect group activity.

6.1.1.5 Approaches to Information

Wersing and Neveling identified six types of approaches to Information which are as follows-

a) **Knowledge Approach:** This approach records knowledge that is built on the basis of perception of the structure of the world but the problem with this approach that the term information erroneously be used for the term knowledge.

b) **Meaning Approach:** The semantic contents of a message are accepted as information.

c) **Message Approach:** the mathematical theory of communication uses this approach. It is concerned with the transmission of symbols representing a message.

d) **The Structural Approach:** In this approach information is viewed as structures of the world or static relations between physical objects which may be perceived or not.

e) **The Effect Approach:** In this approach the semantic contents of a message are accepted as information.

f) **The Process Approach:** According to this approach the process information occurs in human mind when a problem and useful data are brought together.

6.1.2 Users

In a library or information centre environment, the users are the vital fact was not recognized for a long time by our information managers. They were the last connection or the recipients of the information in the communication cycle. There are various number of terms used as synonyms or near synonyms to user such as patron, client, member, customer etc. Thus, in an information system the user is the most significant component. It was revealed from the library and information science literature that for a long time information workers focused their studies only on components of information system except user.

6.1.2.1 Users and Information Use

Nowadays information users live in a complex and multifaceted environment. The main environment factors are the following:

- Increasing laziness or uncertainty of users information needs;
- A vast quantity of information is being gathered as well as pouring into the systems which have their own of presentation;
- The mechanisms of matching information needs with information sources have been increasingly made efficient, which are sophisticated and complex;
- There is therefore, a need for training users of information with respect to the ways in which information needs are expressed, new methods of searching and manipulating with the mechanism of information retrieval ; and

- The modern concepts of user friendliness, user assistance and user education have developed several devices and courses to inculcate in the regular information seekers a methodology for productive approach for information gathering and self-education.

6.1.2.2 Definitions of User Studies and its Categorization

The term 'User Studies' has been defined differently by different information scientists. According to Wysoki "user studies or use studies could be concerned with studying information- processing activities of the users. Empirical studies of the use of the demand or need for information is usually called user studies. In fact a study which is focussed on users to understand directly or indirectly their information needs, use behaviour and us pattern is usually called a use study for a meaningful user service, user study is a precondition."

In the information system and services the user study is one of the important study which enlightens the character and nature of the user which includes the process of obtaining information by the user, discussions about their behaviour, character of the users and their needs. As the history of the user study can be mark out back when Royal Society Conference on Scientific Information was held in1948. User studies have been categorized into three categories as follows:

According to Menzel (1966) gave classification as follows:

a) Channel studies
b) Critical incident studies
c) Dissemination studies

Another classification given by Menzel (1966) is -

a) Behavioural studies
b) Use studies
c) Information flow studies

Nowadays, one of the most important anxieties to the Library and Information Centre is the selection and use of information by the users because users are the last linkage or recipient of information in the communication cycle.

6.1.2.3 User Approaches to Information

Information need is a composite concept of different types of requirements and approaches to information. Melvit Vogit clearly identified four types of information requirements which are discussed as follows-

i. **Current Approach: -** Every active worker has to keep himself a breast of current developments, up to a fair degree, not only in his specific field of work but also in broader field or fields of interest or areas, whose development can be substantially, chance the course of his present work. Here, the worker interacts with the information system in very general way-browsing through his favourite periodicals, going through the abstract journals etc. but all this without keep in view any specific search for information.

ii. **Everyday Approach: -** This approach stems from the research worker's frequent need, in the course of his investigation or specific piece of information. The nature of information sought is very specific and a quick answer is usually expected.

iii. **Exhaustive Approach:-** The third approach for which dependence on documents is very much necessary and hence had attracted the attention of document lists quite

easy, is for all or almost all relevant literature on a subject. When a worker or a team of workers want to take up a new area of investigation or have come to the stage of reporting the results of an investigation, such an approach to information is necessary. It can be easily realized that such approach would be occasional only.

iv. **Catching- Up- Approach:-** A worker may at times need to have a brief but a complete picture of a recent development of a related subject or a subject in which he was not very much interested or which did not come under the area of his main interest. This is likely to be an area in which he is not an expert. As a result of this he is not quite current wit the subject. Hence, in such a situations, he expects to have in a communication a device which will help him in quickly catching-up with the subject.

6.1.2.4 Types of Information Users

In information system, users are considered as a basic component without it the information system is not complete. For instance, in library system it is very essential to identify who are users, what kind of information they require and also how the library satisfies the users or fulfill their needs. Different authors categorizes the information user in different groups which are explained in below-

According to Bembem and Ibohal (2008) categorised the users community as follows-

- Academicians
- Researchers
- Students
- Authors

- Publishers
- Scientists
- Technologists
- Aggregators
- Academic Institutions
- R & D Organizations
- Industrial Sectors
- Similar others.

According to their nature of work users can also be categorized as:

- Lay people
- Government Servants
- Educators
- Students
- Researchers
- Policy Makers, etc.

According to Heidi Julien (1999), characterized information users into four groups as:

- User
- Client
- Customer
- Patron

6.1.2.5 Information User- Agricultural Scientists

In an Information system user is an important component. Access to pertinent information is extremely important mainly in research and development because right information to the right user can pave way to research and development in a new direction. Agricultural scientists are one of the biggest or largest components of the user community in the field of research and development who accumulate process and analyze, retrieve and disseminate information as according to their research needs as they have their own nature and determination or purpose of information needs.

According to Whittaker (1993) on the basis of library services Agriculture scientists can be groped as follows-.

a) **General Reader:** Generally use light reading material of general nature.
b) **Subject Reader:** Those who concentrate their use of library materials on a subject field, the field they are working or specializing.
c) **Special Readers:** Those with special needs resulting from disabilities of one kind or another.
d) **Non- Reading User:** Those who comes to library to make use of library materials, but not reading materials.

Thus, in order to acquire the information needs and the right information they undergo different strategies and activities in the process of seeking as these different categories of scientists have different seeking behaviour and also have their own features, behavioural pattern, reading practice, requirements, different method, patterns and limitations too.

6.1.3 Information Need

The term 'Information need' means requirement, want and demand or it is a subjective practice which is difficult to define or describe, isolate and measure. A need is usually perceived as describing what an individual ought to have for his effort, improvement, regeneration or recreation etc. Information need is an intellectual concept used to response the query why people seek, gather and use information to satisfy his/ her basic need, so that to achieve the respective goal. Following are some of the definitions discussed by different authors-

1. Taylor (1968) introduced the concept of information need as a Personal, Psychological, sometimes in expressible, Vague and Unconscious conditions.
2. Maurice B. Line (1974) defined the term 'Information Need' as "What an individual ought to have for his work, his research, his edification, his recreation, etc."
3. Wilson (1981) stated the view that information need motivates. Information behaviour is an embedded assumption of the user oriented paradigm which focuses upon what people think, do and feel when they seek and use information.
4. Belkin et al 1982 defines "Information need is described as an anomalous state of knowledge".
5. According to Grunig (1989) human need is defined as an 'inner motivational state that brings about thought and action".
6. According to Dervin (1983) information need implies "a state that arises within a person, suggesting some kind of a gap that requires filling. When applied to the word information, as in information need, what is suggested is a gap that can be filled by something that the needing person calls "information".

