3. INFORMATION, INFORMATION NEEDS AND SEEKING BEHAVIOUR.

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3.1 INTRODUCTION

At the edge of twentieth century, the society has entered into a period popularly called as 'information age'. All the human activities are directed towards information-producing and information-consuming practices. In the United States of America, more than 46% of GNP and 53% of labour income is related to knowledge, communication and information (Hanna; 1991, p.39). In OECD countries, the information sector alone accounts for one-third to one-half of GDP and of employment. According to Wellenius, by the year 2000, this sector is expected to grow to 60% of the European Community GDP (Zijp; 1994, p.3). Parallel to this phenomenon, similar situation is being witnessed in other developing countries with most of their activities being related to information.

With the march of time, information has become the central focus of human living. The new dimensions and spheres of telecommunications, television, telematics, computer related IR techniques along with digital technologies, publishing firms, radio, satellite communication, etc. are at cross roads. The people engaged on other sectors like agriculture, industry, research and development, bureaucracy, journalism, entertainment are running after information of one kind or other. Their jobs are based on information ideas and information technology. They used to perform the tasks which normally involve collecting, processing, storing, disseminating and using information in several forms for different purposes. These activities that consider information as the central theme materially affect individuals, organisations, societies, economies and the whole humanity as well, bringing about a new socio-economic value to the present society. In other words, this emerging phenomena is rooted in the concept 'information'.
‘Information’ in one form or other has consistently been a significant element in the development of human society and that it has shaped over a long period of time, the way in which one thinks and acts (Stevans; 1986, p. 2). The essence of information is a critical factor not only for the countries, but also for the individuals besides its multiplier effect on the efficiency and effectiveness of an entity for which it is utilised. As information is used by all human beings more or less to take decisions in their routine lives and to get the positive result out of it, the need for right information at the right time is highly crucial. This being the sole aim of any service system, the importance of information in every sector of human activity is a matter of great concern not only to librarians, but also to the policy-makers, planners, administrators, scientists, and researchers alike.

The history of information can be dated back to the early civilization when the development of writing in papyrus and clay tablets was started and knowledge-organisation with the generation of ideas related to printing was christened. The development of writing and invention of printing is an important component of the history of information. Einstein has examined the question of the kinds of changes in communication and learning brought about by printing and its impact on the intellectual and political revolutions of early modern times. However, Stevans, for the sake of convenience, divides the entire study of history of information under three broad periods, namely, pre-history, the age of writing, and the printing. Less is known about the real history of information. Hence, it needs a detailed study.

If human society is said to be really marching towards development and progress, it is only due to information. Its value as a vital resource for socio-economic changes has never been challenged. If one finds the human history, one can witness tremendous
changes in the process of social evolution with three different stages in which the role of information is the mainstay. In the agrarian society, the bit of information put to the minds of the farmers brought radical changes in the pattern of agrarian process, products and methods of farming so that, the emerging changes in the livelihood of the people could be felt. The second stage is that of an industrial society where information is primarily considered to be the main spirit behind the growth and development of an industrial world. In the words of noted futurist, Alvin Toffler (1970; p.176) the post-industrial society is information society in which the striking changes are dramatically arrived directly affecting people and organisations in their workplace, at home, and their behavioural patterns.

The present era of information age is christened with the advent of electronics, telecommunication, telematics, computer and other technological advancements-all related to procuring, processing, preserving, disseminating and using of information. The large scale and uncontrolled deluge of publications has made the society overwhelmed with information. With the changing pace of modern life, the concept of information got adequate momentum. The diffusion and dispersion of information has also made people awake to their potential requirements. Just as modern money penetrated the whole world within less than a century underwent sea-changes in people's lives and aspirations, thereby assuming that 'information' now penetrates everywhere (Drucker, 1993; p.328). Information, therefore, moves everywhere and as such its effects are pervasive. Information-man and information-based organisations are doing tremendous jobs for the development of the society. Every effort is being made to create an information-rich environment.
The essence of information and its impact on society has been tremendously realized in all walks of life, as it is very much crucial to the social and economic activities that comprise the development process. Information is primarily considered an agent of social change. In every aspect of the development process, be it education, research, business, etc. information has far-reaching implications and consequences. It has also created new possibilities to attack vexing problems of poverty, inequality and environmental degradation with the potential to achieve unprecedented gains on economic and human development fronts (Talero and Gaudette; 1996; p.11).

Recognising such a social transformation that information has brought about in magnifying, accelerating, reorganising and reshaping the society, the concept of global electronic village through internet has now rendered information sharing activities much faster than ever before. And it is information that has brought about such a huge and world-wide concentration that generates new thoughts to study more on its nature, type, uses, needs and seeking behaviour which ultimately inflicts information flow to understand and create suitable environments.

3.2. INFORMATION : MEANING AND DEFINITION

3.2.1 Meaning

Information appears to be an ambiguous term, a term that is fluid and has several denotations. Because, it has connotative differences with several disciplines that use the concept ‘information’ in their concerned area of studies differently. Information may indicate different concepts both between different disciplines such as philosophy, cybernetics, biology, communication theory, semiotics, and within disciplines including
that of information science itself. The following representation shows how the term, ‘information’ is understood in different disciplinary approaches.

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>Implications of Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Sciences</td>
<td>Processing in living beings</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Processing, Storing and Retrieving in mechanised form.</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>Transmission</td>
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<tr>
<td>Electronics</td>
<td>Communication</td>
</tr>
<tr>
<td>Philosophy</td>
<td>Epistemological study</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>As an abstraction and analogous of element, structure of Communication.</td>
</tr>
<tr>
<td>Psychology</td>
<td>Cognitive processing</td>
</tr>
<tr>
<td>Library and Information</td>
<td>Resource use, systems and services</td>
</tr>
<tr>
<td>Science</td>
<td></td>
</tr>
<tr>
<td>Linguistic Areas</td>
<td>Expressing, conducting and communicating.</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>Resource and commodity</td>
</tr>
<tr>
<td>Journalism &amp; Mass</td>
<td>Reporting, conveying message to a large number of people.</td>
</tr>
</tbody>
</table>

The above representation clearly demonstrates that, the concept *information* is being widely viewed as a subject of study for several disciplines and that they have their respective meanings and implications as concerned to their respective scope of activities.

The impact of information is, however, so diverse that the term information is very often confused and understood in its relation to certain other associated concepts.
such as data, fact, observation, intelligence, skill, knowledge, experience, wisdom etc. Although, these terms have their own etymological and implicational differences with information, the meaning and operational uses are more understood in information terms due to strong ties of interrelationship among them.

However, three terms, data, information and knowledge appear to be more synonymous, inspite of their differences in meanings. By a simple explanation, their meaning can be well differentiated.

**Data** are symbolic surrogates that represent people, objects, events and concepts in terms of words, numbers, symbols, etc. For example, scientific data in laboratory experiments, social data on population, price index, trade statistics, etc.

**Information** is an aggregate of facts and processed data which is communicated in a meaningful term. Examples: results of laboratory investigation, stock exchange information, news of national and international events, etc.

On the other hand, **knowledge** is consolidated and structured information in concrete form or a phenomenon of mind.

However, these terms are so inextricably interwoven that in common parlance they seem to be synonymous. But it is necessary to comprehend the usage of these words for understanding varied professional purposes.

### 3.2.2 Definition

The term ‘information’ is not confined to a single subject or discipline. This has
led to the problems encountered in bringing the term into a specific confine with a common denominator. This has reflected in the continuous effort to develop generalised definitions for the concepts 'information' and 'information science' which until now are partially successful (Wellisch, 1972, p. 173).

Wellisch (ibid) found some thirynine definitions of information and information science, all of them not related to each other (Manda, 1991, p. 18). Most of these descriptions are partially valid only in a limited range of applications. Most of the authors are of the opinion that, the word 'information' is used with different connotations and a single precise definition encompassing all its aspects in principle cannot be formulated.

Farradane (ibid) defines 'information' as any physical form of representation or surrogate of knowledge or of a particular thought used for communication (ibid).

In Webster's Third International Dictionary, the term, 'information' is defined as "the communication or reception of knowledge or intelligence, something obtained or received through informing, the process by which the form of all object of knowledge is impressed upon the apprehending mind so as to bring about the status of Knowing" (Webster, 1978, p. 1160).

According to Shera 'information' is a fact. It is the stimulus which one perceives through senses. This information may be a single isolated fact or it may be a whole cluster of facts; but it is still a unit of thought. It can have any dimension. It is that intellectual entity which one receives, the building block of knowledge (Babu; 1994; p.22).
According to Schramm 'information' is the stuff of communication and that communication is the ability to process information and share it with others" (Dervin et al; 1982; p.419).

Kent (1970, p.16) States that information is the feedstock for knowledge. In an ideal world of unimpeded flow of information into knowledge, there would be an advantage to be gained by any individual or group compared with another by possession of information.

Wersig and Neveling (1975; p. 127-40) however, in their study of “the phenomena of interest to information science” consider information much more comprehensively adopting six basic approaches, namely, the structural, the knowledge, the message, the meaning, the effect, and the process approach. The summary of these approaches is that, information is a social process and can be understood if it is defined in relation to needs either as reduction to uncertainty caused by a communication data or as data used for reducing uncertainty.

The definition as given by Brookes, however, shows a different picture. He says that ‘knowledge’ is summation of many bits of information which have been organised into some sort of coherent entity that can be represented by a simple equation. When information Δ1 is added to the existing body of knowledge K(S), it results in modified knowledge K(S + ΔS). This can be represented as : K(S) + Δ1 = K(S+ΔS) (1981; p.3-12).

