CHAPTER TWO

CONCEPT OF INFORMATION:
A RESOURCE IN DECISION MAKING
CONCEPT OF INFORMATION: A RESOURCE IN DECISION-MAKING

2.1 Definition of information

The term ‘information’ has been derived from the two Latin words ‘Formatio’ and ‘Forma’. Both the terms convey the same meaning of giving shape to something and of forming a pattern. ‘Information’ was also Latin synonym for ‘news’. Dictionaries define ‘information’ as an action of telling or fact of being told of something new intelligences or knowledge. Similar view of considering information and knowledge as synonymous term is expressed by various authorities. Philosophical dictionary, MOSCOW defines: “Information is certain knowledge, a totality of some data and known facts”. Karen (1) also supports this view that information is knowledge in any form in which it can be transformed. In other words, “information can assume any format and mode as long as basic requirements that a message is passed through an identifiable channel is fulfilled, use of the term is justified”.

Knowledge and information are often used interchangeably but some are able to make difference between the two terms. Farradane makes the difference between the two terms while defining both. He says: “Information is physical surrogate of knowledge (i.e. language) used for communication. It is neutral in the sense that it does not have to be new to recipient” while knowledge is “memorable records of a process in the brain, something available in the mind; production of consciousness in the
mind is at present quite unexplained" (2). Peter Ducker (3) while differentiating between the two terms says: "Only when man applies information in doing something, does it become knowledge - knowledge like electricity or money is form of energy that exist while doing work". Daniel Bursting (4) feels that information is random and knowledge is orderly and information is gathered because it is there. According to Brockes(5), information adds to one's knowledge. Knowledge structure is modified by the information input to give a totally new knowledge structure. This is shown clearly by the formula given below:

\[ D_1 + (S) - (S + DS) \]

where \( D_1 \) is information input which together with knowledge \( S \) forms a totally new structure \( (S + DS) \). Brillioun (6) considers information as data while saying, "Information is raw material and consists of mere collection of data". Similar view is given by Shera who says, "Information both in the sense it is used by the biologist and in the sense we librarian use it, is a 'fact'. It is the similar we receive through our senses. It may be an isolated fact or a whole cluster of facts; but it is still a unit, it is a unit of thought". Hoshvosky and Marsey (7) view information as data used to solve problems. They consider: "Information a process which occur within human mind when a problem and data for its solution are brought into productive union".
Yovits (8) et al observe that information is a data of value in decision making. It means that information or data when received and utilised is able to help in decision making.

Another group of thinkers treats information as message. According to Neelameghan (9); “In a generic sense, it is content (message) which is exchanged when adjusts to its environment and as the environment in term is changed by the reaction of organism”. G. Bhattacharya (10) also gives similar view when treating information as “a message conveyed or intended to be conveyed by a systematised body of ideas”. Shera (11) also has the similar view when he says that information should bring a response in the recipient. He says further: In the generic sense it is that which is transmitted by act or processes of communication. It may be a message, a signal or stimulus. It assumes a response in the receiving organism and therefore, processes response potential”. Pratt (12) also believes that information should be able to change the recipient image after receiving a message. According to him, “Information is the alteration of image which
occurs when it receives a message”. Both the definitions emphasise that there should be some reaction on the receipt of message, failing which it will not be termed as information.

Mackey (13) observes that information has newness in its character: “we have received we know something new that we did not know before it is always information about something”. Weissman (14) gives similar view: “Information is that which adds to changes or repeats representation of what is known or believed to know. Information is human product therefore subjective at least to the extent it is constructed by human representational technique and artifacts”.

Belkin and Robertson (15) developed structural concept of information based upon structural change suggesting that information is that which is capable of transforming structure. They further say that “information is the structure of any text which is capable of changing the image structure of some recipient”. Burch and Stater (16) have included some essential attributes of information in their definition while defining information on occurrence or set of occurrence which carry messages and when perceived by the recipient by any of the senses will increase their state of knowledge. The significance or value of information received can only be measured by the recipient".
2.2 Importance of information

Information is needed in all aspects of society and in all disciplines. People demand information that is timely, relevant, accurate, reliable, up to date and quickly available. Information is needed by decision makers in industry, physicians in hospitals, research scientists in laboratories, children in schools, patrons in libraries, backward communities in their development, administrators (at national and state level) in their decision-making process, farmers in their fields, lawyers and educators in their profession, the military, those grappling with the problem of energy and environment and lastly by any one living in the society; varying either specific or of general nature.

Each of us has had the experience of finding out a piece of important information that would have reversed or modified a decision just made, if the information had been available at the appropriate time. May be that the information has just become available or is always available, but one did not know where to look for it, or worse, one may have known or suspected that the information is available, but he did not have the time or resources to look for it. It is like searching a needle in a Haystack.