6.1.3.1 Nature of Information Need

The information need is a genuine situation in which, there be existent of a close and interconnected meaning between“information” and “need”. Information initiates and is created or generated because there exists a need or an interest. The concept of information is of primary concern. The “information” quantitatively necessary for understanding a function is the objective information. Such “information needs” of users have to be satisfied. The need of information with precise content is an objective demand of the user. If an individual is in need of specific information for realizing specific tasks, then the need for information is an objective information need i.e. qualitatively and quantitatively determined information needed by then individuals for solving an objectively assigned task. Since any individual already has certain qualitatively determined information that may be used in solving the tasks, then to a certain degree. However, the individual may bring forth new tasks which are to be fulfilled or the fulfilment of which is to be aimed at, the information acquired so far will never fully suffice. There will be always a need resulting from the difference between the objective need and that part of it that has already been satisfied. Thus satisfying the information need always means satisfying that needs which has not so far been satisfied or fulfilled.

6.1.3.2 Basis of Information Needs

The need is concluded when the purpose for the use of information is present. Certain conditions are to be followed for the need of information by the user. These conditions may be

a) Firstly, whether the awareness of the need for information is also essential or adequate for concluding that the need exists.

b) Secondly, whether the existence of a need for information is essential circumstance for saying that there exists a need for information.
c) Thirdly, the absence of information is essential or sufficient condition for concluding that the information need exists.

According to Derr (1983), the presence of "information purpose" as a necessary condition of information need has stressed two necessary conditions for information need as follows:

i. The presence of an information purpose.
ii. The information in question, contributes to the achievement of an information purpose.

Thus, it has been seen that the users do not always need the information requested by them. They lack a genuine purpose for the use of information; this implies that the claim rests upon a judgement about the user information purpose. Judgement is required to see whether the information, in question, contributes to the achievement of an information purpose. Ideal curiosity may not be legitimate reason for information need. The attribution of information need requires the making of a judgement. The attribution of information need inextricably involves the making of value judgements with respect to the implicit information purpose. Further the judgement as to whether the information question, contributes to the achievement of a designated information purpose is a straightforward factual judgement.

6.1.3.3 Identification of Information Need

In research process the identification of information is must to satisfy any type of information needs and it is also true that satisfying the information needs is very

problematic even after its identification. Girja Kumar (1980) clarifies in his study about the information needs by expressing it as input-process-output model. It can be illustrated as below in the **Figure 6.2**.

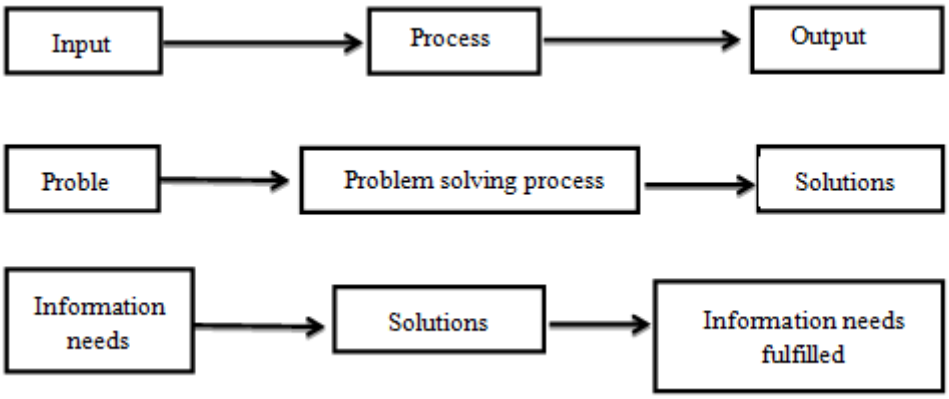

Figure 6.2: Model in the Identification of Information Need

From the above it is clear that the basic components of the system are

i. Problem ;
ii. Problem solving process; and
iii. Solution.

The problem is studied or analyzed to determine information needs because it is illuminating of the improbability in knowledge while the solutions results in solving of the situation by fulfilling the gap in the knowledge or information.

6.1.3.4 Levels of Information Needs

Earlier, studies give greatly emphasis on the Psychological feature of the information seeking behaviour. (Taylor, 1968) identified information needs based on the psychological human behaviour as follows:

i. **Visceral Needs:** An actual but unstated need for information.

ii. **Conscious Needs:** An ill-defined area of choice.

iii. **Formal Need:** An area of doubt which may be expressed in actual terms.

iv. **Compromised Need:** A need interpreted into what the resources and file can provide.

6.1.3.5 Types of Information Need

The information need may be of different types like need uttered by the user or need that a user cannot express, current or instant need and upcoming or delayed or potential need. Basically, to identify or recognize the information need is an indefinable one. Hence, it must be perceived in larger perspective of problems to be solved or answered, availability of alternatives or substitutes, environment of works, determination of taking decision and the factors influencing information needs. According to Tague et al. (1976) in his work recognized mainly four types of Information needs which are discussed as follows-

- Social or Pragmatic information needs in which information is necessary to deal with day to day life.
- Recreational information needs includes those type of information which satisfies the recreational and artistic attention of persons.
- Professional information needs which include that information required to function expertly within a business or professional surroundings.
- Educational information needs includes those information essential to satisfying the academic requirement at an institution.

According to Childers (1975), there are two types of information needs:

- **Kinetic Needs:** Satisfying a special problem, diagnosed & immediate.

- **Potential Needs:** Satisfying unconscious hidden problem under layers of attitude, impulses and values.

6.1.4 Information Seeking

Information seeking is one of the most important behaviour in research and development areas and in the field of Library and Information Science. It is the process in which the human involve in different types of activities in order to make himself to develop and potentially improved their state of knowledge. It is also an important perceptive allied with learning and problem solving sometimes thought of a higher intellectual process.“Information seeking” is the term defining and describing the techniques or ways the individual seeks, evaluate, select and make use of information.

According to Wilson (2000) “Information seeking as the purposive seeking for information as a consequence of a need to satisfy some goal.”

Marchionini (1995) has given a definition from the point of view ofproblem oriented approach, which describes it ‘as a process in which humans purposefully engage in order to change their state of knowledge’ and which is ‘closely related to learning and problem solving’.

Johnson (1997) has given a more restrictive definition and according to him information seeking can be defined as “purposive acquisition of information from selected information careers”

According to Gary (1997) information seeking is a process in which humans engage to purposefully change their state of knowledge. The process is inherently interactive as information seekers direct attention on adapt to stimuli, reflect on progress,

and evaluate the efficacy of knowledge base of the information seeker. Information seeking is thus a cybernetic process in which knowledge state is changed through inputs, purposive outputs, and feedback.

Kuhlthau (1993) and Chatman (1996) are concerned with the ways the worlds information seeking term has been used by the people in their research work. Such researchers present conceptions of process, learning and social relations that reflect the focus and interest of their research work.

Kuhlthau (1991, 1993) focused on information search process, which emphasizes feelings, thoughts, and understanding of a situation that they need to resolve task, problem, or topic. This particular action led to the action of people as they seek the meaning of useful research in providing a frame work for improving information search.

Kuhlthau (1994) and Bates (1986) define it as understanding the pattern of people information behaviours, the variety, uncertainty and complexity of the information needed by the seekers must be known.