'Information' as defined in Oxford English Dictionary gives rise to two propositions. They are:
Communication of instructive knowledge or news of some fact or occurrence;

Knowledge-communication concerning some particular fact, subject or event;

Buckland, on the other hand, has segregated three different aspects of information. In his analysis, he considers (1) Information as process; (2) Information as knowledge, and (3) Information as thing (1995; p. 351).

According to Davis and Olson (1905; p.200) 'Information' is data that has been processed into a form that is meaningful to the recipient and is of real or perceived value in current or prospective actions or decisions”.

Over the years, a variety of more specific definitions of information have been found, ranging from the idea that information consists of 'assertions as to the state of affairs at a given news (Berlo, 1977; p. 33) to the idea that information is defined in terms of its potential for reducing cognitive uncertainty (Atkins; 1973; p. 205).

However, in the context of user studies research, the word 'information' is defined as a physical entity or phenomena, the channel of communication through which messages are transferred or the factual data are empirically determined and presented in a document or transmitted orally (Wilson; 1981; p.3).

Although there are variations among these definitions, virtually all are based on a single theoretical formulation developed by Shannon and Weaver (1949).

Thus, taking together all these definitions, it can be summed up that, 'information' is the intellectual property in one form or other that is conveyed or utilised to generate enriched and meaningful messages for creation of knowledge.
Information has, therefore, become so pervasive and widespread both in its contents and dimensions that there can be no single definition, as there can be no single set of characteristics for the classification and grouping of it. Several attributes can be interwoven to the idea of information, such as, transfer process, properties, contextual subjects and uses. If one goes to interpret information differently, it would be obvious that several disciplines have information as their significant part of study and research. But a subject like Library and Information Science appears to have concentrated more on the ‘concept of information’ than any other discipline.

Information is primarily a basic necessity for the human being which is put to use to generate good or bad results. Its value can be realised on its use, the information provider or user, and the way they utilise information in their desired perspective ways. As it is evident that information reduces uncertainty, Prasher (1987; p.96) argues that the degree of uncertainty varies from one person to other depending upon the time and place. Information generates value through the decision situation it creates and the decision it informs. By developing a relationship between information life cycle and decision making, Mason, Mason and Culnan (1995; p.51) have collectively determined five core components of information value-adding chain.

Beginning from the source, the data is desired in the second place which then in the third stage is given proper interpretation applying assumptions and perspective to the data. The fourth component, on the other hand, is the evaluation of inference drawn with regard to values that lead to action in the final stage. Information value adding chain can be, therefore, worth noting with respect to two basic features. First, information is developed through several qualitatively different levels and the second
being that the flow of information from source to action is often characterized by points of articulation between different parties (ibid). In decision-making, the nature and amount of information changes the behaviour of the individual recipients.

### 3.3. CHARACTERISTICS OF INFORMATION

Information is a resource of immense socio-economic value. Its use in social restructuring and nation building is vital as it affects every aspect of development. The centrality to the concept of 'information' is its communication and use. The work of any developmental user, i.e. scientists, technologists, teachers, researchers, managers, etc. necessitates effective communication, on which one's complete result and achievement depends upon. The question of communication and use of information are based upon its nature, characteristics and properties. The following description illustrates the importance of the attributes of information in a broader perspective.

Paisley and Hardy (1980; p.26) have suggested some of the factors that are related to the use of services of information by individuals. Their contention is that, the value of information can be defined in terms of attributes related to the settings in which information is used. These attributes include relevance, timeliness, comprehensiveness, authoritativeness, specificability, locatability, acquirability and usability. The value of a piece of information with respect to the above attributes may vary in respect to the several factors as suggested by Paisley.

- the way in which the information is used including its use in learning, decision making, problem solving, calculation and verification;
- characteristics of the individual seeking information including their preferences for cognitive complexity or simplicity, the paradigm with which they structure a field and the extent to which they differentiate, and the various levels of information;
• social and organisational factors including characteristics of the work-team, work organisation, and professional disciplinary groups to which an individual belongs; and

• task requirements including, whether the problems encountered in a given task are recurring or episodic.

A different view, however, has been taken by Cleveland in identifying the distinguishing characteristics of information. According to him, information is human, expandable, compressible, substitutable, transportable, diffusive and shareable. These attributes make the concept information a unique resource and its use that creates an epoch in the modern information environment (Mason; 1995; p. 42).

Considering information as human, it is propounded that information exists in the human mind. Information is abstract and psychological in nature as it lives in the human being because, it is primarily a mind-based entity. The cognitive structure of human brain generates and processes information. Therefore, information is the result of mental activity of mind that observes, imagines, remembers, analyzes, compares, relates, organises, intuits and integrates.

Information can also be expanded in its use. The attribute, ‘expandability’ means that any item of information is used or produced, creates new information and such its scope and limit get expanded.

Information is compressible. Information contained in complex system and services are compiled, integrated, summerised, indexed, abstracted, thereby, its very communication is compressed. The librarians and information scientists use several methods in condensing the information for better understanding of the users.
Information can be substituted for any material for which it is used. Substitutability is one of the major sources of information's power and can be used to improve human condition(s), (Mason; p. 44).

It is a well-known and acknowledged fact that, information is transportable. From the early times, several methods were undertaken to transfer message from one place to another. Using modern technology, it has become very easy and cheap to transmit messages. All the technologies are directed towards achieving sophisticated and speedy transmission of information from the point of generation to the point of use across the world. Major changes have been witnessed in both speed and volume of the movement of information particularly owing to technological revolutions and internet. The basic phenomenon of this transportability is to ensure the use and sharing of information in a global sphere.

Information is more concerned with knowledge diffusion. Because, it has got to be diffused for various developmental purposes. This process of diffusion and dissemination adds value to primary information.

The shareable feature of information is the most significant factor in regards to its use. Adding to the concept of information, new dimension of sharing has been evolved, giving subsequent development to networking among information centres and providers. Few such well known networks are OCLC, UTLAS, WLN, RLIN and many others.

3.4. PROPERTIES OF INFORMATION
An examination of information and its components gives rise to the need for assessing its inherent properties for which its essence and existence appears to be prominent in human use. Burt Nanun (1981; p. 56) found that information has unique properties in terms of the following attributes.

- Information is extremely heterogeneous;
- It is of least value, unless otherwise interpreted or used in specific contexts;
- Demand for information depends upon variables like age, perishability, convenience, reliability, source, cost, quality, quantity and availability;
- Information appears to be the central focus in management and functioning of an organisation meant for production; and
- Copy-right, intellectual property right and patent laws are to be provided for safeguarding the values of information products.

However, the properties of information can be analysed on the basis of its utility in specific fields or areas. In general connotation, the concept of information has certain universal properties applied to all. Thus, information in common parlance is not consumable in use, shared by many without any loss, and a democratic resource that can be used by everybody, of course, barring few exceptions to official secrecy now in vogue in few countries. Information is, therefore, continuous, dynamic and evergrowing without any end to it.

In scientific and technical parlance, information has certain unique properties. In physical and biological sciences, information is universal in its content and it can be available to all in an organised communication system. The quality of information is enhanced with the review of peer groups. Information in these areas are prone to obsolescence due to fast growing/changing phenomenon associated with it. The present exponential growth of scientific literature has made information in-accessible and unavailable to certain extent.
In present technological environment, information has got free as well as restricted flow in the sense of time and geographical barriers that has made its value more sought for.

3.5 TAXONOMY OF INFORMATION

The use of information in society is so complex and myriad in nature that there cannot be a single category of information. Even if there is certain category, it is, however, difficult to differentiate without any basis. In fact, information can be categorised using different characteristics that depend upon the purpose of such grouping.

According to Kablitz (1969) ‘information’ can be of three kinds:

i. Semantic Information (as a message)

ii. Semantic Information (as a process)

iii. Documental Information

While, semantic information as a message is used for transmission of knowledge, the same as a process is used to store and disseminate on a permanent basis. On the other hand, documental information having the characteristics of analytical and synthetic nature is full of facts, statistics or statements supported by evidences.

Bhattacharya (1978; p.18-20) has, however, categorised information under two broad groups:

i. Discursive information;

ii. Non-discursive information.
Discursive information is the message conveyed by a systematised body of ideas or its accepted or acceptable substitutes, having one or more of the following attributes relating to its treatment of explosion:

i. Ranging over a wide field;

ii. Proceeding logically or coherently from topic to topic, and

iii. Reasoning from premises to conclusion or proceeding from particular to general utilizing analytical reasoning or proceeding from logical abstraction to logical interaction.

Non-discursive information, on the other hand, is a unit of facts conveyed by a systematized body or its accepted or acceptable substitutes. Further, non-discursive information, on the other hand, is subdivided into two types.

i. Qualitative; and

ii. Quantitative

According to Badwen, (1986; p.210) however, information can be of four types (1986; p.210). These are:

i. Interdisciplinary information

ii. Peripheral information

iii. Speculative information

iv. Exceptions and Inconsistencies.

This taxonomical division of information is more creative in nature and in that it provides adequate sustenance for developing idea(s) generated in human mind.
Another classical categorisation of information has been provided by Shera (1972; p.175). He has formulated such a categorisation of information which is primarily based on the process of generation. Thus, information, according to him, can be studied under six broad groups:

i. Conceptual information;
ii. Empirical information;
iii. Procedural information;
iv. Stimulatory information;
v. Policy information; and
vi. Directory information.

Types of information has been judged by Christie (1991; p.39) from different angles taking into account the following four broad dimensions: (a) relating to behaviour; (b) organisational penetration; (c) item content, and (d) technological fit.

From behavioural patterns, however, information can be of only two types. They are: (a) general, which is more of relating to purpose, and (b) specific that relates to the psychological mechanism involved. On the basis of organisational penetration, three fundamental types of information can identified. These are:

i. Material information;
ii. System information; and
iii. Product information.

