Chapter 1
Introduction to Information Seeking Behavior
INTRODUCTION

Information has become the most important aspect of today's social development, as social development depends on the standard of living of that particular society. The vital factor that affects research is information.

The amount and type of information received would directly have its impact on the social development. Information is indispensable for socio-economic development. It is essential for decision making; lessons uncertainty can be shared with others and retained at the same time. Learning is a life long process and it must be supported by information skills for learning. Today there is a trend towards learning or project based learning. That is not possible without adopting the concept and practice of information literacy. Information literacy means that students, teachers and library professionals know how to make use of information resources and services to support teaching and learning. Student must be able to identify their information needs, explore information available, select relevant information, organized the select information, create information by customization and personalization present that information in proper format, assess the quality of information and finally apply that information for decision making, problem solving, lifelong learning.
The supply of correct, complete and precise information in time helps policy makers in making the maximum use of the available resources as also in avoiding duplication of work. Similarly, a research and development programmed can be accomplished successfully only if the required information becomes available as and when needed. Without proper and complete information no worthwhile decision can be taken. In fact no development or progress is possible without the support of information.

Since the progress of every type is linked with the availability of right information at the right time, access to it, as also its dissemination is of the vital importance. To ensure unrestricted development, there need be a free flow of information.

DATA AND INFORMATION

Data, Information and Knowledge are often used synonymously though there is differences in their meaning. These are of course related terms. Simply stating, “Data” is unorganized pieces of facts. The result of observation or measurement by human brain in actions is called data.

Data is a set of facts, which may or may not be convey any logical meaning. In other words, the representation of a fact or set of facts, about an entity or a value, or a set of values of the attribute of an entity, in a
formalized manner suitable for communication, interpretation or processing by human and or mechanical or computer means are data.

Information is the data, which may be transmitted between individuals, and each individual can make whatever use he can of it. No decision is generally taken when there is uncertainty about the options. Information reduces this uncertainty and helps a person to arrive at a decision. The degree of uncertainty however varies from person to person depending on the time and place. Each person, as such, shall require different amount of information to arrive at a decision. Thus information “can be quantified in term of its effect on the state of the decision-maker at a particular moment in time”. The amount of information, which affects the behavior of a recipient and makes it to take some decision, however, varies from person to person, from time to time and from place to place.

“Information” must be differentiated from data. “Data” whether it is numeric or bibliographic, related to fact, figures or recorded documents, expressed in the form of symbols. But for “data” to transform it to information should be processed, organized and presented to a person or agency, at the time needed for taking some action.

WHAT IS INFORMATION

Human mind is a generator of ideas. These ideas are based on certain facts. These facts are derived by continuous observances and experiences.
When these facts hold the test of time, they become data that is something which occurs, which can be seen, felt and observed. When these data are arranged in an organized manner and presented or told or passed on to someone, it becomes information.

Information originates from idea that creeps in the mind, as a result of observation. These ideas/facts when organized or processed to convey significant meaning about anything, is 'Information'.

**CONCEPT OF INFORMATION**

The term “Information” originated from ‘formation’ and ‘forma’. These terms define the size and format of any entity along, with the indication towards the construction of a pattern.

In order words, Information means” to inform or to tell or a thing told”. Information may also be termed as “knowledge is what we know or the portion of information which is our knowledge.

It is used with a variety of meaning, some identify it with communication over transmission lines, measured by the statistical properties of signals, some identify it facts about any subject, some with the experience stored in human mind.

When data is processed and presented in an organized form, it becomes Information. Thus information is organized, processed and systematized Data which conveys logical and proper understanding about a situation,
or issue. Data is collected, systematized and interpreted to generate information.

Keeping in view, Information may be defined as data of value to decision-making. The processed data is information only if it is useful to somebody, otherwise not. The same processed data may be information for the one who is to use it in decision-making, and it is no information to another for whom it has no utility.