6.1.5 Information Seeking Behaviour

Information seeking behaviour is the purposive seeking for information as significance of need to satisfy some objectives or goals. In the process of seeking information, individual may interrelate or interact with manual information system (World Wide Web). It means seeking information to fulfil the need for some purpose or achieve the task. It is the mental process which occurs in the mind of the users what they perceives in their mind to satisfy their needs. They search information through information channels such as library information centres, online service or some other persons. This pattern is called

"Information Seeking Behaviour". Thus, we can say it is a behaviour in response to satisfy the need of information. Information seeking behaviour is the application of approaches through set of actions in order to attain the desired information need. When attitudes and actions are cooperated the performance develops automatically and centred on the level of performance, the satisfaction level of the acquired information is determined. Some definitions as given by the different authors on information seeking behavior have been mentioned here.

Wilson (1999) defines the term information seeking behaviour as "the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and information use". Thus it includes face-to-face communication with others, as well as the passive reception of information as in, for example watching television advertisements without any intention to act on the information given.

Case (2002) defined information behaviour as "Information behaviour encompasses information seeking as well as the totality of other unintentional or passive behaviours (such as glimpsing or encountering information) as well as purposive behaviour that do not involve seeking such as avoiding information."

A study of University College London (2008) for Joint Information Systems Committee, on information behaviour of the researcher of the future in the Google Generation detailed six different characteristics of online information seeking behaviour:

- horizontal information seekers
- navigation
- viewers
- squirreling behavior

- diverse information seekers
- Checking information seekers.

Ching-chih Chen (1982) says “information seeking patterns are paths pursued by the individuals in the attempt to resolve a need”. A study of user’s traits, and of the study of user’s traits and of the study environment and also of information, provides skill and is an important constitute of this new systematic approach.

According to Krishan Kumar (1991), “information seeking refers to the process off collecting and receiving information by different means” while Girja Kumar (1990) says that “Information seeking behavior is mainly concerned with who needs what kind of information and for what reasons; how information is found, evaluated and used”.

6.1.5.1 Meaning and Scope of Information Seeking Behavior

The meaning and scope of information seeking behavior can thus be summed as:

- The motive and purpose for seeking information;
- The nature and type of information sought;
- The ways and means of accessing, searching, identifying acquiring work-related information;
- The degree of dependence on sources of information;
- Communication behavior;
- Use of library and user-interaction with the library

6.1.5.2 Purpose of Information Seeking Behaviour

In any organization/university the exploration for information by a person is seldom at end. It is the portion of the process of decision making, problem solving, planning, resource sharing etc. Information sought by a user is frequently for a particular purpose, which must not to be neglected in user studies. Information seeking is the important activity for all scholars. It may be current or anticipated and use of an item of information or even source in best when a perfect match take place between the need arising out of the purpose and instance of use. The nature of work of the users and the different roles played are the starting point for understanding the purpose of information seeking. The purpose of seeking information also varies according to work assigned to each user or client.

6.1.5.3 Nature of Information Seeking Behaviour

According to Wilson (1981), the nature of Information Seeking Behaviour with interrelationship among concepts in user study has been discussed in **Figure 6.3** as under.

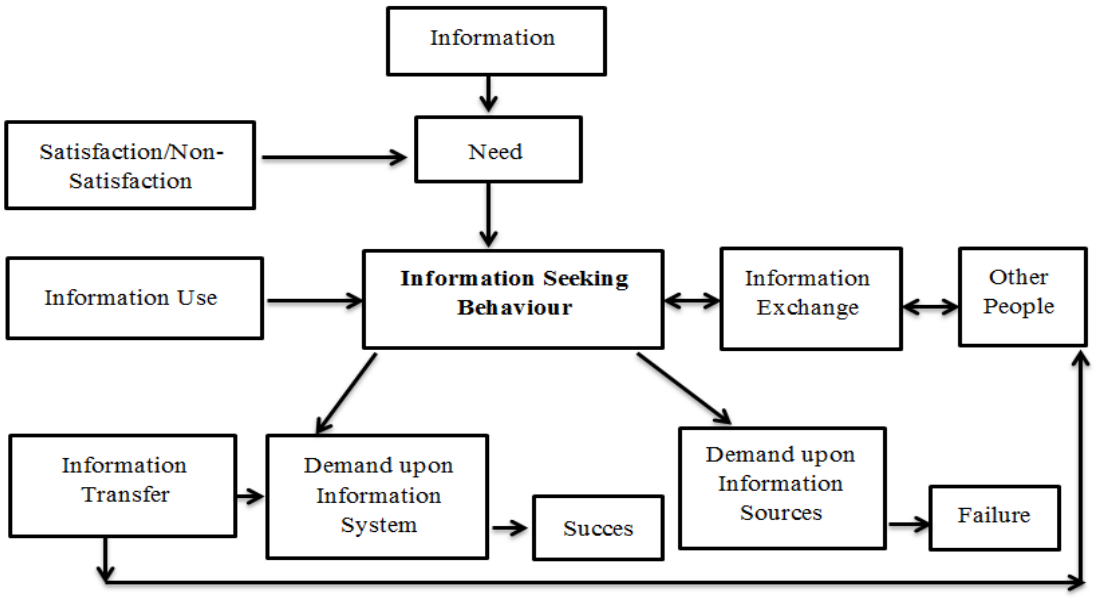

Figure 6.3: Wilson's Model of Information Seeking Behaviour with related concepts in Users Study

Thus, the nature of Information Seeking Behaviour begins from the recognition of user's need.

6.1.5.4 Process of Information Seeking Behaviour

According to Sunner, 1987 he process in Information Seeking Behavior constitutes of mainly five stages which are as follows

i. Perceiving;
ii. Responding;
iii. Valueing;
iv. Organisation ;and
v. Characterisation of a value.

Whereas, according to Girja Kumar (1990), the following process takes place in Information Seeking Behaviour.

i. Identifying the objective;
ii. Defining need;
iii. Accessing Information system;
iv. Establishing Source of information;
v. Information Acquisition;
vi. Use of Information , and
vii. Satisfaction/Dissatisfaction.

The process of Information Seeking is of cyclical nature. The various steps in the process are interrelated, acting and reacting upon each other in the sequential order as well

as interacting with the Information seeking behaviour in general simultaneously. The process is represented below in the **Figure 6.4**:

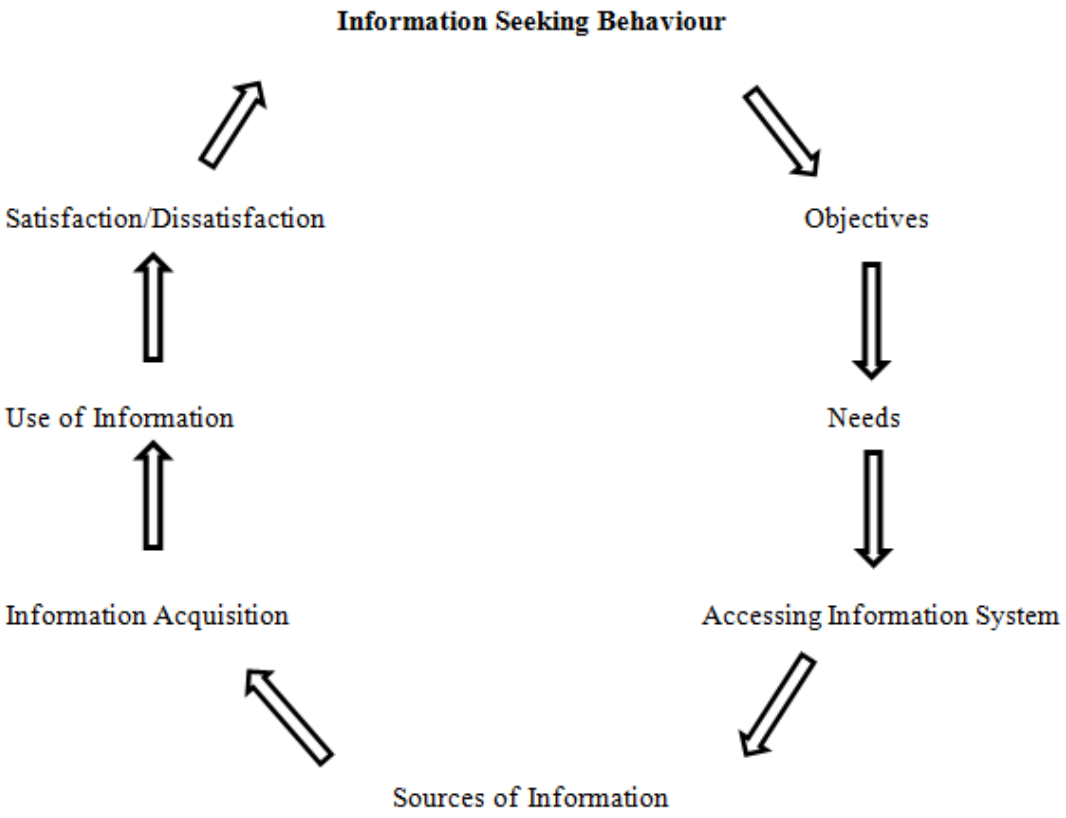

Figure 6.4: Process of Information Seeking Behaviour

6.1.5.5 Facets of Information Seeking Behaviour

While seeking is characterised as a more human oriented and open ended process, retrieval implies that the object must have been known at some point; most often had been previously organised for later use. Seeking connotes the process of acquiring knowledge. It is more problem oriented as the solution may or may not be found. It is closer to answering questions or learning.

According to Marchionini (1995) and Hearst (1999) “A person engaged in an information seeking session performs two distinctive tasks: information seeking and information retrieval.”

Marchionini, (1995) organised information seeking behaviour into four levels of granularity as shown below:

1. At the coarsest level, people exhibit information seeking patterns. Patterns are mostly unconscious sequences of behaviours that can be discerned over time and across different information problems and searches. They are influenced by user disciplines, domain and systems.
2. Strategies are the approaches that information seekers take to a problem. Two classes of strategies are formalised as analytical searching and browsing strategies. They are the extremes of a range of flexible combinations of strategies (Belkin et al, 1993). Strategies mostly are consciously selected and mainly search specific.
3. Tactics are discrete intellectual choices during an information seeking session. Tactics are more focused than strategies, for example narrowing the search space by selecting a date range. Tactical skills clearly distinguish between expert and novice users of on-line systems, are often mentioned as searching skills.
4. Moves are finely grained actions manifested as discrete behavioural actions, e.g. doing search, going to advanced search, downloading a document, or even clicking a mouse. Moves are evidences of tactics. They offer observable clues for interface usage and mapping the intellectual activity at higher levels of action. This study concentrates collecting user moves data and aims to utilise it in order to build models of their seeking patterns.

The **Figure 6.5** below shows four levels of granularity of information seeking behavior.

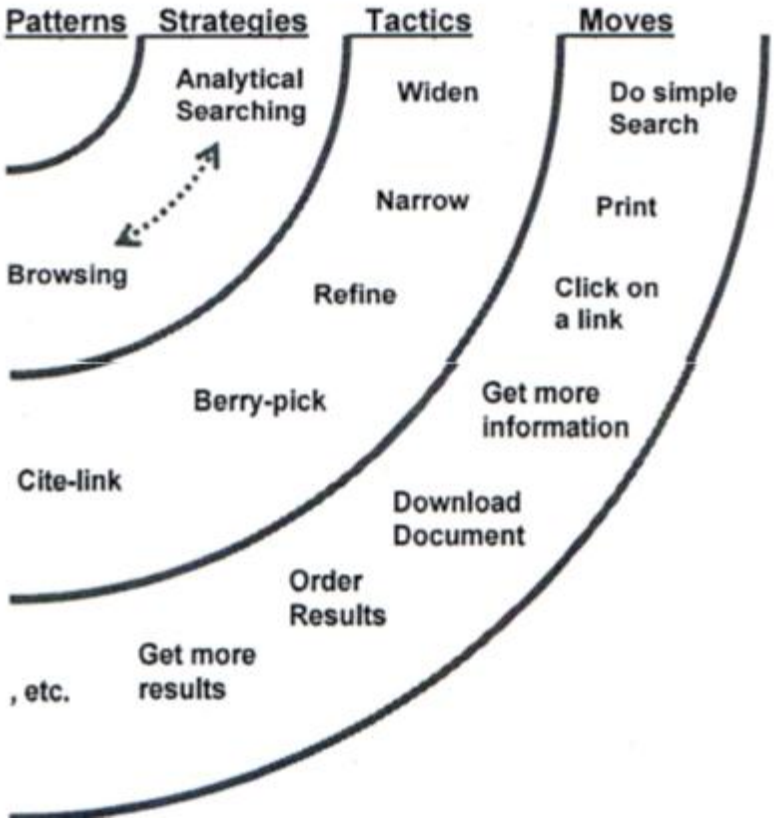

Figure 6.5: Four Levels of Granularity of Information Seeking Behaviour

(Source: Shaaban, 2003)

6.1.5.6 Factors Influencing Information Seeking Behaviour

According to Krikelas, (1983)the following are some factors influence the Information Seeking Behaviour of the users:

i. Pay offs and costs,

ii. Resources available,

iii. Update rates,

iv. Amount of information available,

v. Diagnosticity of data,

vi. Distributional characteristics of data, and

vii. Conflicts among sources

6.1.5.7 Factors Affecting the Information Seeking Behaviour

According to Laloo (2002) the factors which affect the information seeking behaviour process are-

- social,
- political,
- geographical,
- educational, etc.

Thus, in order to recognize the information need of an individual certain factors need to be considered on a course of action as to whether the source is within reach, the money involves,the time involves,the sources having the answer to their problems and lastly, understanding the source that provides the answer.

6.1.5.8 Information Seeking Behaviour – A Brief History

The study of information seeking behaviour can be dated back to late 1940's. By knowing the origin of User Studies,the emergence of the concept of information seeking behaviour can be understood.As the user studies mainly cover users' characters, needs, and dependency and satisfaction level by nature. According to Wilson (1994) the term 'User studies' covers an extensive range of research areas in Information Science and which can be extended to include parts of Computer Science, Communication Studies and other fields too. Its allied terms are information seeking behaviour and information needs. These terms have varied range of problematic areas such as Bibliometrics, User Education, studies of Reading and Readership and Information Retrieval Design and Evaluation.

At the early stage, Ayres and McKinnie (1916) have conducted a library survey, which is the first hint of study in this direction. Later, the study of McDiarmid's (1940) 'Library survey' referred to variouskinds of surveys. These library surveys were mainly focusing on how people used libraries to satisfy their needs. The path of the studies from library survey to user studies has been changed from "The Conference of Royal Society ofInformation" held in 1948. Another Conference at international level was conducted by theNational Academy of Sciences, Washington on Scientific Information (1959) focused on information needs of scientists and from there on a large number of studies on information seeking behaviour of people belonging to a particular discipline was found to have been conducted. While in India, the user studies were highlighted firstly by Ranganathan (1970)through his "Annotation on 'User's Survey'". Later, countless studies in this direction were carried out by numerous authors in different subject fields.