An organisation requires the above three types of information to produce informative materials, viz. document either in printed or non-printed form. Here, it can be ascribed that, the types of information distinguished above are primarily concerned with the
organisational effectiveness for production and consumption of documents.

In respect to item content, information can be divided into two types:

(a) Data information;
(b) Programme information.

While data information refers to statistical numbers, symbols, etc. that are used in specific purposes, programme information, on the other hand, is manipulated to show how former is utilized.

The fourth key type under this dimensions, i.e. technological-fit, is less significant due to the introduction of electronic system that handles a wider spectrum of information.

Despite the above categorisation of information formulated by several authors, a broad grouping of information has been done on the basis of a set of common characteristics. The modified model of information transfer of Shanan and Weaver is the base of such characteristics that groups information depending upon the purpose of its use. These characteristics can be source, channel, media, recipient and information needs. Under this type of grouping, information can be of the following types (IGNOU materials; 1996).
### Information Grouping

<table>
<thead>
<tr>
<th>Sources</th>
<th>Channel</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Signals</td>
<td>i. Literature (Primary, Secondary &amp; Tertiary)</td>
<td>i. Oral</td>
</tr>
<tr>
<td>ii. Text</td>
<td>ii. Information Institutions</td>
<td>ii. Recorded</td>
</tr>
<tr>
<td>iii. Graphics</td>
<td>iii. Distribution agencies</td>
<td></td>
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</tbody>
</table>

#### Recipient

<table>
<thead>
<tr>
<th>i. Individuals</th>
<th>By Standard</th>
<th>By Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii. Groups</td>
<td>i. Popular</td>
<td>i. know - why</td>
</tr>
<tr>
<td>iii. Organisations</td>
<td>ii. Scientific</td>
<td>ii. know - how</td>
</tr>
<tr>
<td>iv. Institutions</td>
<td>iii. Technical</td>
<td>iii. show - how</td>
</tr>
</tbody>
</table>

The study on taxonomical division of information, therefore, reveals that categorisation of information varies from entities to environments. In a particular situation, information has specific categories which are quite irrelevant to a different setting. For example, information concerning a health service environment has the following categories.

(a) Scientific, clinical and health service information;
(b) Patient-generated clinical information;
(c) Corporate activity management information; and
(d) Information for patients, carriers and the general public.

In Journalism and Mass Communication, information can be categorized into two types (1) Current information, and (2) Retrospective information.

While current information is more used to design a news item as the recent happening or events, retrospective information, on the other hand, is said to be helpful in fabricating a feature article to substantiate the facts.
These types of information, however, are exclusively designed to affect a definite environment for which its categorisation is meaningful.

3.6 PRINCIPLES AND QUALITIES OF INFORMATION

The basic concepts and ideas as propounded by Ranganathan in his five laws are the fundamental tenets of library science. These laws show a significant move towards establishing a dynamic theory by which the very fabric of the discipline is based upon. Information science is the ‘brain-child’ of Librarianship and the laws generated for the Library Science to be functional can be considered synonymous with information science.

In a corollary to the five laws of Library Science, Bhattacharya, (Khanna; 1985; p.73), however, has derived the five basic principles of information. These are:

i. Information is for use

ii. Every information user his/her information

iii. Every piece of information, its user

iv. Save the time of information user

v. The universe of information is ever growing.

It is very often remarked that information is a valuable resource having certain qualities for its effective use. Rojas (Devarajan; 1989; p.2) has identified some of the important qualities of information. These are:

i. accessibility,

ii. comprehensiveness,

iii. precision,
These aforesaid qualities of information appear to be the essential conditions by which the use of information in an effective way can be ensured.

But, William (1965) has determined six other parameters of information that are considered as equivalent to qualities. These can be discussed as under:

(a) Quality of information can be measured by the quantity of information contents in pages, words, characters, bits, etc.;

(b) Quality corresponds to the contents and meaning;

(c) Structure and organisation of information and its logical relationship between statements and elements;

(d) Ideas expressed in the documents using language, symbols, codes and syntax;

(e) Completeness, accuracy, relevance and timeliness of information; and

(f) Value obtained from information in the time span.

In any system or services dealing with information dissemination for its users, there needs to be an approach of agreement for greater reliability and accuracy of
information provided. Information must conform to reality, so as its trustworthiness can be ensured. If up-to-date information cannot be provided, the value of its use will be deemed to lose its credibility. The information intermediary while analysing and disseminating information must ensure the attributes of quality which can satisfy the recipients in a manner that conform to their information privations. That is why, the system should generate the idea of quality in respect to reliability, accuracy, reality, nascency completeness, certainty, and intelligibility. In an effort to ensure quality of information, Librarians used to interpret, classify, catalogue, store, analyse and update in a manner that permits in their scope. However, the application of information technology is designed to ensure dissemination of error-free clientele-friendy and qualitative information, detecting bias and improving the quality beyond human imagination.

3.7 INFORMATION SOURCES

It is the inherent attitude of man to preserve his thoughts and ideas for the future generations. From earliest times to the present day, people have kept their ideas, thoughts, emotional feelings in written/recorded form through a variety of materials: bone, clay, metal, wax, wood, papyrus, leather, parchment, paper, film, plastic, and magnetic tape and finally in optical disc. Behind their attempt to preserve these materials for posterity, they have only one intention: to keep their ideas alive and provide the same as information for further generations to come.

Libraries have played a major role not only in accelerating the use of these different types of materials for information dissemination but also studying these materials and developing more sophisticated technology for longer, faster and effective use. A better knowledge of information sources helps one to develop the right approach to
collection and retrieval of information in a library setting so that information contents in these materials are better exploited and effectively utilised by the users in need.

Information is pervasive and available everywhere whatever form one may say. For one's communication convenience it can be better considered as sources with different types. Sources are the means by which ideas, opinions, facts and thoughts are communicated. Users are very often confused with the numerous sources of information available to them. The problem that is often encountered by a user is, how to select from the myriad sources, the information that is of most valuable to him. A knowledge of the information sources, their scope and limitations, their inherent characteristics, and the method of consulting them (easy or difficult) are equally important (Kawatra, 1989; p.122).

The sources of information may be formal or informal. The line between formal and informal sources is difficult to draw, a reasonable approximation might be that formal sources are susceptible of use by a number of people not necessarily at the same time, while informal sources operate on an individual interpersonal basis (Ford; 1973; p.87). Moreover, the formal sources are continuously increasing. Even unpublished sources are becoming increasingly important to scholars. Occasions will arise, especially in a special library or a university library, when information would be required by a user without pre-condition about the form of document. In such a situation, what matters is the finding of information, not the sources (Kumar, 1978; p.98). However, it is needed to affirm from which source the information in need can be had.
3.7.1 Classification of Information Sources

While providing a number of information services and bringing out a lot of information products, library and information centres used to deal with several types of information sources. It is always desirable to group them into convenient classes in accordance with certain logical attributes. These attributes can be the publication process, target group, physical media, nature of presentation, information content, purpose, scope of treatment, etc.

Experts in Library and Information Science have shown considerable interest in classifying information sources into convenient groups. Guha (1983; p.17), however, has described the division of documents as per the demarcation shown by Ranganathan, Hanson and Grogan.

(a) Grouping by S.R. Ranganathan

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Neo-conventional</th>
<th>Non-conventional</th>
<th>Metadocument</th>
</tr>
</thead>
</table>

This categorisation of information sources emphasises the physical characteristics of the document. Another factor is that the documents are grouped in the chronological order of their development. It seems that this grouping does not cover adequately the information characteristics of the documents for a wider use.

(b) Hanson’s Grouping

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books, journals, reports, patents, theses, trade literature, standards, etc.</td>
<td>Abstracting, indexing journals, citation indexes, subject bibliographies, reviews, surveys etc.</td>
</tr>
</tbody>
</table>
This two level category of documents of Hanson is an improvement over the previous one and seems to satisfy the users as well as the librarians to some extent. Because of the fact that the classification of documents is to be on the basis of level of reorganisation. However, it has not completely satisfied the requirements in a scientific manner. A question has been raised here. How can a textbook be considered as a primary document? Textbooks are assimilated information written for a particular level of users, the information having been drawn basically from primary sources. Hence, it could have been placed in the secondary category or some other category.

(c) Grogan's classification:

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodicals, research reports, conference proceedings, patents, standards, trade literature, thesis, manuscripts, Govt. Publications, correspondence files, feasibility reports, case studies, maps, charts, atlases, photographs, graphics, etc.</td>
<td>Indexing &amp; Abstracting Services, reviews of progress, reference books (encyclopaedia), dictionaries, handbooks, tables, formularies treaties etc.</td>
<td>Year book &amp; directories, bibliography of bibliographies, textbooks, Guide to Literature, etc.</td>
</tr>
</tbody>
</table>

This type of classification of information sources by Denis Grogan appears to be more pragmatic as it logically identifies the information characteristics of the documents. In classificatory terms, information content and its uses are more valued than that of its physical media.

According to his groupings, primary sources of information are those documents which have independent existence, containing new and original information or the reflection of new ideas, observation, experiment. An article in a journal is the new
and original contribution of the author/contributor. Again primary document can be attributed to the publication process in which it is first published. A research monograph is the original thought content/outcome of research project of a researcher which has never been published earlier and which takes the shape of a book form for the first time.

Here ‘secondary’ is used in the sense of immediately derived from something original, primary or basic. It can be cited that indexing and abstracting services are publications containing bibliographical details of the articles, with or without annotations derived from primary journals, are considered ‘Secondary’ publications.

