UNIT 1 CONCEPT AND NEED FOR INFORMATION

Structure

1.0 OBJECTIVES

This Unit introduces you to the concept of information, the way information gets generated and the need for it in various human activities. After reading this Unit, you will be able to:

- explain the variant nature of information;
- distinguish between seemingly synonymous words, such as information, news, data, knowledge, facts, intelligence, advice and wisdom;
- describe how human activities result in the generation of information; and
- identify the information needs of different groups of users.

1.1 INTRODUCTION

In this Unit, we shall look at the meaning, of information as also the meaning of other related words such as data, facts, intelligence, advice, knowledge and wisdom. Although often these words are often used synonymously, each one is different from the other in meaning and use. Some of them are explained here with examples with special reference to library and information science.

Information emanates from all human activities and achievements; both individuals and corporate bodies are involved in the creation of information for some purpose or the other. Research and Development activities, for instance, generate new information which, in turn, is used as a basis for bringing forth more information. Some organisations are entrusted with the task of collecting and organising statistical information through census and surveys. A state with its organs of executive, legislature; judiciary, business and industry generates vast amount of information and contributes substantially to its growth.

We shall also study in this Unit why information gets generated at all. This is explained by taking typical examples of information needs of a wide cross-section of people; viz., students, teachers, medical and legal practitioners, engineers, technologists, business managers, industrialists, government officials, legislators, research workers, and other specialist groups.

This Unit also explains the pervasive nature of information in modern society. The facilities to store, retrieve, and access information for its full exploitation give a country economic, technological as well as political advantages over other countries. Information, therefore, is considered today a commodity and a source of power.

1.2 INFORMATION AND OTHER RELATED CONCEPTS - THEIR MEANING AND CHARACTERISTICS

You may often hear or read in newspapers and other popular magazines about "exponential growth of information" or "explosion of information" and computers are to be used for handling such large mass of information and for quick retrieval of the desired items from it. We talk about the "growth" or "explosion" because we see around us, large bookshops, libraries and news stands, a wide array of publications - books, periodicals, newspapers and news magazines. The much talked about information is recorded in these publications. The term "information" is used very loosely. It is therefore necessary, in the context of library and information science, to know its more precise meaning.

Let us begin with the definitions as provided in two well-known dictionaries and a definition given by UNESCO.

1) "News or intelligence communicated by word or in writing; facts or data; knowledge derived from reading or instruction gathered in any way". (New Webster Dictionary of the English Language, 1984).
2) "Knowledge communicated or received concerning a particular fact or circumstances; any knowledge gained through communication, research, instruction". (Random House Dictionary of the English Language, 1983) .
3) The definition of information, according to a UNESCO document (Inter-governmental Conference on Scientific and Technological Information for Development, UNISIST II 1979), is as follows:

"Information is made up of symbolic elements, communicating scientific and technical knowledge, irrespective of their nature (numerical, textual, graphic, etc.), material carriers (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 message (substance and form) and its communication (act)."

The Random House Dictionary has also listed two sets of words that are used synonymously with the term "information". These are;

i) Data, Facts, Intelligence, Advice.

ii) Information, Knowledge, Wisdom.

The terms, "news", "data", and "knowledge" contained in the above definitions of information, are relevant in the context of library and information science. According to the three definitions:

i) these terms are related to the concept of information and thus are nearly synonymous with the term information;

ii) information is communicated by word of mouth or in writing; and

iii) information is derived from reading or instruction or gathered in any other way.

Further, the last two statements imply that some people communicate information while some others acquire, derive or gather and use information. Information is, thus, generated, communicated and used. There are then generators, communicators and users.

Although in this Block, we shall use "news", "information", "data", and "knowledge" interchangeably as if they are synonymous terms, it is necessary to point out that they are not strictly so. Each is a shade different from the other.

1.2.1 News

Concise Oxford Dictionary defines News as "new or interesting information" or "fresh events reported"'. In short, all that a newspaper contains is not news. Only episodic information in it is news.

These may pertain to current political affairs, sports and games, economic and commercial activities, arts and culture and socio-political engagements. These are all episodes or events and, therefore, it is said that news is episodic information that is ephemeral in character having, however, historical value.