6.1.5.9 Information Seeking Behaviour of Agricultural Scientists

Information Seeking Behaviour consist of the kind of information needed by the certain user, the reason for its requirement, the sources of information, etc. and libraries, information centres, internet, etc. provide the need of the information seekers because each and every user seeking information has its own purpose for their information needs.

In this up-to-date and advance era of Technology, the information seekers on the track of using the facility of internet widely all over the world and this goes out to be the supreme or most active and quickest source for the new seekers. Thus, this result to a new era and come to be a sophisticated technology for the information seeker and profited them in many ways in their research and development activities because through research

solitary, scientists not only collect, store, process, retrieve and use information but also try to create it.

6.1.5.10 Information Seeking Behaviour Models

Models are developed to represent and to have clear understanding on specific problems where theories are not sufficient. Models lead to the development of formal theories. Models exclusively make the content of the concept that they deal more tangible through illustrations in the form of diagram, chart, map, table, graph etc.

Reynolds (1971) defines a model as "by illustrating casual process, models make it easier to see if hypothesis are consistent with what we observe in real life".

Many models of Information Seeking Behaviour have been developed, some of important such models are:

1) Wilson's (1981) - Model of Information Seeking Behaviour
2) Wilson's (1996) – Expanded and Redesigned of 1981
3) Dervin's (1983& 1996) - Sense Making Theory
4) Ethis's (1989 & 1983)- Behavioural Model of Information Seeking Strategies
5) Kuhltham's (1991) – Model of Stages of Information Seeking Behaviour and
6) Foster (2004) – Non-Linear Model of Information Seeking Behaviour
7) Nested Model

6.1.5.10.1 Wilson's (1981) Model of Information Seeking Behaviour

Wilson's second model of 1981 is based upon two main propositions i.e.first, the information need is not a primary need, Secondary needs are of a more basic kind; and second, that in the effort to satisfy a need, the enquirer is likely to meet with barriers of different kinds.

Wilson proposes that the basic needs can be defined as physiological, cognitive or affective. He goes on to note that the context of any one of these needs may be the person him- or herself, or the role demands of the person's work or life, or the environments within which that life or work takes place. He then suggests that the barriers that impede the search for information will arise out of the same set of contexts.

The model below in **Figure 6.6** shown in simplified version. Wilson's model is clearly what may be described as a macro model or a model of the gross information-seeking behavior and it suggests how information needs arise and what they prevent the actual search for information. It also embodies, implicitly, a set of hypothesis about information behaviour that are testable: for example, the proposition that information needs in different works roles will be different, or that personal traits may be inhibit or assist information seeking.

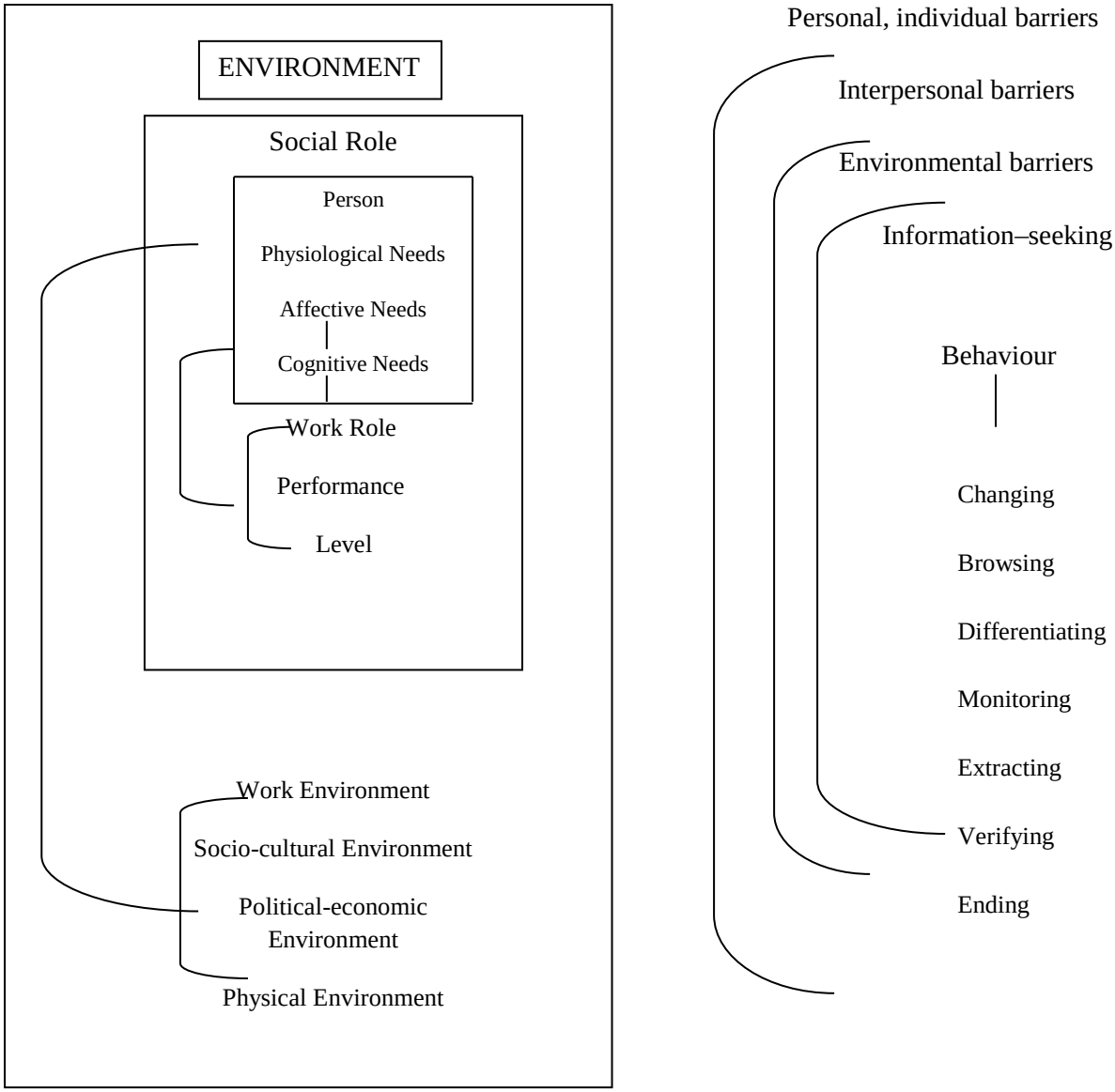

Figure 6.6: Wilson's Information Seeking Behaviour Model (1981)

6.1.5.10.2 The Wilson Model (1996)

Wilson's second model (1996) is complex and features the following in **Figure 6.7**:

It deals with the aspects as to why some seek more prompt information than others, reason for the more usage of resources from a particular source than others and ambiguous status among people in pursuance of a goal successfully based on the perception on their

own efficacy. Features of the model are Activating Mechanisms for seeking information which are affected by the Intervening variables of six types: Psychological aspects, Demographic background, Role related to social aspects, Environmental variable and Characteristics of role. This model recognizes search behaviours: Passive attention, Passive search, Active search and on-going search. The term in the model 'information processing and use' implied that the information is evaluated to know its effectiveness on satisfying the need.