However, the term ‘tertiary’ is used in the sense of occurring in or being in a third stage. These types of documents are usually compilations drawn from primary or secondary sources, organised and arranged according to a definite plan. Essentially, these are to aid searchers in using primary and secondary sources. Among this group are various sources like guides, directories, bibliographies that all lead to other sources of information.

(d) **Katz’s Categorisation**

In accepting the above grouping of information sources, Katz (1982; p.16-20) adds three main categories: (1) the control, (2) access; and (3) directional type. The first broad class or form of reference source is the bibliography. This form is variously defined, but in its most general sense, it is a systematically produced descriptive list of records.

i. **Control**

The bibliography normally serves the role of a controlling agent. It invents what
is produced from day-to-day and year to year in such a manner so as to enable both the compiler and the user to feel they have a control, through organisation of the steady flow of knowledge. The bibliography is prepared through research, identification and classification.

ii. Access

After the controlling function is done, the individual items are organised for easy access to facilitate intellectual work. All the access type of reference works can broadly be defined as bibliographies, but they may be subdivided as follows:


2. The library card catalogues or the catalogue of numerous libraries arranged for easy access through a Union list. Technically, these are not bibliographies but are often used in the same manner.

3. General systematic enumerative bibliography which includes various forms of bibliographies. Example: The National Union Catalogue.

4. Indexes and abstracts, though are usually treated separately from bibliographies, but are considered bibliographical aids. They are systematic listings that help to identify and trace materials. Indexes to the contents of magazines and newspapers are the most frequently used types in the reference situation. Example: The Readers’ Guide to Periodical Literature.

iii. Direction

Bibliographies themselves normally do not give definite answers, but they direct users to the different sources for answers. For their effective use, the items listed
must be either be available in the parent library or available from another library system.

Source Type

Unlike the access type of reference work, they are synoptic. It includes encyclopaedias, fact sources, dictionaries, biographical, and geographical sources.

Agencies of Formal and Informal Sources

Agencies of information can be grouped under two broad categories, viz: agencies of formal sources and informal sources (Babu; 1994; p.91).

Formal Sources

Under formal sources of information:

1. Libraries
   (a) Academic Libraries;
   (b) Public Libraries; and
   (c) Special Libraries.

2. Information Centres
   (a) International Information Centres;
   (b) National Information Centres;
   (c) Regional Information Centres; and
   (d) Local Information Centres.

3. Personal Books Collection
   (a) Self;
   (b) Relating to friend/colleague(s).
Informal Sources

1. Agencies of informal sources of information come under:
   (a) Suggestions from colleagues/friends.
   (b) Contacts with peers;
   (c) Off-prints from authors;
   (d) Journal clubs;
   (e) Technological gate-keepers;
   (f) Corridor meetings at conferences.

2. Communication among big groups these can be:
   (a) Seminars and conferences, and
   (b) Invisible colleges (Information exchange groups).

In summing up the above schemes of information sources groups done by LIS experts, an integrated approach can further be taken to categorise them in a systematic manner. Organisation of information presupposes the essence of the need to know the users and their information use patterns. Users of information are categorised according to their status, level of works, and areas they are involved in. Though the information need may vary from person to person, a general pattern of requirement exist among various groups of users. In general, the following four types of sources are used to suffice for the needs of the users in different circumstances. They are:
   (1) Current Information; (2) Exhaustive Information (3) Everyday Information and (4) Catching-up Information.
3.8 READING HABITS AND ITS IMPACT ON INFORMATION ACQUISITION

Literacy is that social phenomenon which is more or less interwoven with the fabric of the society in order to make people know about themselves and others, and aware of the society around them as well. One of the important characteristics of the literacy programme is 'reading' which assumes a greater significance in present day society, because, reading is a human activity that drives one towards an intellectual world. Grey opines that, reading influences the extent and accuracy of information as well as the attitudes, moral beliefs, judgement and action of readers (Devarajan; 1989; p.14).

In other words, reading is the comcomitant activity of 'writing' and both the production of delayed messages with a degree of permanence, and the utilisation of symbolised speech as a means of conveying messages account for the accumulation of information in a controlled fashion that can not be accomplished through the human memory alone (Daily; 1978; p.87). However, reading is the art of interpreting printed and written words which is considered as the basic tool in education.

Reading is primarily considered as a habit of high order. It is one of the most powerful and lasting influences on the promotion of one's personal development. Such a habit helps in building the morale of the personality. Regular and systematic reading sharpens perspectives of one's living, and thereby prepares him for an effective participation in the social and political life. Reading habit is, therefore, considered as an exercise to mind.

Almost all of our intellectual activities are centred around the reading habits.
Because, our primary concern is to acquire knowledge and reading habit being one of the important ways, it is widely and differently practised by human beings.

3.8.1 Objectives of Reading

Reading habit though entails several objectives, its purposes differ from person to person depending upon the circumstances. Users of a library are also of variety in nature as their needs differ in respect to the use of various reading materials of the library with multifaceted missions. This can be examplified by the following objectives of reading.

i. to meet the needs of short range, long range, reference services through the help of reference librarian;

ii. to consult with only reference material/source such as subject dictionaries, general dictionaries, encyclopaedias, etc. without taking any assistance from the reference librarian;

iii. to avail current information in one's subject of interest;

iv. to keep abreast of the latest publications that are of interest to one's specific needs;

v. to make a serious and exhaustive study on a specific topic of a particular subject;

vi. to make oneself aware of the day-to-day happenings;

vii. to utilise leisure hours by reading some light materials for pleasure reading.

Processes of the readers may differ, but their primary goal is directed towards increasing reading habits which can be culminated in the institution called library.
3.8.2 Libraries and Reading Habits

The unprecedented growth of publication/information has accelerated the growth of knowledge that propelled the reading habits considerably. Such a growth is so huge and gargantuan that it is not possible on the part of human being to keep track with a particular piece of information. Neither personal purchase nor borrowing can quench one's thirst for knowledge or information. So, emergence of library is the only panacea to solve the problem of reading can be attributable to an essence in the world of human-knowledge.

Libraries store information in different forms, bring out reading materials in readable formats according to their variety needs of their clientele. While libraries create the real atmosphere for reading, these ultimately increase the reading habits of the users. Sharma (1978; p.171) is of the opinion that, the practice of using the library will make a man habitual of going to the library and then he will realise that his reading in the library is essential for him as other essential items like breakfast. This very statement truly signifies that the role of a library is an essential ingredient for one's sound intellectual existence.

Scholars in search of information always try their best to establish permanent ties with the library to promote their reading habits. Hence, reading habits of the user community is generated, maintained, promoted and achieved by the library and information system.

3.8.3 Reading Habits and Information Acquisition

A library system is primarily designed to serve a community of users and to provide them utmost satisfaction. To satisfy them their needs are to be fulfilled and
to fulfil their needs, their requirements are to be assessed. This ultimately drives one to undertake a study of users in order to determine their reading pattern, habits, information needs and seeking behaviour and their approach to information so that an effective library system can be build up. Hence, the study on reading habit of a particular group of users substantially moulds the library management to develop such a system with optimal satisfaction. Information acquisition as one of the vital activities of a library is primarily based on the needs and reading habits of a given group of users. Because, information to be procured is selected basing on the needs and reading requirement of the users.

3.9. INFORMATION NEEDS

Users constitute inseparable and indispensable part of any library and information system. The emergence of an information organisation is due to the very essence of the users. While all the factors responsible for the existence of a library and information system are directed towards proper and effective use by a specific group of users, the central question of library’s effectiveness and efficiency is based on the users and their needs. It is often remarked that, a library is basically a service institution designed to provide information services to fulfil the information requirements of the community. Libraries are service enterprises and service will be better if the nature and needs of clientele are known (Martin; 1976; p.487). A shift has, therefore, been developed to emphasise the successful use of the libraries on the basis of information needs of the users.

How users are the central focus and research on users is the most significant aspect to an information system can be best illustrated by the following quotes on 'information needs and users'.

1. It becomes increasingly clear that the success of information services is more likely to be achieved through adjusting the services to meet the specific needs of an individual rather than trying to adjust the individual user to watch the wholesale output of an information system. (Garvey et al; 1979; p.256)

2. Effective transition into the information will require switching from information systems that are technology and content driven to information systems that are user driven (Mick et al; 1980, p.55).

The recognition of users' needs in terms of users than that of system is the new agenda for the library and information scientists. This user-orientation practice phenomenon is the order of the day in the library environment that is ultimately propelled towards improvement of the information system. Hence, library users appear to be the steering wheel of an information system on which the scholars in LIS are more anxious to know their users.

It is pertinent to raise certain issues related to the essence and emergence of research on 'information needs' studies. Although information needs is a part of user studies, actual emphasis was laid on study of 'information' needs and seeking behaviour during post 1950s era. The Royal Society Scientific Information Conference (1948) undertook several surveys of user's information seeking behaviour. During 1960's, the work of M.B. Line, Michale Brittain, Menzel, Paisley through various articles published in ARIST accelerated the growth of research work and literature on information needs. One important milestone in this area is the work of the University of Bath where the study on Information Requirement of Social Scientist, popularly known as INFROSS was conducted. INISS and DSISS were similar type of works that led the scholars to be motivated to work on similar line.
Similarly, the studies of Dervin and her colleagues, Mick, Wilson, Rohde, Cronin, and Renekar outlined the theoretical perspective on the study of information needs research and devised models for the improvement of the existing state of the information user studies.

A survey of the literature on information needs and uses suggests that all these studies are primarily clustered around two essential spheres.

i. The focus is laid on user study with a shift of emphasis to information seeking behaviour during 1950s. Attempts were made to depict the characteristics of the users as a sociological group explaining information needs and how to satisfy them.

ii. The second feature is directed towards information retrieval and information system design. This investigation is intensely concerned with information retrieval strategies that might assists the users in representing their needs, and with the development and refinement of information systems in an attempt to reflect the users' needs better (Itoga; 1992; p.331).