1.2.2 Data and Information

The term "data" (plural form of datum) refers to "an individual fact, statistic, or a piece of information or a group or a body of facts, statistics or the like" (Random House Dictionary of the English language, College Edition, 1975). Thus, data may be described as discrete and unorganised pieces of information. Data become "information" when these pieces are processed, interpreted and presented in an organised or logical form to facilitate a better comprehension of the concerned topic or issue. In other words, data become information when processed and presented to form an intelligible context.

The following examples will be helpful in bringing out the difference between the two:

i) The Meteorological Department is responsible for the daily collection of atmospheric data on weather. These data are presented in quantitative terms, e.g., tables containing rainfall or temperature figures over a period relating to different regions. The pilot of an aircraft needs weather data relating to the region over which he/she would fly. He/She would rather prefer a brief forecast note on the weather conditions based on these tables which would tell him/her whether he/she would face air turbulence on the route. These processed and interpreted data then become information.

ii) Reserve Bank of India Bulletin regularly publishes notifications on exchange control regulations as and when some existing regulations are amended or new ones introduced. We may say that each notification contains discrete pieces of facts or information. If, however, these notifications, at a later stage, are organised or consolidated in such a manner that all the related pieces are brought together, (e.g. those dealing with the foreign exchange regulation relating to business travel), then such a consolidation becomes information.

iii) A scientist studying the behavior of a chemical compound under different physical conditions would observe and record the relevant data provided by the experiments. These data or raw facts would not convey any meaning unless he filters; analyses and integrates them and finally interprets his findings. The resultant product-then becomes information.

Usage in the Context of Library and Information Services

In library and information science, there is, however, no need for making such distinction between data and information, because many users would consider data and facts as information. For example, data on national income (i.e., national income statistics) presented in a tabular form would enable an economist to make an assessment of the health of the national economy. To him/her, it is ``statistical information". He/She may like to interpret the data and publish a paper on the topic. A reader who is not adequately conversant with national income statistics or who is interested in getting a quick grasp of the national economy would find this paper more useful. This paper, rather than the statistical tables, provides him/her the necessary "information". However, a conscious awareness of the distinction between the two is helpful in providing information services to different types of users having different kinds of information needs.

Categories of Information in Social Sciences

It would be useful, particularly in social sciences, to group information into three categories:

- Statistical Information
- Descriptive Information
- Analytical or Interpretative Information

Let us go back to the example of national income statistics mentioned earlier. The table showing the data about national income over a period is statistical information. If someone merely describes the changes that had taken place during those years, we may call it descriptive information. In Unit 5 of the Block 2 we shall refer to review literature. This type of document contains primarily descriptive information. When an author analyses and interprets the data within the framework of economic theory and his/her views on the subject, we would call it analytical or interpretative information. Analytical information is, thus, essentially based on statistical as well as descriptive information, data and facts being interpreted to arrive at a conclusion.

1.2.3 Knowledge

The dictionary definition of knowledge is 'organised body of information or the comprehension and understanding, consequent on having acquired an organised body of facts' **(Random House Dictionary of English Language, 1983). In** common usage of the word, we say 'a knowledge of French is desirable for the post' which means that a person having reasonable acquaintance with French is eligible for the position. A book of knowledge is the title of a book which contains data and information about selected topics which would be useful to students appearing for competitive examinations. Similarly, we often refer to a library as a storehouse of knowledge, meaning thereby, that a library stores documents which contain information and knowledge. Therefore, in common parlance, we use information and knowledge more or less synonymously, without making any distinction between them. But, we must understand the usage of these words a little more precisely in our professional studies.

Data are sets of facts or observations and they are turned into useful information after sorting, compressing and organising them into a meaningful guide to form a basis for further study and research.

Patterns of such information are then built into a coherent body of knowledge. Knowledge, hence, consists of an organised body of information. This interpretative knowledge forms the

The following example may make these ideas a little more clear: basis of insights and judgements.

Data	Cotton
Information	Yarn
Knowledge	Cloth

Cotton can be loomed into yarns which in turn can be weaved into cloth. So also data can weaved into information which can be used to form an organised body of knowledge. In general, both data and information are the building blocks of knowledge and all three are handled in libraries offering different types of services.