NATURE OF INFORMATION

1. **Information as a commodity**: Information like any other commodity is meant for consumption. When information is used as a commodity, it often assumes economic value. The individual is possession of information is in a more advantageous position that the one possessing it.

2. **Information as energy**: Those who view information as energy regards it as a quantifiable physical entity. It can be said that the information is transmitted by, or embedded in ordinary form of energy.

3. **Information as communication**: Information is often considered to be synonymous with communication. When one person is communicating with another, the person initiating the exchange of data is moving or transferring his/ her understanding of the data
(together with the actual data) to the other person (the receiver). When the data are received the person becomes informed. Being informed, therefore, is the result of communication of information transfer.

4. **Information as Facts**: Information is often thought to be the same as facts.

5. **Information as Data**: Information is often thought to be the same as Data. Data are the product symbols that are organized according to established rules and conventions. For example the population of India that is 100 crores is a data with specific meaning to convey.

6. **Information as Knowledge**: Information is often used interchangeably with Knowledge. Knowledge implies a state of understanding beyond awareness. It represents an intellectual capacity to extrapolate beyond facts and draw original conclusions. Knowledge must be deduced, not simply sensed. What we know or think is often caused Information.

**DEFINITIONS**

Information is the product of human brain. It may be abstract or concrete.

When an individual begins to think, a variety of images and sensations flash across his mind. Different authors had given their views and ideas:

Information is news or intelligence communicated by words or in writing; facts or data; knowledge derived from reading or instruction gathered in any way.

Random House Dictionary of the English Language (1983)

"Says that information is knowledge communicated or received concerning a particular fact or circumstances; any knowledge gained through communication, research, instruction."

Intergovernmental conference on scientific and Technological Information for Development, UNISIST II, (1979)

Information is made up of symbolic elements, communicating scientific and technical knowledge, irrespective of their nature (numerical, textual, graphic, etc.). Material carries (paper-print, microform or machine readable form) form of presentation, etc. It refers both to the substance or contents of documents and to the physical existence; the term is also used to designate both the messages (substance and form) and its communication (act).

According to Mathematical Theory of communication.

The amount of Information in a message is related to the probability, the more information it has. The theory believes that the prior knowledge of the recipient may reduce the amount of information in a message.
The semantic theory of communication.

Views information from technical angle, in the context of communication engineering, and is concerned with the problem of accurately transmitting the symbols communicating the information.

According to Krikelas (1983) "Information seeking behavior refers to “Any activity of an Individual that is undertaken to identify a message that satisfies a perceived need”.

Shera “Information, both in the sense, it is used by the biologist and in the sense of library, it is ‘fact’.

Becker opines about Information as “Facts about any subjects”.

Miller expresses as “Information is something when we face a choice. Whatever its content, the amount of information required depends on the complexity of the choice.

Machlup has defined information as “Information is piecemeal, fragmented, particular, whereas knowledge is structural coherent and universal; information is timely, transitory perhaps even ephemeral, where as knowledge is of enduring significance; Information is flow of message where as knowledge is stock largely resulting from the flow”.

Bell explains that “Information is news facts, statistics report, legislation, text- codes judicial decisions and resolutions”.

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CHARACTERISTICS

Though information is an economic resource, but it has a number of characteristics, which is not shared by other economic resources. Some these are

1. Information is shareable, it can be change be given away and can be retained at the same time;

2. Information is expandable and it increases with use;

3. Information is compressible, able to be summarized, integrated, etc.

4. Information is acquired at a definite measurable cost;

5. Information possesses definite value, depending upon its user which may be quantified and treated as an accountable asset;

6. Information may vary in value over time in an entirely predictable way;

7. Information has a ‘consumption rate’ which may be quantified;

8. Information is amenable to use of cost accounts techniques; and

9. Information is a source of both economic and political power.

Cronin also briefly states the characteristics of information:

1. Information is a commodity that cannot be exhausted;

2. With the passage of time, Information loses its currency and becomes obsolete;

3. Certain type of Information can have multiple life cycles;
4. Information cannot be depleted on use;
5. The same Information can be used by one and be of value to an
   infinite number of consumers and;
6. Information has a property of public good: More for the one does not
   necessarily mean less for you.