Altogether, more than 1000 information needs studies have been undertaken at either macro or micro level. Inspite of the work done, the system improvement on the library environment has not been appreciably good. Researchers are more interested to focus on micro problems and undertake studies to alleviate the problem and bring a solution to the long cherished desire of developing an user oriented information system on library and information environments. This impetus enables professionals and researchers to know more about their users and explore possible improvements related to user system interface in their respective libraries.
The present information science has urged upon the librarians and information scientists to seek to understand the library users so as to come up within their information environment. Why information seekers choose to exploit certain information resources while ignoring others or why they decide to abandon one type of inquiry in pursuit of another are some of the questions of considerable importance to the field and to society as well (Sandstorm; 1994; p.414). It is a universal phenomenon that libraries are meant for service delivery to the users and to provide improved services to the community. It is, therefore, desirable to know their users, their needs and preferences for the documents and such other related materials. In order to achieve the objectives of developing a good library and information source system and to arrive at the target of designing the library system and services to suit the requirements of its target users, the last and most successful method perhaps is to study the information needs and interests of its users.

3.9.1. Information Needs : the Conceptual Framework

The concept of information needs is the outcome of the combination of two terms 'Information' and 'Needs'. To make a sensible analysis of the concept, it is necessary to identify the nature and meaning of the above two terms and their significance in connection with user studies approach. What is information and what is need?

Much has been talked about information from definitional and conceptual point of views in the previous discussions. However, in a restricted sense, information is a sensible statement, opinion, fact, concept or idea or an association of statements or ideas (Evans; 1981; p.2). In a broader sense, however, information is that which is transmitted by the act or process of communication, it may be a message, a signal,
a stimulus. It assumes a response in the receiving organism and, therefore, possesses responsive potential... It is instrumental and it usually is communicated in an organised or formalised pattern, mainly because, such formalisation increases potential utility (Shera; 1972; p.164). As regards to the second term, what is a need? Everybody is engaged in some other assignments that are significant for him. These activities are designed to achieve the target, whether he is a farmer, teacher, physician, bureaucrat or a journalist. Each one is so heavily engaged in their respective area(s) of activities that they necessitate the help of some other elements that bring success to their work, which can be termed as 'need'. In this connection, it can be assumed that, these professionals more or less depend upon information to update their knowledge or to answer their queries of some kind or other. To be full-fledged or self-sufficient on ones view, there is a great necessity of adequate and appropriate information in right time.

This lack of self-sufficiency in one's part constitutes one's information needs. The information needs represent gaps in one's correct knowledge that makes him quite satisfied with a given situation or work environment.

According to H.A. Murray, a need is a construct, that presents a force is the brain region. It leads to organised action (Girija Kumar; 1989, p. 443). Girija Kumar, however, opines that the term, 'need' refers to such a concept to what an individual ought to have and differentiates want as what an individual would like to have.

Thus, it is inferred that 'need' can be defined as a situation that requires some course of action, which leads to want and good directed behaviour causing the tension in the respective individual's mental sphere.
Information needs, thus, is a concept of human need. Information need 'arises whenever individuals find themselves in a situation requiring knowledge to deal with a situation as they see fit' and that information needs arise in all aspects of everyday life. The home, the office, in relation with family or friends or the insurance company out of idle curiosity, or as a requirement of work (Chen and Heron; 1982, p.5).

Information need itself is a psychological state, not a visible object or complex of symbols. An information need, therefore, is something not directly observable. However, it has a definite existence in the minds of the user at least, and so, it is useful to have a term by which one may refer to it (Cooper; 1972; p.21). It is sometimes confusing with in the association of two terms: information and need. This complexity can be traced back to the connotation of basic need, synonymous with other human needs. The Encyclopaedia of Psychology on human needs has divided it under three basic categories.

3.10.1.1 Physiological needs often called basic need for food, clothes, shelter, etc.

3.10.1.2 Affective needs (Sometimes called emotional or psychological needs) such as, need for attainment, for domination, etc. and;

3.10.1.3 Cognitive needs (often called esteemed needs) for need to plan, learn a skill, etc.

Obviously, these three needs are interrelated, one giving rise to another, after having fulfilled one need, i.e. psychological need, it may trigger off affective or cognitive needs, which is a very common phenomenon taking place in human beings. These interrelationships, therefore, give rise to search for information towards the satisfaction of needs. Wilson (1981; p.8) has sought to remove the terms 'information needs'
from the professional vocabulary and speaks instead of 'information seeking towards the satisfactory of needs'.

It is quite difficult at times to know much in advance whatever information/text an individual needs and desires from given library in order to fit his reading taste. Wilson (1968) has found that, perfect knowledge of an enquirer's predilection and perfect knowledge of all the texts which could possibly be used by an enquirer would be necessary before the ideal set could be identified. Librarians normally provide documents on the basis of usual identification and selection by inspecting records of those documents that meet the needs. It is not a usual practice that they used to observe and explore the usefulness of the relative documents provided for reading. Although keeping records of all these events on the library settings is a phenomenon, its influence on the real library and information activities is least realised. The knowledge gained from these records-keeping methods does not help build up the library functioning. Neither is it used to mould nor outline individual reading behaviour of the user. Other factors that contribute to this phenomenon is the traditional library functioning, staffing arrangement and training in librarianship.

Although users constitute the core of the library system, the responses received from them are not appropriately and appreciably utilised for the decision-making policies of a library system. Unless a mechanism of close-monitoring is developed, user needs may not influence library policies for overall developments.

3.9.2 Definition

Information needs has become the central theme in information science research in a design to improve the existing condition of the library and information system and
has focused on new models of users-driven information services. Research shows numerous definitions of 'information needs' that have been given by authorities on several fronts. According to Dervin and Nilan (1986; p.17), 'Information need' has been defined as a state of needing anything the researcher called, information. Almost without exception 'information needs' has not been defined as what users think they need, but rather in terms that designate what it is in the information system that is needed. The definitions have not focused on what is missing for users but rather on what the system possesses.

There is a paradigm shift in the definitional problem of information needs. The emphasis is more directed towards users and their state of psychological attitude. Information needs refers to a relationship which obtains between information and the information purposes of individuals. It is, therefore, an objective condition rather than a psychological state.

According to Guha, (1983; p.46), information needs is referred to a composite concept of different types of requirements and approaches to information. Information need is defined as "a function of extrinsic uncertainty produced by a perceived discrepancy between the individual's current level of certainty about important environmental objects and criterion state he seeks to achieve" (Atkin, 1973; p.206). Ford (1980; p.100), in other words, has defined "information needs" as a conceptual incongruity in which the person's cognitive structure is not adequate to a task.

When a person recognises something wrong in his or her state of knowledge and wishes to resolve the anomaly (Belkin; 1978; p.58), this very act refers to information need.
Girija Kumar (1989; p.415) states that information needs, is identified as individual needs of user regarding information, which should be satisfied by the individual information system. Information Needs as defined by Krikelas says that, 'when the current state of possessed knowledge is less than needed', when internal sense runs out (Dervin; 1977; p.28). When there is insufficient knowledge to cope with voids, uncertainty are conflict in a knowledge area (Home).

In definitional terms 'information needs' is the knowledge-bound requirement satisfying the use of a specific bit of information within a framework of definite purposes.

Information need is seen both as a subjective and relative concept existing only in the mind of the experiencing individual (Wilson and Streetfield; 1981). It may vary with different situations with emphasis on individuals' various perceptions and characteristics. For example, individuals need information depending upon the circumstances and purposes. Decision-making is that purpose guided by certain environmental factors.

Information need is embedded with the concept of information. The information content of the document and the perception of users towards his requirement is confined to the study of information needs. In users study research, the term is prominently identified for determination of a reality in information use by end-users.

3.9.3. Factors Affecting Information Needs

Information needs is a mere psychological and environmental attribute confined to the users. As normally human needs are cropped up by certain circumstantial factors, information needs are also affected by certain factors.
Paisley found the following factors that affect information needs to a great extent:

1. the range of information sources available;
2. the uses to which the information will be put;
3. the background, motivation, professional orientation and other individual characteristics of the users;
4. the social, political and economic systems surrounding the user; and
5. the consequences of information use.

Information needs, according to Dhawan and Sachdeva (1986, p.104), are also greatly influenced by certain factors like, work activity, discipline, availability of facilities, etc. It is viewed that the need is very often based on the hierarchical position of the individual. The higher the position of the individual in respect of his scope of activity, the more information he needs to satisfy his requirements. A scientist having been in a senior managerial level looking after administrative affairs of the scientific organisation is running after information of management of science and technology rather than as science and technology information only.

Different professionals have their specific needs. A scientist at lower level is looking for information primarily on a new specific task assigned to him. Hence, his information need is confined to a narrow area of subject speciality. On the contrary, a teacher in journalism, whose basic objective is to train a breed of young people for the profession never looks for information on an event of investigative issue; rather he seeks to know how best to teach the students about the effectiveness of investigative journalism for practical purposes. Thus, higher the position, greater the facility and broader the scope of works that entail greater information.
The information needs of human beings, therefore, are greatly affected by the environment in which they work.

3.9.4. Types of Information Needs

Organising information at any level presupposes the essence of a need to know the users and their information use habits. In order to determine the varied needs of the users, it is essential to identify the type of users before any attempt to assess the need is made. Users of information are of different types ranging from a child to an aged, illiterate to a highly educated intellectual, and a common man to a research scholar. People working at these scope of activity and level of understanding require information to satisfy their needs. Several studies conducted in the field have shown that, information needs varies from person to person at different points of time and place. Although there is a common pattern of information requirement found among the various group of users, there is an exception in specific cases with a group of specified individuals. However, information need in all these cases are highly complicated. In order to arrive at a clear picture of information users, it is always essential to demarcate the types of various information needs. Information needs has its own categories based upon different characteristics.