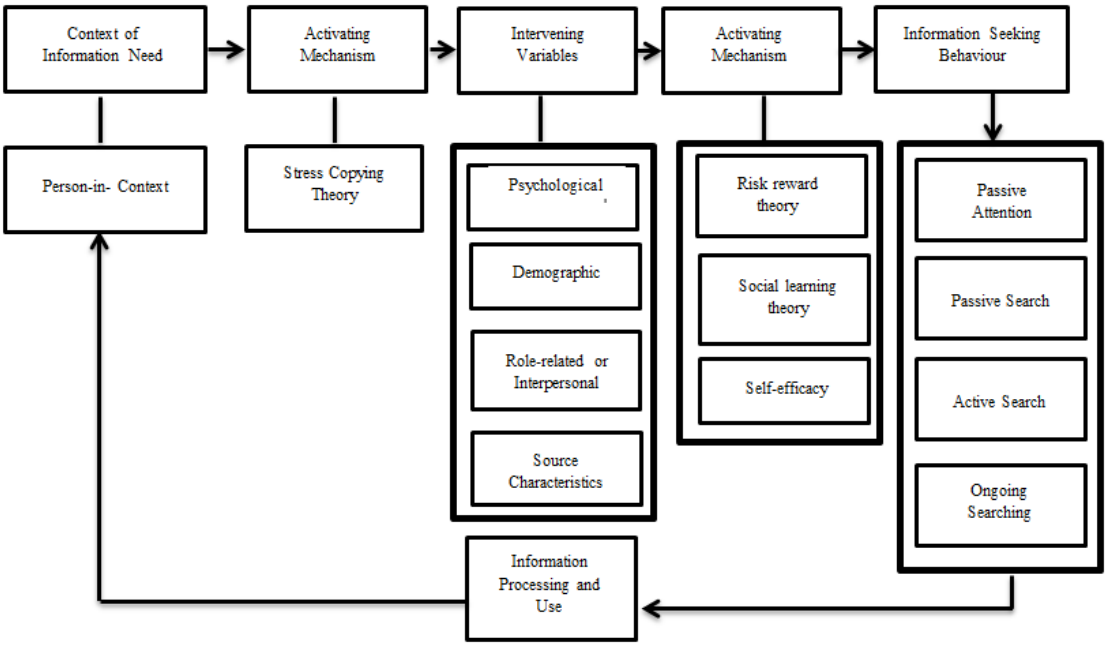

Figure 6.7: Wilson Model (1996)

6.1.5.10.3 Dervin, 1983, 1996 Sense Making Theory

Dervin's sense-making theory has developed over a number of years, and cannot be seen simply as the model of information-seeking behaviour: it is, rather, as she says, 'a set of assumptions, a theoretic perspective, a methodological approach, a set of research methods, and practice' Figure 5.8 Dervin's 'sense-making' triangle designed to cope with information perceived as a human tool designed for making sense of reality assumed to be

both chaotic and orderly.' However, sense-making is implemented in terms of four constituent elements-a situation in time and space, which defines the context in which information problem arise; a gap, which identifies the difference between the contextual situation and the desired situation; an outcome, that is, the consequences of the sense-making process, and a bridge, that is, some means of closing the gap between situation and outcome. Dervin presents these elements in terms of a triangle: situation, gap/bridge, and outcome, which can be represented as in **Figure 5.8**.

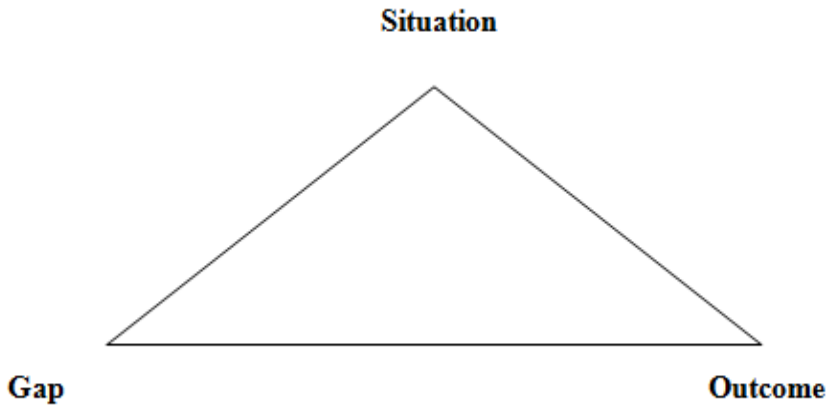

Figure 6.8: Dervin's 'Sense-Making', Triangle

However, it may be preferable to use the bridge metaphor more directly and present the model as **Figure 6.9** below:

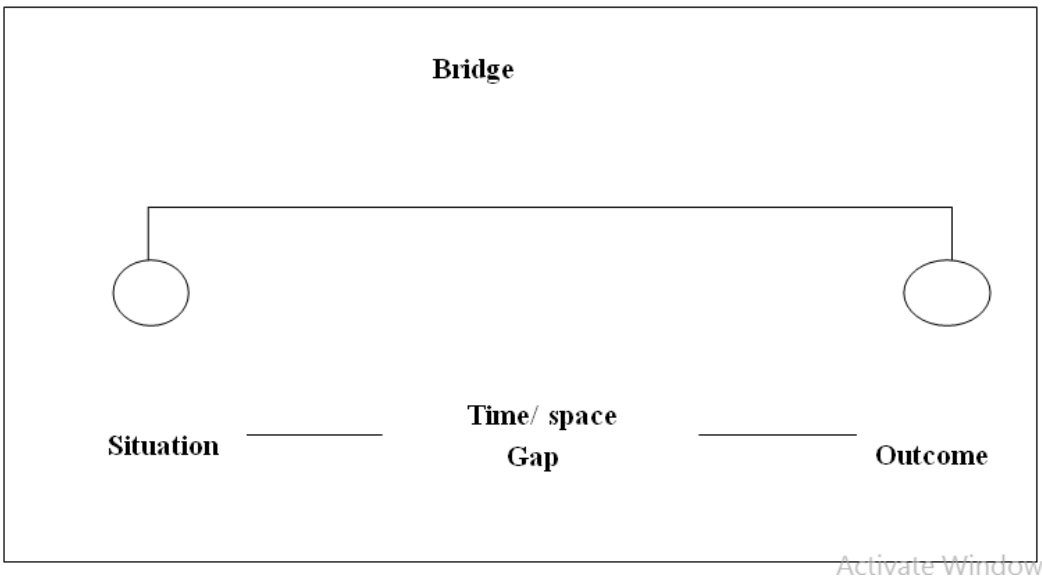

Figure 6.9: Dervin's 'Sense-Making' Model Re-drawn

The strength of Dervin's model lies partly in its methodological consequences, since, in relation to information behaviour, it can lead to a way of questioning that can reveal the nature of a problematic situation, the extent to which information serves to bridge the gap of uncertainty, confusion, or whatever, and the nature of the outcomes from the use of information. Applied consistently in 'micro-moment, time-line interviews' such questioning leads to genuine insights that can influence information service design.

6.1.5.10.4 Ethis's (1989 & 1983) - Behavioural Model of Information Seeking Strategies

Ellis elaboration of the different behaviours involved in information seeking is not set out as a diagrammatic model and Ellis makes no claims to the effect that the different behaviours constitute a single set of stages; indeed, he uses the term 'features' rather than 'stages'. These features are named, defined and shown in **Figure 6.10** below:

- ✓ Stating: the means employed by the user to begin seeking information, for example, asking some knowledgeable colleague;

- ✓ Changing following footnotes and citations in known material or 'forward' changing 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-up or current awareness searching;
- ✓ Extracting: selectively identifying relevant material in an information source;
- ✓ Ending: This may be defined as 'trying up loose ends' through a final search.