With the advent of technology, the proliferation in each of these areas of methods of identification of the flood information, production in all its structural ramifications, their organisation and control for better, faster and timely, retrieval has been at international level. The conventional, geographical, cultural, language barriers and other technical barriers like
media and mode of communication, loss in conversion and communication channels are being cleared to a great extent by forming information networks at local, regional, national and international levels using communication satellites for proper co-ordination and co-operation for all round development of societies. The only limitation is political nexus and national priorities. The impact of all these on the corresponding management of the same at national levels has been equally important. We see at present proliferation of material, managing storage of millions of data, on silicon chips and their retrieval by using optic laser technology for fastest and precise retrieval in the design that is required to take appropriate decisions.

Man's ingenuity with all the existing barriers in different societies, countries, there has been globalisation in the competition for every thing that is best. Technology is moving the information faster to remove these boundaries. There was a time in 1500's when the Mediterranean was the centre of the economic growth. This was shifted to Baltic and North Sea, then the Atlantic. Now it is the Pacific.

The librarians and information scientists have to play the important role of interceptors or gatekeepers in this inflow and outflow of information. They form trained motivated and dedicated group using appropriate tools in storage management and retrieval of information in the development process. The world is becoming smaller and with these
challenges, development of organisations, governments have been in full, growing with the telescopic development in each of the modern areas of electronic, telecommunications, satellite technology etc. The interaction between nations in specialised areas has become more versatile and easy.

Adopting to change has never been easy, particularly when everything is moving so fast. In Indian context having our national policy issues and priorities like accelerating the economic growth, alleviating poverty and other forms of deprivation to improve the quality of living standard of the people by providing greater economic opportunities to realise quick result by efficient use of already created assets. Generation of larger employment, encouragement of self-employment for realising these objective have to be met. Realisation of all these mutually reinforcing programmes for the study of changes in economic and social infrastructure calls for decisive decision making with the mass of data that is generated, plan formulation and effective implementation to achieve the goal.

Effective information also helps in design, monitoring and evaluation techniques, to adopt corrective measures, to overcome the bottlenecks and to assess the performances. The role of information, information technology and information policy on economic growth are
mainly responsible for the disparities in the development of different
countries (17).

2.3 Communication of information:

2.3.1 Channels of communication:

Wilbur Schramm (18) treats communication 'as the exchange of
knowledge, skills and attitude among persons or among social groupings'.
Steinberg (19) defines communication as 'the process of relaying or
transmitting a sign or symbol, verbal, written or pictorial- from a specific
source to a specific audience or received by means of any one or all of
several media that act as channels. The channel of communication may be
formal or informal. Formal channels are those where face to face
discussion is possible; informal channels are means of transmitting
message that involves a medium such as radio, television, films,
newspaper, book, which enables one or few individuals to reach on
audience of many. In the case of researchers the informal channels have
been characterised as 'invisible college' and 'back fence' college in the
case of lay person.

The invisible or backfence college may constitute friends,
neighbours, colleagues etc. They may not be professional communicators
of information but they do provide job-related information. Communication
system consists of four elements viz., communicator, receiver, media and
message. While individuals and institutions are considered as source of
information, it is a matter of argument whether a document (reading material) has to be treated as a source or media. A document is generally considered as a source of information. Document is an embodiment of thought. The information dissemination media and mechanism are presented in Figure 2.1.

2.3.2 Diffusion of Innovations

Diffusion is a special type of communications. Diffusion is the process by which innovations spread to the members of a social system. It is concerned with message of new ideas whereas communication encompasses all types of message (20).

Diffusion-studies have revealed that the decision about an innovation is a process that occurs over a period of time and in series of stages. A committee of rural sociologists largely based on the studies of Ryan and Gross (21) and also Walkening (22) in 1955 postulated five stages in the innovation-decision process or adoption process. These are (Table 2:1).

1. **Awareness stage**: At this stage the individual is exposed to an idea, lacks detailed information about it. This is somewhat like seeing something without attaching meaning to it.

2. **Interest stage**: At this stage the individual is motivated to find out more about the new idea. He seeks more information which help him to relate the new idea to past experiences and other practices he has used. He wants to know what it is, how it works and what its potential may be.
FIGURE 2.1
INFORMATION DISSEMINATION MEDIA AND MECHANISMS

![Diagram showing information dissemination media and mechanisms]

SOURCE: STEINBERG (C.S.), The mass communication.
3. **Evaluation stage:** Here the individual is concerned with mainly applying the idea to his present-predicted situation. He goes through a sort of mental trial of the new idea. He considers the relative advantages of the new practice over other alternative.

4. **Trial stage:** If the mental trial is favourable, the individual actually applies the new idea on a small scale in order to determine its utility in his own situation.

5. **Adoption stage:** The individual uses the new idea continuously on a full scale.