Self Check Exercise

l) Distinguish between information, data and knowledge. State the other words synonymous with information.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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1.3 INFORMATION GENERATION PROCESS

Information is the product of different human activities and events. Activities are undertaken by individuals or by organisations in pursuance of certain objectives. Events are things that happen, occur or take place. If there has been no activity or an event taking place, there would be no information. Imagine a situation when, on a day, the entire population of the world goes into a slumber. Next day, there would be no news (although subsequently this would be news which would hit newspaper headlines).

1.3.1 Research and Development

All intellectual activities consciously pursued and systematically completed generate useful information. Research (also Research and Development) is such an activity. Research organisations in science, technology, social sciences and humanities have been established specifically for this purpose. Research is a creative work contributing to the growth of knowledge for the benefit of man and society. It is a highly organised activity throughout the world which continuously creates a large mass of new information.There has been a dramatic increase of both research institutions and researchers in all branches of knowledge. More 'and more funds are now allocated for conducting research. The progress of a nation is often judged by the percentage of national income that is spent on R&D. The output of research constitutes a major part of information handled by the library and information centres. Since the industrial revolution in the late 18th century, there has been a large-scale growth in this organised body of information and to this is continuously added the output of current research activities. This phenomenon is characterised' by the term "information explosion".

Research activities are not restricted to research institutions alone. Academic institutions - colleges and universities also undertake research and consider it as one of their major tasks, besides imparting formal education.

1.3.2 Surveys and Censuses

There are also organisations which have been set up specifically to gather statistical information through censuses and surveys. This may be considered an auxiliary research activity. One of the most important examples in India is the Office of the Registrar General which was established to conduct decennial censuses to collect population data which form the basic information about the demographic characteristics of the country.

1.3.3 Government Activities

Information is also generated as a by-product from the activities undertaken by different governmental and non-governmental organisations. The most important organisations in this class are the governments themselves and their agencies. They perform their tasks as a matter of routine. For example, the police department has been set up for the maintenance of law and order. It is their routine administrative task. The activities of these departments, in turn, generate information about such burning topics as dowry deaths, terrorism, corruption and the like. The stupendous development planning exercise undertaken in the successive Five Year Plans by the Planning Commission and State Planning Departments of the Government has generated an enormous amount of information on almost all dimensions of socio-economic issues. A major part of the information (both statistical and descriptive) needed by the social science researchers in academic institutions and decision-makers in governments, business and industry, emanates from the governmental sources. The reasons are obvious. There is no area of activity in the life of a nation in which the government is not involved.

Besides these administrative organs of the government, the legislative and judicial bodies also contribute to the growth of information, e.g., the basic sources of legal information are the legislatures which enact various laws and the judiciary which interprets the laws when disputes arise in their implementation and enforcement.

1.3.4 Other Activities

Another source of by-product information is the business and industrial organisations whose activities throw up business and industrial information.

Exercise 2 asks and provides a simple list of Indian organisations which contribute to the generation of information. We should also note the contribution of individuals involved in information generation. They are historians, critics and political commentators. Their writings are replete with a vast amount of socio-political information. They mirror the social condition of specific periods.

Self Check Exercise

2) List a few organisations and institutions that generate information. Give at least one example of the type of information generated by each of them.

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of this Unit.

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1.4 NEED FOR INFORMATION

Everybody needs information for some purpose or the other. When you want to travel, you need information about routes, timings of the transport services, hotel facilities, and the like. You may gather this information from a friend or from a travel agency. You may also go to a library and collect this information from some formal reference sources like tourist guides and railway time-tables. The discussion in this section would be limited to information which is recorded in various types of documents.

People seek information -for various reasons, Consider the following typical examples of information needs of a wide cross-section of people:

1.4.1 Education and Research

i) Students need information relating to their academic pursuits.

ii) Teachers need information for imparting education students to their students

iii) Rsearches(or scientists) need continuing basis and are considered the biggest consumers of information.

While the information needs of all types of users are important in varying degrees, the systems services researchers have unique information needs which distinguish them from other user groups.We have also mentioned in Section 1.3 that the output of research constitutes the major part of information handled by the library and information services. Thus, the researchers have unique 'distinction of being both consumers (i.e., users) and producers (generators and creators) of information We shall, therefore, discuss their information needs in detail.

A researcher needs information for three purposes.

a) To keep up with new developments in his area of interest;

b) To get acquainted with the state-of -the-art of the subject;

c) To gather specific pieces of data and information needed at different stages of his work.