**APPROACHES OF INFORMATION**

It may be to understand what Information is, but no universally accepted
definition of Information has yet crystallized, perhaps it will never be
crystallized. In view of this the expert advice is that study should be made
on the Information related phenomenon rather than Information itself.
Accordingly, Wersig and Neveling" give the following six approaches to
information.

1. **The structural approach:** In this approach: Information is viewed as structures of the world or static relations
   between physical objects which may be perceived or not;

2. **The Knowledge approach:** This approach records knowledge that is
   built on the basis of perception of the structure of the world. But the
   problem with this approach is that the term ‘Information’ may
   erroneously be used for the term ‘knowledge’.
3. **The message approach:** The Mathematical Theory of Communication uses this approach. It is concerned with the transmission of symbols representing a message.

4. **The meaning approach:** In this approach the semantic contents of a message are accepted as Information.

5. **The Effect approach:** This approach says that Information occurs only as a specific effect of a process;

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

**TYPES OF INFORMATION**

J.H. Shera categorizes Information into the following six types:

1. **Conceptual Information:** The ideas, theories, hypotheses about the relationship which exists among the variables in the area of a problem;

2. **Empirical Information:** Experience, the data of research, may be drawn from others. It may be Laboratory generated or it may be a product of the ‘Literature Search’.

3. **Procedural Information:** The methodology which enables the investigator to operate more effectively. Procedural information relates to the means by which the data of the investigation are obtained, manipulated, and tested; it is certainly methodological, and
from it has been derived the ‘scientific attitude’. The communication of procedural Information from discipline or field of investigation to another may illuminate vast shadows of human ignorance.

4. **Stimulatory Information**: man must be motivated and there but sources for such motivation, himself and his environment. Stimulatory Information that is transmitted by direct communication - the contagious enthusiasm of another individual- but whether directly or indirectly communicated it is probably the most difficult of all forms of information to systematize. It is by nature fortuitous; it submits unwillingly to direction or compulsion.

5. **Policy Information**: This is the focus of the decision - making process. Collective activity necessitates the definition and objectives and purposes, the fixing of responsibility, the codification of rights and privileges, and the delineation of function.

6. **Directive Information**: Group activity cannot proceed effectively without coordination, and it is directive information that this coordination is achieved.

**Barrier of Information**

1. The barrier of large number including the phenomenon of a small piece of information lying buried in a vast mass of information.

2. The barrier of language of (manmade/ machine).
3. The barrier of inadequate finance.

4. Barrier caused by Jargon example. Neologism, Synonym, Acronym and Labels of presentation failed to convey the message intended to be communication.

5. Cultural and social differentiation may cause serious problem of communication.

6. Barrier of space.

7. Barrier of time.

8. Barrier of lack of accessibility to right source of information.

**LAWS OF INFORMATION**

**Laws of stimulation (1st law of Information):** A decision maker remains in a state of rest to perform the same action unless and until his knowledge base is stimulated by either a piece of information from external source (non–autonomous) or activated by his own self thinking mechanisms (automation).

**Laws of Equi-orientation (2nd law of information):** Under similar condition of time space resources and knowledge base. The same piece of data acts as information for all decision makers and makes them take the same action.
Laws of Information utilization (3rd law of information): The force that proper's a decision maker to seek access to an information store is directly proportional

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\text{Force} = \text{Rel} \times \text{Avail Prec} \times \text{Reliab} \times \text{speed of access} \div \text{cost}
\]