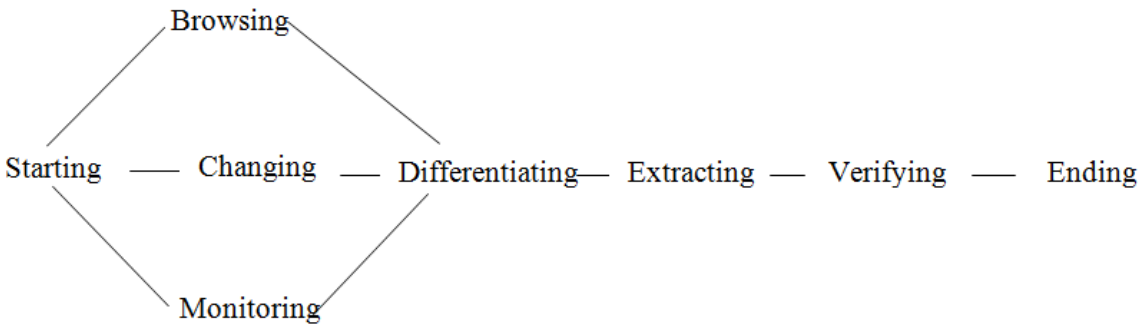

Figure 6.10: A Process Model Based on Ellis 'Characteristics'

6.1.5.10.5 Kuhltham's (1991) – Model of Stages of Information Seeking Behaviour

Kuhlthau's work complements that of Ellis by attaching to stages of the 'information search process' the associated feelings, thoughts and actions, and the appropriate information tasks. This association of feelings, thoughts and actions clearly identify Kuhlthau's perspective as phenomenological, rather than cognitive. The stages of Kuhlthau's model are Initiation, Selection, Exploration, Formulation, Collection and Presentation. As an example, the Initiation phase of the process is said to be characterized by feelings of uncertainty, vague and general thoughts about the problem area, and is

associated with seeking background information : the 'appropriate task' at this point is simply to 'recognize' a need for information.

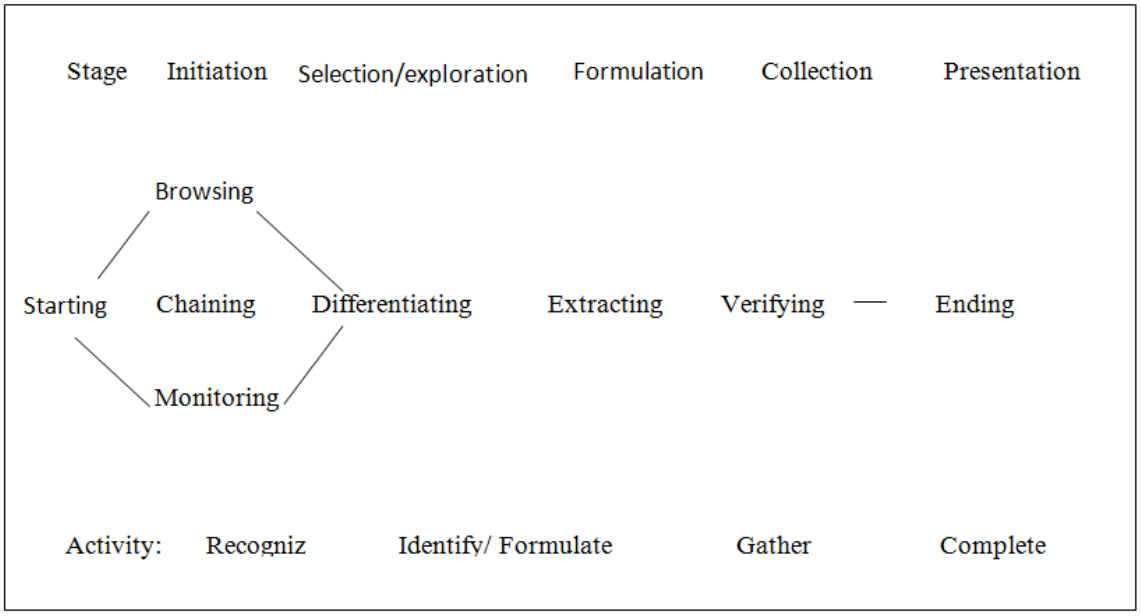

Figure 6.11: A Comparison of Ellis's and Kuhlthau's Framework

Though this merger of the two models in **Figure 6.11** above we can see strong similarities and the major difference appears to be that Ellis specifies the models of exploration or investigation. The point reiterated, however, that Ellis does not present his characteristics as stages but as elements of behaviour that may occur in difference sequences with different persons, or with the same person at different times. Thus, the two models are fundamentally opposed in the minds of the authors: Kuhthau posits stages on the basis of her analysis of behaviour, while Ellis suggests that the sequences of behavioural characteristics may vary.

6.1.5.10.6 Foster, (2004) Non-Linear Model of Information Seeking Behaviour

The emergent concepts were grouped into three core categories: Opening, Orientation and Consolidation, around which detail retailing to their definition, function and context

continued to be developed through further analysis. The new model of inter-disciplinary information seeking is represented in terms of three core processes and three levels of contextual interaction in **Figure 6.12**. The following sections provide an overview beginning the core processes of Opening, Orientation and Consolidation at the centre and moving on to discuss their interface with the three outer contextual interactions of the model.