Based upon information seeking behaviour, needs have been categoriesed as: (1) immediate or (2) deferred or distant (Krikelas; 1983; p.8). Further, depending upon the stage of activity, types of needs can be identified (Martyn, 1974; p.31) more effectively.

Normally, two types of information needs are identified. These are (1) Applicational needs which are primarily concerned with finding answers to specific questions on problems, and (2) Nutritional needs which are more concerned with maintaining the general competence of the individual matter than the needs proper.
Merrier and Herner (1967; p.22) have identified two types of needs. They are (1) substance or kinds of message, and (2) means or channels of delivery.

However, Itoga (ibid) while grouping information needs on different fronts and counts has considered the following three basic categories of needs on the pretext of human understanding as described below:

3.9.4.1 **Perceptual Understanding**

Information is provided to the users only when the provider perceives the users’ behaviour, gestures and words without knowing any communicative meaning.

3.9.4.2 **Normative Understanding**

It happens only when normal communication is used to express the desire for a source by the user to the information provider.

3.9.4.3 **Contextual or Subjective Understanding**

It is the occasion when the information provider interprets the users' expression for sources within the meaning in context term in a simultaneity form. Cronin (1981, p.40) has, however, considered the various information needs under three broad groups. In his practical experience, he could come across the needs for information as:

i. Expressed information needs;

ii. Unexpressed information needs; and

iii. Delitescent or dormant need.
He further adds that, the users of information services may have information needs which they are totally unaware of, but which the information provider may be able to bring to light.

3.9.5 Approaches to Information Needs

The literature on information needs and users covers the fundamental terms in a different manner that do not define the concepts interchangeably. In order to provide a clear picture of the phenomenon, Dervin and Nilan (1986; p.10) have enunciated the following six basic approaches to information needs:

i. Research approach;
ii. Awareness approach;
iii. Like - Dislike approach;
iv. Priority approach;
v. Community Profile approach; and
vi. Interests, Activities & Group Memberships approach.

These approaches seem to find the strategical issues of information needs and assessment that paved the way for different patterns of use. The problem concerning the user behaviour in relation to needs is very often judged by the system definitions of the needs. There is a limitation of user concentration within the system. Hence, the resultant phenomenon is 'system needs' rather than the 'users needs'.

3.10 INFORMATION SEEKING BEHAVIOUR (ISB)

Human being is involved in certain social activities which are complex and interdependent. This phenomenon gives rise to increasing need for information from some potential
sources that are not known to them. Moreover, the needs are myriad, and the variations among people are of different in nature with regards to context, intellectual level, frequency and volume of information sources required. Besides these, there are a number of institutions, organisations, and learned societies, industrial firms, government and non-government agencies dealing with a variety of information in acquiring and disseminating.

With the growth of information deluge, each one needs information of increasing variety and diversity of level, frequency, volume and use. This complex situation appears to be ambiguous and heterogeneous in character so that, information needs of a particular group of users and information flow from a specific situation/organisation are difficult to determine. Again, the use of information is so complex that there cannot be a simple system to cope up with the task of effective retrieval without assessing their specific needs. This situation has given rise to the growing concept of information searching and the manner of determining the pattern of searching is said to be considered Information-Seeking Behaviour (ISB).

Users and their information use studies perhaps form the largest single body of research literature in librarianship. Crawford estimates that well over 1000 user behaviour and information system use studies have appeared in print (Krikelas; 83; p.5). The recent developments in the field has added new dimensions to the research literature. It can be expanded by new approaches to citation studies, automated searching, text-retrieval and scaling of bibliographical data bases. The body of literature on 'user behaviour' within the framework of librarianship is increasing day by day.

This incessant growth of various aspects of the subject has led the researchers to concentrate more on service aspects in order to refine the services or redesign
the information system. To crystallize the situation, different roles played by the users appear to be essential for an early assessment. Because, such an assessment would result in improving the existing system and generating new ideas and thoughts related to information products and services.

Information environment primarily appears to be critical as it involves users of information, organisations, information mediators, library and information centres, publishers and producers of information. In this complicated situation, the role of the information intermediary assumes greater importance due to the fact that the whole system is based upon the effective retrieval of information by the intermediary.

The present scene has given birth to the deluge of information and the complexity of centres or storehouses in such a manner that the role and responsibility of the intermediaries has been very much ambiguous and varied in nature. One can term the intermediary as 'information specialist' who helps people to find information they are looking for. Every activity related to information acquisition to dissemination is more or less an event that implies an information system finding out about, and producing the information required in that particular case. The intermediaries help the users to build up this system not only with their knowledge about storehouses of information but also with the knowledge about the information-seeking behaviour of the users.

Normally, all library activities are designed to develop a system based on a string of services to be provided to the users upto their utmost satisfaction. In this connection it can be summed up that 'satisfaction out of services is the end and the library and information system is the means'. On this premise, it can further argue that the intermediary is more concerned with the provision of satisfaction of the users. Because
he/she is directly dealing with the users to develop the system and it is essential to
know the users and their information privations before information is rendered to them
and new services are designed.

The librarians and information scientists have to be more concerned with the
needs i.e., 'information needs' of their respective clientele as has been elaborately
discussed in the preceding pages. Once information needs are developed, the user
has to develop the personal strategy of searching information from various sources.
Thus the concept of information-seeking behaviour of the user is being generated within
a given library and information environment.

Current research on information retrieval and dissemination pays greater attention
to the study of information habits and needs of users about myraid information systems.
It has also been said that the user should be viewed more broadly as existing within
interacting cognitive, emotional and social systems (Summers; Mathews and Conry;
1982; p.75) while considering the user as the central focus of ‘information needs’;
the emphasis is shifted on the personal and psychological attributes of the users that
would provide a good understanding of the dimensions of the study. Hence, the
emerging concept of Information Seeking Behaviour becomes the focus of the question
which needs a detailed emphasis.

3.10.1. Information-Seeking Behaviour: Theoretical Framework

A librarian’s major task is to satisfy the users. In order to undertake such a
critical task that involves a clear understanding of the psychological, physiological and
social factors of the human nature/beings, one has to develop a deep understanding
of user-librarian interaction based on human behaviour, which often remains unpredictable and complex.

If one looks deeper into the information sphere, the understanding of human involvement is more a factor that contributes to the existence of the system. In that, the attribute, personality and motivational structures that constitute the overall ‘behaviour’ of the human being is seen. A person needing information develops certain behavioural option. There are five main classes of these options: (1) to wait; (2) to act; (3) to generate information; (4) to seek information; (5) to opt out of the situation (Christie; 1981; p.150). Each of these classes can be broken down into fixed groups and eventually into the specific concrete options available at a given point of time. But the general classes apply at all points of the behaviour structure.

The user can wait before deciding what to do, can act on the information retrieved so far, can generate information, can seek information, or can opt out of the situation, if the same does/does not suit to his taste or need.

Human brain acts as a processor of information. Zweizig in his work utilized the model of the individual as an information processor. Bell’s (1991; p.8) study analyses many information processing mechanisms in animals which are applicable to human being and provides a foundation for understanding searching strategies and tactics, patterns of resource distribution, and trade-off between competition and risk on time minimisation and energy maximisation. Charg and Rice (1993; p.250) have further clarified the Bell’s model of ecology influencing animals’ searching behaviour providing some insights for the development of human behaviour theories.
Researchers in communication and psychology have shifted their move to view ‘persons’ as active and purposeful assets. As a result, human cognition and behaviour have become increasingly a matter to be discussed and applied as a mechanism for information processing, social and cognitive psychologists have developed a number of common concerns within this type of information-processing framework regarding such issues as the nature of cognitive structure, verbal memory, the processing of movies and visual information, impression formation, and stereo-typing (Sypher and Applegate; 1984; p.310).

However, information is not only an element of learning but also is a set of stimulus for those human beings who consider it as the sustenance of their sound existence. Those who like learning and knowledge, their attitude to information is equally electrifying their activities. Descartes has argued that only some human action stemmed from material and mechanical sources and information being the most vibrant material develops certain behavioural patterns in the human mind for a concrete action to be undertaken. Hence, the need for information and its seeking pattern is a genuine characteristics.

3.10.2 Information-Seeking Behaviour: Definition

The phrase 'Information Seeking Behaviour' has been defined variously by different authors. The following definitions of information seeking behaviour will, however, make the concept more clear.

According to Krikelas (1983; p.7), information seeking behaviour refers to “any activity of an individual that is undertaken to identify a message that satisfies a perceived need”.
King defined information seeking behaviour "as a manner in which a user conducts himself in relation to a given information environment. It is, therefore, regarded as essentially, a process of interaction between the user and the rest of the information system (Manda, 1991; p.18).

The act of searching or finding information can be ascribed to information seeking. Such an activity begins when the user perceives that the existing knowledge is less than that needed to deal with some problem(s). With the end of that perception, the process of seeking ends. Developing an instinct for information is a sort of behaviour and the process of searching the same is considered as Information Seeking Behaviour.

One can ask 'what is the basis of seeking'? Seeking arises when there is some perceived need. It is required to determine why individuals selectively seek certain kinds of information while they ignore or reject others. Based on Festinger's cognitive dissonance theory, it was suggested that individuals seek information that confines their pre-existing opinions, attitudes and favours their predisposition (Rahim; 1990; p.100). In this same framework, it is noted that individual's information seeking behaviour is not guided by the relative importance of relevance of an issue, but rather by their pre-existing attitudes towards the issue.