Keeping up with current developments is one of the key factors for success in the career of a researcher. This activity not only updates his knowledge but also stimulates his thought process and often may suggest new ideas and methods of experiments.

Before a researcher decides on a new project, he needs to undertake a thorough literature search, i.e., he examines the various documents containing information on the topic. He does this to:

a) get acquainted with the state of knowledge in the area (i.e., state-of-art);

b) identify whether there are shortcomings and gaps in the existing knowledge and thus to assess further scope of work in the area; and

c) avoid the possible duplication of work and thus to save time, effort and money.

Even while conducting research, he might need some data on, say, properties of a chemical compound, production of acommodity or information about a technique.

Thus, research requires information all the time. Though the nature of information required varies from time to time.'

1.4.2 Professionals

Professionals, like medical and legal practitioners, need information to pursue their vocations. The physicians cannot afford to ignore new developments in the medical sciences. Theft ignorance would be fatal to the patients. Similarly, legal practitioners must keep in touch with the case law and judicial verdicts to ensure fair justice. Judges need access to earlier verdicts or case precedents before pronouncing judgments.

Engineers and technologists need information for solving technical snags faced by them on the shop floor.

Managers (or executives) in business and industrial organisations need information to enable them to take appropriate decisions relating to issues having both short-term and long-term implications. They need more information for taking decisions involving managerial issues.

1.4.3 Government Activities

i) Government officials (who are also managers) similarly need information for decision-making.

ii) Legislators need information for arguing a point on the floor of the house or legislatures.

The above examples show that information is a vital input in different types of activities carried by different groups of people.

Self Check Exercise

3) List the different groups of users of information, stating the purpose for which they need information.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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1.5 GENERAL OBSERVATIONS

Large scale use of information in all countries by a wide cross section of people has resulted in the coming of terms like `information age and information society', which signify the pervasive nature of information in modern society. Information today is regarded as a valuable resource which helps in transforming nutural resources of a country into finished products. The availability of information and facilities to store and exploit it gives a country economic, technological as well as political advantages over other countries. The political power of a few big nations is derived from information. Information has, thus, an economic value and is a tradable commodity, which gets produced sold and consumed, involving increasingly a large number of people. Information handling in this sense is an industry (information industry).

Futurologists say that we are entering an era in which trade will consist largely of information exchange. Even when, trade involves commodities other than information, like raw materials, intermediate and finished products or services, it will be dependent on information exchange systems.

Self Check Exercise

4) Information is power'. Elucidate this statement. Give your answer in five sentences.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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1.6 SUMMARY

In this Unit, we have:

i) given the meaning of information and related words in the context of library and information science;

ii) explained the variant nature of information with examples;

iii) indicated how information gets generated and by whom;

iv) explained the groups of users and the specific purpose for which they need information; and

v) highlighted-the importance of information as an economic resource which transforms every other natural resource into an economic product, and hence a source of power.

1.7 ANSWER TO SELF CHECK EXERCISES

1) Information is made up of symbolic as well as descriptive elements, communicating knowledge. It refers both to the substance or contents of documents and to the physical existence; the term is also used to designate both the message (substance and form) and its communication.

   A distinction is made between raw information (facts, concepts, representation) and the documents in which it is recorded.

   Data, as discrete and unorganized pieces of information, become information when these pieces are processed, interpreted and presented in an organized or logical form to facilitate a better comprehension of the concerned topic or issue.

   Knowledge is an organized body of information that can be used as the basis of further knowledge. Information that removes uncertainty and alters concepts is knowledge.

   The other synonymous words for information are: facts, intelligence, advice and wisdom.

2)

SI. No.	Organizations and Institutions	Information Generated	Type of Information Generated
i)	The Meteorological Department	Atmospheric data on weather and other related phenomena	Statistical information in the form of tables
ii)	Reserve Bank of India	Notifications on exchange control regulations	Descriptive and textual
iii)	Research Organisations like the National Chemical Laboratory	Experimental information	Textual and numerical in the form of journal articles or research reports

3)

Groups of Users	Purpose
Students	For pursuing academic studies
Teachers	For imparting education
Professionals (medical, legal, judicial, etc.)	To pursue their vocation
Engineers and technologists	For solving technical snags on industrial shop-floor
Business managers, top executives of government	For decision making
Legislators	For arguing a point on the floor of the legislatures
Researchers	For their research work on a continuing basis

4) Information has an economic value in transforming all the natural resources of a country into finished products and is treated as a tradable commodity which gets produced, sold and consumed. In this sense, information handling is to be regarded as an industry.