In the past, by the researchers, the thin conceptualisation of the adoption process has been highly favoured, but of late, critics point out that there are deficiencies in the model. Another four-stage model consisting of (I) Knowledge; (ii) Persuasion; (iii) Decision; (iv) Confirmation has been conceptualised by Rogers and Shoemaker (23). In a study, while discussing the information development and flow, Lionberger et al (24) with reference to information Macro-system model (adapted by them from Coughenour) have presented certain major functions which they say occur in the sequence: (i) Innovation, (ii) Dissemination, (iii) Integration, Validation, information, persuasion and governance have been mentioned as subsidiary functions. Also ‘studies’ have indicated that the mode of adoption of ideas is not uniform with all the farmers. “All farmers do not adopt a new practice at the same time. They have been categorised as innovators, early adopters, early majority, late majority and laggards” (25). Without going into the detail of the diffusion process, it is pertinent to note
### TABLE 2.1

RANK ORDER OF INFORMATION SOURCES BY STAGES IN THE ADOPTION PROCESS

<table>
<thead>
<tr>
<th>STAGES IN THE ADOPTION PROCESS</th>
<th>AWARENESS</th>
<th>INTEREST</th>
<th>EVALUATION</th>
<th>TRIAL</th>
<th>ADOPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Learns about a new idea or practice</td>
<td>Gets more information about it</td>
<td>Tries it out mentally</td>
<td>Uses or tries a little</td>
<td>Accepts it for full scale and continued use</td>
</tr>
<tr>
<td>1. Mass media radio, newspapers, magazines</td>
<td>1. Mass media</td>
<td>1. Friends and neighbors</td>
<td>1. Friends and neighbors</td>
<td>personal experience is the most important factors in continued use of an idea</td>
<td></td>
</tr>
<tr>
<td>3. agricultural agencies, extension, Vo-ag, etc.</td>
<td>3. Dealers and salesmen</td>
<td>3. Dealers and salesmen</td>
<td>3. Dealers and salesmen</td>
<td>2. Agricultural Agencies</td>
<td></td>
</tr>
</tbody>
</table>

the role of information sources at all the stages of adoption and its need to each category of adopters.

2.3.3 Adoption process and Information sources

Several studies conducted revealed that the information sources and services used differ from stage to stage of adoption. In the order of preference at different stages of adoption, table 2.1 indicates the mass media, friends and neighbours, agricultural agencies, dealers and statesman with different rank. While discussing the role of literature and other media of communication in the diffusion of innovations, Boon (26) analyses the library and information services stagewise. According to him, the current awareness service is useful at the awareness stage. At interest stage the librarian can search the literature for more profound information. The adopter can be directed to a right source which we call referral service at evaluation stage. By directing the adopter to personal source and by providing backup material, the librarian can play a useful role at the trial and adoption stage.

2.4 Information Systems and use of Information:

2.4.1 Information Systems

According to Bhattacharya (27), there are three types of information systems, they are (i) primary information generation system, (ii) primary information communication system and (iii) the secondary information service system. It is necessary to consider its potential use by the persons
or group for whom it is intended, regardless of what other parameters are considered in the development of a storage and retrieval mechanism. It is necessary to fashion the system to suit the users’ needs, habits and preferences or to train the user to meet the system so designed. Both approaches are possible, but the second one, involving education, orientation, re-education of the user is evolutionary and futuristic. According to Herner (28), a system designed for now should at least be able to serve the present users.

2.4.2 *Information users in agricultural field*

Today the users in every field are confronted with an overgrowing abundance of facts and information. According to Barnard (29) the international agencies, research stations, university departments, marketing organisations, commercial firms, co-operatives and farmers themselves all generate and utilise facts pertinent to the industry owing to rising standards of literacy, education and knowledge, the proliferation of information-producing organisations and increasingly sophisticated means of communication. He further says that increasing availability of information does not itself mean that individuals are better informed than in the past. Perhaps, Barnard does not realise the fact that one cannot differentiate useful and redundant information unless either he is aware of new information or helped by some agency. Lionberger (30) says that for any specialised endeavour a continuing supply of updated science based
information is needed. The process by which information is generated, disseminated and utilised, he calls information macrosystem.

According to the opinion of Simpson (31), the increased dissemination of information will not by itself improve technology transfer. He stressed the need for evaluation synthesis and compression of significant information into package which can be applied effectively by the user audience. Strasser (32) says that a high quality information should be based on what a user needs can use rapidly and expeditiously than what a communication system designers can provide. He further says that the present day information systems are much better than what most of those to whom they are directed can put to use. He calls for marginal improvement in the users' sophistication. Allen and Cooney (33) point out that the world store of scientific and technological knowledge presents the small nations with a vexing problem of maintaining its scientific and technical community abreast of foreign developments. According to them, the majority of the countries are concerned only with acquisition and they either ignore or give only cursory treatment of dissemination. More possession of information does not guarantee its utilization by those who require it. Maunder (34) mentions the source of information for solving the problem of rural people as one of the conditions conducive to development of effective extension services.
Allen on the basis of an exhaustive study pleads for differentiated information services for scientists and technologists. He says that the requirements of scientists are document based whereas that of technologists are either product or person based.