THEORIES OF INFORMATION

Mathematical Theory of information

Early theory of information was based on the classic research of Shannon and weaver, who suggested that the amount of information in a message is related to the size of the vocabulary available in it. As they were working in the context of communication engineering, computer and telegraphy, the amount of information was measure in ‘bit’ The mathematical theory of information, thus evolved, stated that the amount of information in a message, is related to the probability ratio of the message i.e. if a message has lesser number of term, there is possibility of 50% of information reception, as there are equal chances of guessing either correct or incorrect. And if, the number of terms is more, the probability of getting more and correct information is high. But if, the recipient has prior knowledge of the same, it will reduce the amount of information in a message.
Semantic Theory of Information

According to this, information in a message is increased by the prior knowledge of the recipient. This theory was referred to by Fairthrone as the Phlogiston theory of information, in which an earlier knowledge of the message would increase the information content for a particular recipient, as he would be able to extract more or fully because he knows the basics of that concept.

Whitehorse and Yovits

Whitmore and Yovits generalised another information system. They suggested that, information is data of value, for decision making. This Theory stated that the information embedded, had the capacity to reduce uncertainty. Reduced would vary, with the information needed by the recipient. In this way, the decision taker will be guided by the information, in deciding matters. Information is, a relative quality, and can be measured in terms of its effect on the state of the decision makers at a particular moment of time.

Brookes Information Theory

Brookes tried to differentiate between information and knowledge. He opined that the individual knowledge, that has been collected by himself, when it is collected together and presented for public use.
To support the above statement he had put forward an equation of information theory.

$$\Delta I + (s) \rightarrow (s + \Delta s)$$

Where S is the knowledge structure modified by the information input $\Delta I$, to bring forward a totally new knowledge structure $(s + \Delta s)$.

Thus the concept of information as made clear by these theories is that information can be regarded as data which can be transmitted between individuals, and it varies from individual to individual, regarding its usage. As Information gets publicly recorded, it becomes objective knowledge, useful to everyone.

From above we may derive certain parameters of information as:

1. Language, symbols, alphabets, codes and syntax.
2. Content which enables us to know about the Information.
3. Structure, the format or organization of Information and its logical relationship between statements or elements.
4. Quantity which can be measured by the total number of pages, words, character, bits, documents, etc.
5. Quality, which is characterized by completeness, accuracy, relevance and timeliness of Information.
6. Life, the total span of time during which value can be derived from the information.
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These parameters of Information further lead towards certain characteristics of information.

1. Information is a flow of messages- Information is actually a piece of message. Whenever this message is transferred from person to person through any mode of communication, it generates information.

2. Information is transitory by nature.

3. Information inherits meaning.

4. Information is particular- This characteristic of information is quite appropriate, as it is information, it cannot be vague, it has to be specific or particular.

5. Information is fragmented.

6. Information is dynamic.

7. Information is timely – Information is characterized by timeliness.

8. Information is purpose oriented- any fact/data/ information has some purpose behind its origin or generation.

9. Information can be recorded.

10. Information is quantitative.

11. Information needs person affiliation.

12. Information is structural- An important characteristic of information is its structural form.
13. Information is explanatory or descriptive - An important feature of information is that it explains or describes a happening.

14. Information can be abstracted or extracted.

15. Information can be changed into other mediums.

16. Information is mainly related to abstracts and behaviors.

17. Information can be destroyed.

CONCLUSION

It is important to note here that information an important basic resource. It is an indispensable raw material for right decision making from the governmental level to the personal level. It is in fact a vital ingredient for the socio-economic, cultural growth and development.
INFORMATION SEEKING BEHAVIOR

DEFINITION OF TERMS

**Information:** The word Information means knowledge acquired experience or study: the act of informing or the condition of being informed. It is regarded as a collection of raw data, consisting of symbols, signs, signals and surrogates that can be compile into message text, audio, image or digital for communication.

**Seek:** To make search or enquiry to look for information.

**Seeking:** It means an expression of want, demand, need or requirement that entails looking for or fetching an item or information.

**Behavior:** according to oxford English dictionary bearing or conduct means the way of behaving or behaving with careful good manner.

It normally associated with the psychological and emotional status dynamics and paradigm of an individual or organization in relation or reaction or internal and external stimulus.