On the other hand, Hawking and Daly (1988; p.202) have added selectivity process of dissonance theory. They have viewed that the selectivity process is not only a cognitive phenomenon, but it should be viewed interactively with other variables such as emotions, availability of information and specific domain of information.

The work of Donohew et. al. (1990; p.11), 'knowledge gap' contended that
what motivates individuals to seek information is the relevance of such information to individual situations. Persons having higher social status or educational attainments are better equipped with information, but those who actually obtain from an information-seeking environments are seldom considered the least knowledgeable.

3.10.3 Factors of Motivation in Information Seeking

There is a varying degree of motivation to seek information. It primarily depends upon the work situations or level of requirements or organisational factors. Individuals with this motivation to seek information on politics may not have the same degree of interest to seek information on scientific research/or on investigative journalism.

Goldhaber et. al. (1978; p.82) suggest that persons are interested to seek information concerning their work environment. The motivation to seek information lies in information itself. Persons seeking information about job-related matters are very often motivated by the desires to get rewards for successful performance. Individuals will not be motivated to seek such information because of the same is perceived, that being reinforced.

Individuals' referent criterion or past experience also contributes to their information-seeking behaviour. The presence of a referent criterion would reduce the degree of probability of individuals' seeking information because the need for new information is minimised. (Grunig and Dibrows; 1977; p.145-67). They contend that the stronger the involvement, the higher the probability that individuals' would seek information about the situation.

On a study of a health information system; Etteme et al (1983; p.525) find that
circumstantial factors as predictors of information seeking would not be powerful enough to generate active search for information when such information is not readily available. In situations where information related to the specific issue is readily available, individual situational factors would again emerge as better predictor of information-seeking.

Individuals in the course of time may exhibit different information seeking behaviour because of a significant difference in the nature of the problem. Certain jobs and life styles may be characterised by the degree of constraints they happen to face. There can be two types of situations in which information is consulted: (1) continuous and (2) discrete. Bureaucrats, for example, while dealing with specific issues face discrete problems. But journalists whose responsibility is to report in a daily manner need information continuously. The distinction is in the predominant nature, and this predominance may manifest itself in a general pattern of information-seeking.

How the users, especially, scholars use the resources and that is their usual habit of seeking information has been the concern of information intermediary. The same is being studied from a variety of perspectives. It is the responsibility of not only library and information science but also the sociology, psychology, and cognitive science and communication studies. Increasingly, ethnography documenting the behaviour of individual scholars in their teaching and research environments will provide needed context for such work. Limited progress in explaining and predicting human information seeking, retrieval and use, however, may be attributed to a lack of agreement about whether appropriate goal is to develop general or restrict investigations to descriptions of specific cases. (Sandstorm; 1971; p.418).
There are different dimensions of behavioural assessment, while some emphasise the sociological approach as the appropriate one, others prefer psychology or cognitive science that leads the behavioural patterns. Some still say communication system to be the mainstay in shaping the behavioural designs while others consider observable behaviour or actions of the information user that mould the human information seeking behaviour.

3.10.4 Element of ISB

Information-seeking is a matter more or less related to the sense making in which the individual chooses an item of information that best fits to his needs and purposes.

Making an in-depth study on ‘information needs’ Dervin and Nilan (1986; p.12) have proposed a paradigm shift for information seeking behaviour. They have identified an automotive set of premises and assumptions, the essence of an alternative paradigm in a set of six elements. They are:

1. the conception of information as objective versus subjective;
2. information users as passive recipient or objective information versus purposive, self-controlling, sense-making beings;
3. User of information on behaviour applied across situations versus behaviour understood as the result of dialogue between system and user in which need articulation goes through situationally bound interactions;
4. the study of user behaviour primarily in the context of user interaction with the system versus holistic approaches that focus on the whole social interaction;
(5) focus on external behaviour versus internal cognition; and

(6) concerns that a focus on individual behaviour yields too much variation for systems to integrate versus the need, with individuality in user behaviour. They, however, conclude that traditional approaches have aspired to sophisticated quantitative techniques... yet in the context of the impetus of the paradigm shifts, scholars are now calling for supplementing quantitative approaches with inductive, qualitative approaches (ibid; p.16).

3.10.5. ISB Vrs. Gratification Theory

The gratification theory on ISB developed by Chatman (1991; p.42) identifies the underlying methods by which researchers are able to explore a minimally understood area in information studies. The theory has attempted to define problematic situations for poor people and new conceptual factors that influence their choice of a strategy. It has attempted to address a central issue of information use among poor people, even though they do not appear to be active seekers of information.

This theory illustrates immediate gratification behaviour that appears prevalent in the lower working class. The findings suggest that no information-seeking will occur if respondents are convinced that good future is more attributed to luck, rather than to one's investment of time or energy.

In his attempt to determine the information seeking strategies of engineers and scientists, Wolek (1972) made a study which is designed to assess their behaviour patterns when they needed to enrich their understanding of a technical subject prior to an interpersonal communication (Christie; 1981; p.159). The study has identified three basic methods of information-seeking: (1) Piggy backing; (2) Friendly consultation;
and (3) Professional peripheration. These factors are responsible for such methods to be adopted. Firstly, an user would tend to piggyback - giving information search a low priority; if there were higher priority demands on his or her time. Secondly, a person would be guided by previous experiences, especially in regard to selecting appropriate sources of information. And finally, professional peripheration tended to be used when an understanding of the context of question/problem was felt necessary (ibid; p.160).

Holland's (1972; p.160) study hypothesised that special communicators would be regarded by their colleagues as having especially high value as information sources and in turn would have exposure to both a greater number and a greater diversity of information sources. In his result, he has suggested that the relationship between these two variables is usually very complex. Particularly, a number of variables like location, status, experience, telephone and travel budgets normally affect both information potential and information exposure.

3.10.6. Categories of Information Seeking

People seek information in different ways and for different purposes. Thus the method of information seeking varies from person to person and situation to situation. Lonnqvist (1990; p.200) has identified the existence of two types of information seeking:

i. Specific information seeking with subject acquaintance of the scholar.

ii. Dependent information seeking when the subject is new and the scholar is not aware.
While the scholar is well aware of the subject, one can undertake information-seeking in a specific way that suits his/her needs. That is to say, one can gather references to literature on the subject in a specific time frame. One can also use the method of chain searching to choose the right track. This can be considered as the greatest skill in information seeking which is normally practised by experienced scholars.

The second type is confined to either scholars started to work on a new subject or a new research project which is not known to him, or the user is not mature enough in terms of use of information sources.

The above two types of information seeking do not always occur in their present form. Individual variations could be seen but it is fair to say that these two main types crystallized.

While studying on reading phenomenon of secondary school students, Harwood (1973) identifies seven main categories of information-seeking (Christie; 1981; p.249). These are: (1) reading; (2) consultation: personal contact with the authority; (3) consultation: personal contact with non-authority; (4) thinking: vigorous; (5) thinking: intuitive; (6) systematic observation; and (7) casual observation.

3.11 MODELS OF ISB

A social researcher before making an indepth progress on the problem in hand usually demonstrates his curiosity in order to ascertain whether any of his predecessor had carried out research similar to his problem, and if so, any model or theory to that effect has been established. This curiosity not only helps the scholar to conceive an idea during his initial stages of research, but also cautions him about the expected
problems, which this scholar might encounter during the course of his investigation. Besides, such models sometimes act as path-finders. Thus a question is frequently cropped up in the mind of a researcher as to why do people prefer particular source than others. Although there needs research into the matter to explore the truth, still it can be a common reply that the individuals select the sources that would be possibly a relevant material that contain required information with ease of access. People have several preferences for seeking information. Even if, it is very often based upon certain hierarchies. One can presume that, given a choice, individuals prefer to get their information from a knowledgeable and perceptive source (i.e. one that knows the subject and understands the situation (ibid. p.16).

Users seek information at different situations on different circumstances. What is the behavioural implication related to information seeking is a matter that needs detail discussion.

It can be best illustrated and examined by a couple of models developed by experts on user studies and information seeking behaviours. The following models described below represent information-seeking behaviour.

Early models of information use were more conveyed with document seeking or library use than with the characteristics of behaviour. These works are confined to the use of the library systems and use of various types of documents. Very little is known about developing dynamic models of behavioural patterns of the information user. As a result, adequate coverage and direction could not be established on the development of information systems.
However, a change was witnessed in which researchers have sought to use models based on the information user as an organisational member and as a performance of different kinds of tasks, with different kinds of needs. With the advancement of library techniques, use, development of information system and services, a close look was given to the information needs and information seeking behaviour. Inspite of the narrowness of the research base, several indepth studies were conducted in specific subject areas to determine the users, their information needs and specific traits of information-seeking behaviour of the users through development of suitable models.

During the early 1900s an economist George Stigler had developed optimizing models of information seeking, in which he proposed the use of the concept of utility maximising behaviour to assess the quantity of information people would acquire at different levels of cost and effort: "the optimum amount of search will be such that the marginal cost of search equals the expected increase in receipt, strictly parallel to the analysis of buyers (Schwartz; 1992; p.129). Stigler's theory the "law of diminishing returns in information market" among other things is primarily considered as a significant contribution for which he was awarded Nobel Prize in 1982. Many social science researchers and authors have utilised his idea in their research work.

Similarly, satisfying models concerning to information-seeking designed by Simon in the 1970s emphasises the extent to which individuals and groups simplify and terminate their work on a problem, not for reasons inherent in the logic of the problem but for practical constraints (for example, time, money and patience). Simon was also awarded Nobel Prize in Economics in 1978 for innovating such approach to decision modelling (ibid; p.130).