The British Library Research and Development (35), realising the importance of information for agriculture, constituted a ‘Review Committee on Agricultural Information’ on the following three themes viz. (i) who are the producers and distributors of agricultural information? (ii) what are the needs of users of agricultural information? and (iii) through what channels information is distributed?

2.4.3 Need for study of Information sources of extension workers in India in the agricultural field:

In India the agricultural universities were established on U.S. Land Grant Universities pattern; the extension service is still with the state Department of Agriculture. But in USA integration of the extension workers into a regular university research and teaching department has something in the direction of extension (36). Because an extension worker rapidly gets out of date unless he keeps in touch with current research. He is much more valuable to the farmers and to the rural family if he is a part of a vital and stimulating intellectual community than if he is isolated in a bureaucracy that separate him from the places where ideas are continuously being challenged and tested.
In India extension workers, graduated from Agricultural Universities reside and operate in the field in remote areas far away from Agricultural Universities. They operate at the block level assisted by village level workers, are semi-professionals mainly depending on the agricultural extension officers for know-how. The extension officers need information for both keeping them up to date and for rendering technical advisory service to the farmers. They need information in anticipation and also on demand. Therefore, to disseminate information to the agricultural extension workers, an organised information system has to be given top priority. And when requirements and sources of information are known, design and development of such system is possible.

To identify the sources of information needed by extension workers, several studies have been conducted elsewhere. But those studies have not taken an integrated view of the sources viz. personnel, documents, libraries, mass-meditias and information services. In the present study an attempt has been made to identify the same and to suggest the possible services that can be extended for effective transfer of farm technology.

2.5 Factors Influenced for Information use

The three crucial factors that determine the information use behaviour of an individual are: attitudes, social stereotypes and reference group, which usually influence the information use-habit.
Commitment to values and standards forms an individual's 'personality'. Income, profession, education determine a person's membership in a particular social class. Occupational activities, domestic activities and study commitment (viz. teaching the students, doing research work, studying in the same course, attending seminars and conference, delivering talk through TV/Radio, joining discussion in social, local or private gathering, educating children, developing and maintaining some family culture, giving leadership, formal or informal, to many social causes, etc.) make a level of individual's 'living condition'. 'Reference group' is the group with which a person psychologically identifies himself or in relation to which he thinks himself and things around him. The influence of the reference group is symbolic rather than physical and it may be possible that an individual operates under the influence of the appropriate reference group even without having an intimate contact with its members (38). Professional colleagues, friends, acquaintance, fellow professionals outside the department/institution/locality/state/country, leaders/experts in the field all they can form a 'reference group' of an individual which can control an individual's habits, behaviour, styles and even activities. Demographic variable like sex and age are also a very powerful factor of any individual's information seeking behaviour.

The above factors generally settle the 'pattern of life', attitude 'motives' evaluating abilities and 'status' of an individual. The 'pattern of
life' and 'motives' are decisive factors in the development of need with respect to academic activities (may be recreational, educational or scholarly) and the search for ways of satisfying these needs. The 'evaluating ability' and the 'attitude' makes the individual 'evaluative' (at present case, an user can evaluate the services offered by various libraries-inside and outside, personal or public-owned collection or friend's collection, borrowing or purchasing reading materials etc.). Here 'attitude' refers to the mental construct which serve two important functions, firstly it organises a person's social world which provides directions for how to behave with respect to the social object, and secondly a person's attitude reflects his own values and consequently those of his social group and surroundings (39). And understanding of the factors involved in users' attitudes regarding library policy is thus most relevant to the implementation of specific library plans.

This second stage usually develops a kind of 'information need' which compels an individual to search the means and ways for satisfying this need through various information-input-channels like library, information centre etc. And, the decision for using one always does not give satisfaction. Dissatisfaction caused leads the user to go back again in their state of mind where 'information need' had been developed.
2.6 Information - A resource in decision-making

In agriculture the decision-making process rests squarely on information available to farmers, entrepreneurs and policy makers. According to Blackle and Dent (40) information can be considered as a productive resource, which can influence to a considerable extent the efficiency of production, marketing, processing and administration. If knowledge were complete there would not be any uncertainty in decision-making because the action in any situation would be simply a matter of logic(41).

As Goldhar (42) says: scientist or engineer is a consumer of information. Thinking information as a 'product' and information user as a 'consumer' is the basis for designing organisational and managerial policies which will motivate innovators to move from satisfying towards optimizing behaviour by becoming more venturesome in their search for an acceptance of scientific, technological and economic information.
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