Information Seeking Behavior is an area of active interest between librarians perceived by the user, who as a consequence makes demand upon formal system such as libraries, information centers, online service or some other purpose to satisfy the perceived need. The Information Seeking Behavior mainly concerned with who needs what kind of information and what reasons, how information is found, evaluated and
used, and how their needs can be identified and satisfied. The study of Information Seeking Behavior of scientists can be dated back to the late 1940s. Since that time, a large number of studies have been carried out on various aspects of the information seeking behavior of scientists and this literature has been extensively received.

The use of Information is so complex that there cannot be a simple system to cope up with the task of effective retrieval with assessing (their specific needs. The situation has given) give rise to the growing concepts of determining, the pattern of searching is said to be considered Information Seeking Behavior (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.

The Information Seeking Behavior refers to the strategies and action undertaken to locate discrete knowledge elements. It is concerned with the integrative utilization of the three basic resources.

(i) People

(ii) Information

(iii) System

It can be said that behavior, which yields the highest information satisfaction is the best. The study of the individual Information Seeking Behavior will require some sort of representation of psychological state
of the use in terms not just of knowledge or lack of it but also beliefs, aspiration, goals and so on. Investigation into the perception of users may lead to insight into their expectations and predictions that prompt their Information Seeking activity.

CONCEPT OF INFORMATION SEEKING BEHAVIOR

With the growth of information deluge each complex 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 as that, information needs of a particular group of users and information flow from a specific situation/organization are difficult to determine. Again the use of information is so complex that there cannot be a simple 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 matter determining. The pattern of searching is said to be considered information seeking behavior.

PURPOSE OF INFORMATION SEEKING BEHAVIOR

Information sought by a user is often for a particular purpose which ought not to be neglected in user studio. It may be current or anticipated and the use of an item of information or even source optimum when a perfect match occurs between the need arising out of purpose and incident of use.
The nature of the work of users and the different row play and the starting prints for understanding the purpose of information seeking. The purpose of seeking information also varies according to the work assigned to each.

DEFINITIONS

The phrase Information seeking Behavior (ISB) has been defined variously by different authors. The following definitions are as follows which make the concept clear.

According to the Krikelas (1983): Information seeking behavior refers to “any activity of an individual that is undertaken to identify a message that satisfied a perceived need”.

King defined, Information seeking Behavior “As a manner in which a user conducts himself in relation to a given information system and resources in order to deal with work related personal and social information problems.

In order to satisfy the information need the user activity under goes the information seeking process. The attempt of the user in obtaining the needed information results from the recognition of some need, perceived by the user, this called Information Seeking Behavior.

The Information seeking behavior is mainly concern mainly with who need what kind of information and what reason, how information is found, evaluates and used and these needs can be identified and satisfied
ELEMENTS OF INFORMATION SEEKING BEHAVIOR

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.

Dervins and Nilan have proposed a paradigm shift for Information Seeking Behavior. They have identified an automotive set of premises and consumptions, the essence of an alternative paradigm in a set of six elements.

1. The study of user behavior primarily in the context of user interaction with the system versus holistic approaches that focus on the whole social interaction.

2. Focus on the external behavior versus internal cognition.

3. The conception of Information as objective versus subjective.

4. Concerns that a focus on individual behavior yields too much variation for systems to integrate versus the need, with individuality in user behavior.

5. Information users as passive recipient or objective Information versus purposive, self-controlling and sense making beings.

6. Users of Information on Behavior applied across situations versus behavior understood as the result of dialogue between system and user
MODELS AND USE (ISB)

Research in user Studies, Information Seeking Behavior, and Information retrieval process has no doubt accumulated large quantitative data and findings. However, most of these findings are not coherent and have failed to form theoretical foundation with generalized applicability in various professions and discipline due to innumerable intervening variables involved in the preceding sections particularly relating to information gathering /seeking process. Infact Information Seeking Behavior and Information needs are two separate components of users studies. However, Scholarly contributions made towards developing models of information seeking have failed to give desired results of general application.