None of the above two models seem to hold any real prospect for generating
a cumulative, theoretical framework about information seeking behaviour. This is, economic models are rarely, if ever, focus on psychological principles of optimal effort in information-seeking for which a paradigm shift on developing behavioural models are found.

Krikelas (ibid; p.17) has presented “the alternative model” to information seeking behaviour. Though his model does not elaborately or specifically discussed ISB, its ultimate value lies in its utility in the design and analysis of future empirical studies.

However, the models developed by Mick et al (1980; p.348-351) on management oriented information research appears as a very pragmatic towards describing and studying information behaviour. In their description of ‘individual behaviour model’, they observed individual information behaviour in a corporate environment where they could identify factors affecting individual information behaviour into a form for suitable policy oriented approach to user studies. The individual behavioural model assumes that there is an internal, consistent logic which governs information behaviour. That logic is the product of task requirements and constraints, perceived utility of various information sources, and the criteria for successful accomplishment of the task (ibid; p.348).

This model provides a perceived list of potential actions in response to a task, a style function, on evaluation function that provides feedback to the style sub-programme based on the response to behaviour.

In their attempt to develop a new model for information behaviour, they found a generalised model of scientific and technological information seeking. The conceptual version of this model shows that a stimulus generated within the context of a particular
situation which occurs within an environment and a set of attitudes that generate an information need. A general plan of action is generated in response to this need resulting in a specific action. Once the specific action is performed, its results are evaluated and results of the evaluation provide feedback to attitude and need. This model is used to guide the exploration of the relationships among variables affecting information behaviour.

Robert’s (1993; p.472) “Information Man” model is more applied in classical economics where it predominantly played a major role in economics than on information studies. As he pointed out typically information man does not have an analytical role, even within limited information environments. His functions are as implicit as his presence. Assumptions about what constitutes behaviour have influenced both the direction and the kind of research undertaken; the problems studied in effect, are indirect reflection of information man. They are no less substantial for being unacknowledged. It is unusual to discover data being explained by resource to behavioural interpretation derived from assumptions held about such behaviour’.

Although “Information Man” is a simple and conservative for the purpose of study, it shows an epitome of conceptual sophistication compared to major extent models of information seeking behaviour used for information retrieval research.

In the grounded theory approach, Ellis (1993; p.473) has propounded a behavioural model of the information seeking patterns of academic social scientists. This model was employed to recommend for information retrieval system design. Further studies were also concluded modelling the information seeking patterns of academic and researchers in science and literature at the University of Sheffield.
Wilson (1981; p.9), however, has a different but pragmatic view on discussing a model. In his opinion, human personal needs are at the root of motivation towards information seeking behaviour. These needs emerge due to different roles an individual plays in social life. The 'work role' is most important which is applied in different activities, responsibilities and achievements of an individual especially in an organisational setting. The work role generates some cognitive needs which again leads to affective needs. The ultimate result is the emergence of a pattern of information seeking behaviour.

3.12 RESEARCH ON INFORMATION - SEEKING BEHAVIOUR

Research on information seeking behaviour is on the rise. With the growth of multidisciplinary subjects and interest of researchers of new micro subjects, there appears a tremendous increase of special users in libraries and information centres. To cope with the task of providing satisfactory library and information services, it is always desirable to make a close look at the information users. Hence library intermediaries have started to undertake several research works on information needs and seeking behaviour of their users at different levels.

As mentioned in the previous chapter, more than 1000 studies have been conducted in the ares of information needs, uses and seeking behaviour. Inspite of such voluminous work done, one's understanding of the process that drive information seeking or the variables that influence is limited or inadequate (Renekar; 1993; p.487).

While commenting on the problems of user studies in the previous two decades Brittain (1982; p.147) aptly concluded that:

"Always the number of user studies had increased greatly"
during the 1900s and 1970s, "resulting in an enormous quantity of data about the information gathering, seeking and using behaviour of a large number of scientists, applied scientists, social scientists, practitioners, administrators, government officials, school teachers, educationists and finally, the members of general public, there were no generally acceptable theoretical guidelines to make sense of this huge mass of data".

Saracevik (1987; p.24-25) while speaking on "information-seeking" however, has characterised the current state of knowledge of cognitive aspects of information seeking and information retrieval in terms of two basic questions: (1) at the level that the nationalists used to ask a hundred years or so; (2) that concerns not only with identification of the variables, but what is their nature and their effects?

The situation remains same as Krikelas reacted to Saracevik in the words "work in this area of information-seeking is so arduous because we are only now beginning to understand how complex the process may be and how difficult it is to define - let alone measure many of the important concepts (ibid).

Most importantly, the publication "Annual Review of Information Science and Technology" while providing a series of reviews on "information needs and uses" has contributed a lot to the research discourse on information seeking behaviour. Attempts have been made to relate specific variables to particular pieces of information-seeking behavioural patterns. A good number of articles have also been presented which are devoted to indepth analysis of behavioural components of information uses. Still a renewed endeavour seems imperative in order to discover some of the important issues that remain hidden and possibly unexplored.
3.13 THEORY OF COGNITION AND BEHAVIOUR APPLIED TO LIS RESEARCH

While the physical sciences deal with matter and property of various kinds within the confines of a laboratory, social sciences primarily consider human being and its surrounding as its field of study and research. Library and information science users are considered as one of the most vital elements for the research work. Because the interaction of the users with library and information system is the key issue that helps the system to grow and work effectively. In this connection, it can be discerned that, the attitude and researcher's knowledge on cognition and behaviour to LIS research becomes crucial.

3.13.1. Human as Information Processor

Human being has sensory receptors like eyes, nose, ears, etc. that pick up signals of different kinds at different circumstances. These signals are information that are transmitted to the processing unit called, brain. The result of the processing is output/responses in the form of physical, spoken, written, etc. Although the capacity of processing information in human is limited, it produces effective solution to problems. Information processing in human being is being catalysed by the concept 'cognition' whereby, the output appears to be highly purposive, effective and refined.

3.13.2 Cognitive Theory

The term 'cognition' is an ambiguous term. It has meant different things to different people at different times. The Oxford English Dictionary lists several meaning of cognition including the action or faculty of knowing. Some other concepts with which cognition is associated include awareness, comprehension, skill and understanding.
Cognition has a place of prominence in psychology and it has got a branch called 'cognitive psychology'.

Cognitive psychologists have propounded some theories related to cognition. Among these Peak's theory of psychological structure is used in a very common sense approach to refer to a system of relationship between identifiable episodes. The organs of the structure may be psychological traits, complex concepts having different characteristics, speech, symbols, etc. These components of psychological structure are located in a spatiotemporal manifolds, and are related to each other in many different ways. Behaviour appears to be the phenomenon that leads to a change within or between structures. Peak's analysis emphasises the condition that influences the probability of activation the psychological structures (Lindzey and Aronson; 1968; p.321).

The implicative and international character of cognitive theory has been developed by Ablesen and Rosenberg (1958). They considered the elementary units of cognitive organisation to be cognitive representation of this concrete and abstract and to which individuals can attach verbal levels. They proposed a three-fold classification of element types:

1. **Actors**: oneself, other people groups, etc.
2. **Means**: actions, instrumental responses, etc.
3. **Ends**: outcomes (final products).

These elements can be connected by four types of relations namely, positive, negative, null and ambivalent. The elements and their relationship from the cognitive units that help people in knowing, perceiving for conceiving a particular thing through the development of a faculty at the mental stature distinct from emotions and volitions.
Since a library is designed to provide services to multifarious users, it is essential to know the different personality traits of the users so as to determine their behaviour patterns. Cognition plays a vital role that influences the users attitude towards the use of library materials. Again, it effects the information needs and seeking behaviour of the users to a great extent.

Thus, it is imperative on the part of the researchers of LIS to depict a thorough view of the cognition and its different aspects that have a different direct bearing on the human being in using resources of libraries.

### 3.13.3 Behavioural Approaches

The term 'behaviour' refers to any activity of a living organism, human or sub-human. It may consists of a simple overt or covert responses. Runkel and McGrowing (1972; p.174) define behaviour as a real world event involving overt and covert responses by one or more actors to a task and situation. It said that a child knows how to walk, ride a tricycle. The evidence is simply that the baby and child exhibit the behaviour specified. Moving from verb to noun, one can say that they possess knowledge, and the evidence is that they possess behaviour (Skinner; 1974; p.151).

Behaviour exhists only when it is being executed. Its execution requires a psychological system, including effectors and receptors, nerve and brain. The system was changed when the behaviour was acquired, and this is the chain system which is 'possessed'. The behaviour it mediates may or may not be visible at any given moment. There are parallel in other parts of biology.
Knowledge is associated with behaviour, be it verbal or non-verbal behaviour, the concept of information theory is applied wherein a message is sent through the form of sound stream between the speaker and the listener. The transmission of information from one person to another has been used metaphorically to represent the transmission of input into output. As a form of knowledge, information can be treated more effectively as a behavioural repertoire.

Hence, the term behaviour stems out from the internal need for information that corresponds to the external environment of the human being. Here, it is apparent that behaviour towards information becomes an essential element which constitutes one of the major ingredients in the study of information needs and seeking behaviour of the user community.

A library which is very often described as the store house of knowledge and information, deals with users of various kinds. It moulds the behaviour of the users at different points of time depending upon the available resources, technology and expertise of the professional intermediary. The physical environment of a library attracts the users and repels too. While users are the central focus of the library and information system, their attitude and behavioural pattern appear to be not only interesting but also essential in determining their specific needs and in designing a suitable information system and services. Hence, it is imperative on the part of library intermediary to render adequate importance to the cognitive and behavioural aspects of its clientele so as to put its resources to optimal use.
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