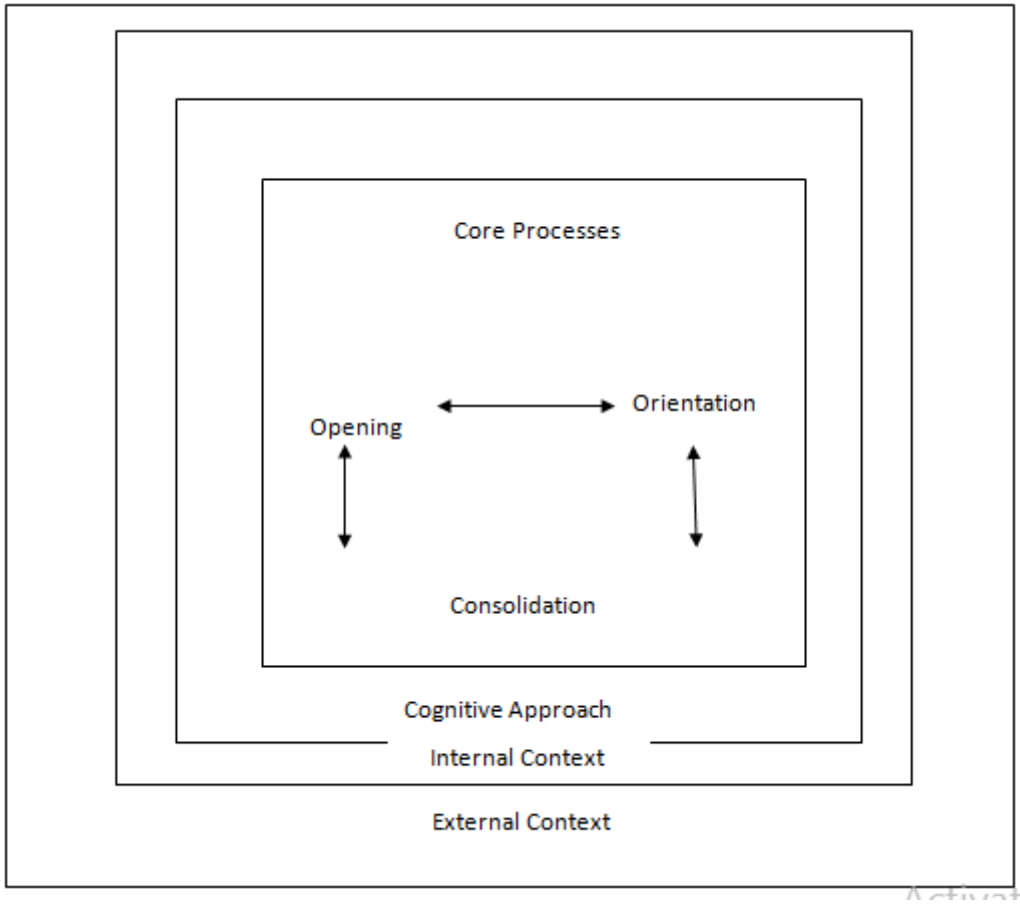

Figure 6.12: Non-linear Model of Information Seeking Behaviour

6.1.5.10.7 Nested Model

As the overall perspective of the research field of the information seeking behaviour is that, it constitutes part of the total field of information behaviour, that is, behaviour engaged in by persons in relations to information sources and channels. Information

seeking is one such behaviour and implies an active search for information and other information behaviour include, for example, the passive reception of information as when a person watches television advertisements. Information searching is defined as that mode of information seeking that involves interaction with computer-based information retrieval systems. Thus, a nested model shown below in **Figure 6.13**, which connects all three concepts:

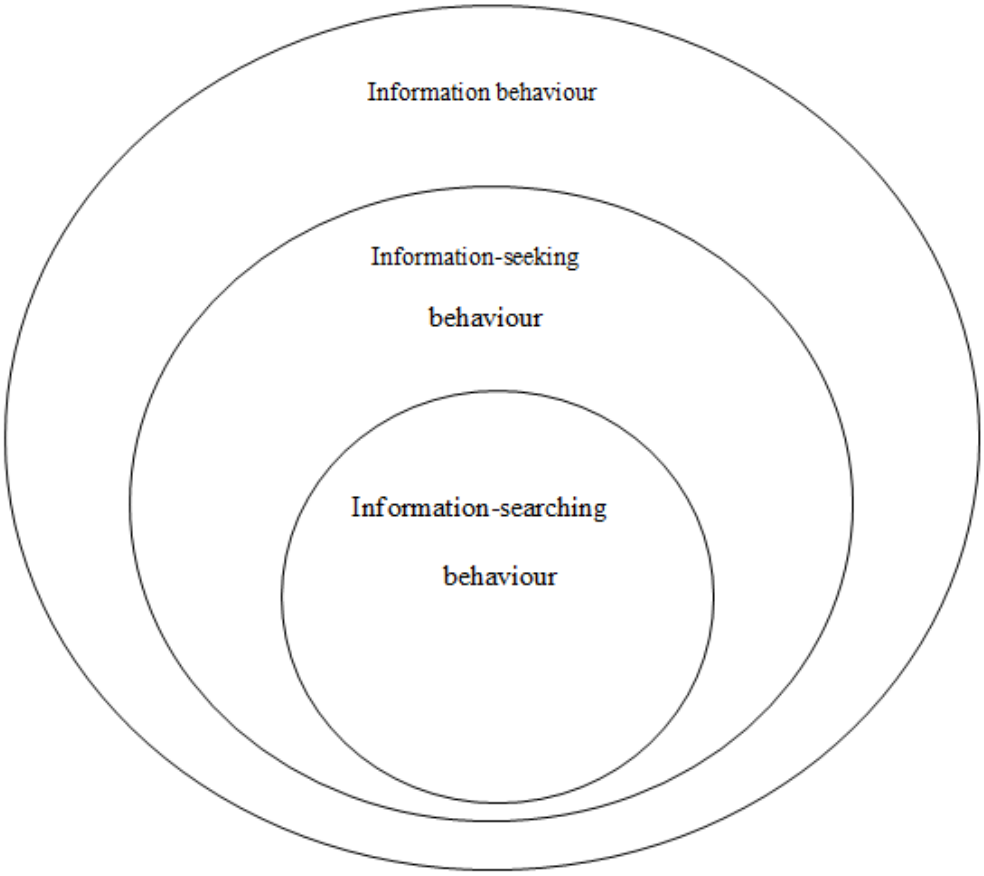

Figure 6.13: Nested Model

Information seeking behaviour has been studied from a variety of perspectives but most often in relation to different groups of people, either differentiated by disciplines or by work role or the life problems of the ordinary citizen.

6.1.5. 11 Theories in Information Seeking Behaviour

Many theories have been developed in the context of information seeking behaviour have been developed. A few of them are discussed briefly below.

6.1.5.11.1 Zipf's Principles of Least Effort

The Principle of Least Effort was proposed in 1949 by Harvard linguist George Kingsley Zipf in 'Human Behavior and the Principle of Least Effort.' According to Zipf (1949) each individual will adopt a course of action that will involve the expenditure of the probable least average of his work, in other words the least effort. It can further be explained that an entity, organization, or system puts an effort either to make it suitable for the emergingrequirements of the environment or to change the environment in which it exists. For any of the above efforts the entity, organization, or system prefers an easier way of approach and cost. With respect to information seeking, the principle of least effort postulates that the information seeker chooses a course of action that will involve most convenient search method for information seeking. The user will apply the searching tools that are most familiar and easy to use so as to find results. This happens in spite of the user having proficiency in technical searching.

Since libraries are user centric entities, the principles of least effort have become important in planning the library system and conducting research in modern library concepts.

6.1.5.11.2 Uses and Gratifications Theory

The Uses and Gratifications theory has been developed by Katz, Blumler and Gurevitch (1974). The concept has come into existence during 1940 with the researches on the children's use of comics. This theory is concerned with social and psychological needs and the behaviour of the people to media.

According to Elihu Katz, Jay Blumler, Mickael Gurevitch (1974), the paradigm of uses and Gratifications is 'the social and psychological origins of needs which generate expectations of mass media or other sources, which lead to differential patterns of media exposure (or engagement in other activities), resulting in need gratifications and other consequences, perhaps mostly unintended ones.

6.1.5.11.3 Sense Making Theory

The Sense-Making Theory within the context of information science was developed by Brenda Dervin (1992). Though the process of sense making was termed in different names by different disciplines for centuries, the term has been manifested in the fields of Human-computer interaction, organizational studies and information science.

According to Dervin the sense making methodology was described as theory for methodology that builds a bridge between substantive theory and met theory. The concept was also explained as an active two-way process of fitting data into a frame (mental model) and fitting a frame around the data. Neither data nor frame comes first; data evoke frames and frames select and connect data. When there is no adequate fit, the data may be reconsidered or an existing frame may be revised.

6.2 CONCLUSION

This chapter gives an outline of the conceptual and theoretical background of information need and Information-seeking studies. It has also reviewed the important conceptual models of Information-seeking behaviour that has influenced studies in the field. Particular attention is given to studies conducted in this field, due to their deliberation of information resources, a predominantly pertinent phenomenon for this study. The detailed analysis and interpretations of the present study have been discussed in the next chapter **(Chapter 7).**