In view of this, Leckie and Colleagues (1996) rightly say that successful model of information seeking must incorporate enough flexibility and unpredictability of information seeking process. Wilson (1999) describes a model of information behavior as framework for thinking about a problem and may evolve into statement of relationship among theoretical proposition. So many models of information seeking behavior in various
professions and disciplines have been developed. A few of them are being discussed for the purpose of generalization.

**Comparison of Models of Information Seeking Behavior:**

**Kuhlthau:** Initiation selection – Identification – Exploration– Formulation – Collection – Presentation.

**Dervin:** Situation in Time & Space – GAP- (Intervening factor) – Bridging – Outcome.

**Ellis:** Starting– Chaining – Browsing differentiating – Monitoring – Extracting.

**Wilson:** Content of needs – Activating Mechanism – Variables.

**Information Seeking Behavior:**

**Active search,** Ongoing Search – Information processing & use

**Passive search**

**Leckie & others:** Work Roles – Task
Characteristics of Information Needs:

Source of Information + Awareness of Information – Outcome – Feedback

Westbrook: Needing – starting – working – Deciding – Closing

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Browsing Meta Data

Peter Brophy: Formulated – Locate – Request – Authenticate – use

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Browse object    Return & Release

Kuhlthau (1993) has also proposed a model of individual information search process identifying following 7 stages, namely:

1. Take initiation
2. Topic selection
3. Previous exploration
4. Focus formulation
5. Information collection
6. Search closure and
7. Start writing
Kuhlthau’s Model (1994):

Kuhlthau’s model of Information search process is more in context of students who select their research topic after initiation. This may not be applicable to other categories of user who normally begin their search with preconceived implicit or explicit need present in their cognitive state. However, the other stages may have the generally applicability.

Ellis (1989) has described these stages as ‘general characteristics’ in time and space of model.

Dervin’s and Wilson’s Model also has the similarity situation in time and space of Dervin’s model is comparable with context of needs of Wilson’s models and work role of Leckie. The context of the problem and situate as are the predominant factors in information seeking behavior.

Wilson Model (1999): Wilson has differentiated between information seeking and information seeking behavior. However in the time present model, both are being together. The process of finding information including behavioral aspect has been rightly denoted by new term information foraging (1998) meaning activities associated with assessing, seeking is different users groups adopting their strategies.

Krikelas alternative Model:-Krikelas has presented “the alternative model” to information behavior. Though his model does not elaborated or
specifically discussed, information seeking behavior (ISB), its ultimate value lies in its utility in the design and analysis of future empirical studies.

**Simon's Model:** Similarly satisfying model concerning to information seeking design by Simon in 1970's emphasis the extent to which individual and groups simplify and terminate their work on a problem not for reason inherent in the logic of the problem but for constraints. Simon was also awarded Nobel Prize in economics in 1978 for innovating such approach to decision modeling.

**Peter Brophy (2000) Generic Model:** Peter Brophy has given generic of hybrid describing the process of 'search and retrieve' of information system. User makes an inquiry interact with secondary sources, discovers his information, and identifies its location and then the browsing of the actual object (container of the information). This stage may not be applicable in all cases. If the information is locally available, he makes a request to get it. Authenticate the user and delivering the item to the user is the function of the library or information centre after which user makes use of the information he has gathered.
CONCLUSION

I would like once more assess the paradoxical role of Information in the modern age. Everyday individual and whole organization try to dispatch with the great information stream continuously incoming. People talk about information over loaded and wounded that there are no essential growth of productivity in organization which invest in information technologies very much.

Information environment is very complex. In order to retrieve desired information of the users, the information intermediary has to adopt inter certain behavioral strategies to make the system effective. Information seeking behavior is one such approach that identifies the basic requirement the users need, while studying information seeking behavior, it is essential to know its various categories and methods so that the red pictures of users perception is visualized.
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