   Information is, therefore, a resource which can enrich a country to provide a high quality of life to its people. The country that has this wealth, decidedly gets an advantage over other countries. Information is also used as a powerful political weapon and hence regarded as power.

1.8 KEY WORDS

Explosion of information : Growth of information beyond a manageable limit.

Exponential : Quantitative growth of a thing at a particular rate of growth; for example, chemical literature doubles every seven years.

Futurologists : Specialists in social forecasting.

Information Age : A period predominantly centred on information activities

Information Society : A society in which all activities are centred on information as a basic input.

1.9 REFERENCES AND FURTHER READING

McGarry, K. (1981). *The Changing Context of Information: An Introductory Analysis.* London: Clive Bingley.

Vickery, B.C. and Vickery, A, (1987). *Information Science in Theory and Practice.* London: Butterworth. Chapter 1, pp. 1-12.

UNIT 2 INFORMATION SERVICES: AN OVERVIEW

Structure

2.0 OBJECTIVES

This Unit gives you an overview of the different types of information services provided by libraries and documentation and information centres, including the value added information services. After reading this Unit, you will be able to:

- understand the nature and functions of information services;
- distinguish between information sources, information resources and information services;
- identify the problems of information services in any environment;
- suggest criteria and measures for the value of information services; and
- appreciate the influence of information technology on the provision of information services.

2.1 INTRODUCTION:

In the earlier Unit of this Block (Block 1, Unit 1), you have learnt about the concept and need for information. In this context, it has been emphasised that a country's development depends upon the application of knowledge and information rather than just the generation of new knowledge. It may be mentioned tot knowledge and information are available somewhere in the world and they must, however, be made accessible to all kinds of users according to their need: decision-makers, entrepreneurs, scientists, engineers and technologists by means of proper communication and transfer.

The dissemination of information consists of either supplying the user with the information he needs or giving him an o0portunity to access it.

A user's information need usually depends *upon the* purpose for which he is `"e information. For instance, a user may be looking for data on the property of a given substance or material. The purpose may be to use the property value in a calculation or experiment. This kind of an approach to information may be termed as 'Everyday Approach' to information. On the other hand, a user may want to look at all the information that has been published on a given topic. The purpose may be to identify a research area or to formulate a research proposal. This type of approach to information is termed as 'Comprehensive or Exhaustive Approach ' to information is called 'Current Approach'. In this type of approach, the user tries to keep himself abreast of what is being published from time to time in his area of specialisation and in areas closely related to it. By doing so, the user -- e scientist, an engineer, a decision-maker, a teacher, etc. - comes to know of recent advances or new developments on a regular basis. This enables him to update his knowledge and can be useful to him in various ways. It may give him a new insight to the problem or suggest new methodologies for work. The current approach is 'thus' essential to every active professional to keep abreast of the latest developments in his field and also to every researcher to avoid duplication of research effort.

There are different ways to disseminate published information among users. For example, the dissemination might involve :i) The primary document itself or a copy of it, ii) The reference of the document in 'secondary' products of different types, iii) The information contained in the document presented in different 'tertiary' products, and iv) The sources of information.

Dissemination of information might be accomplished basically in two ways. One of the methods is to provide information on the basis of an expressed demand. That is to say, a specific request would be met a special search by an information specialist and the user is provided with the information required by him. The second method is to anticipate the user's needs and offer him/her documentary products, potentially helpful to him/her. In other words, information services mainly fall into two basic categories: services on demand or responsive services and anticipatory services. An overview of different types of services that fall under these two categories and the problems faced in organising and providing of such services, form the main contents of this Unit. Details furnished in this Unit will be helpful to comprehend the nature and types of information services.

Self Check Exercise

l) Distinguish between 'Everyday Approach', 'Exhaustive Approach' and 'Current Approach' to information.

2) Give one example each of 'information service on demand' 'anticipatory information dissemination service'.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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2.2 DEFINITIONS AND CONCEPTS

To have a good comprehension of information services, it is necessary to understand cert in concepts relating to them. Some *of* these concepts are briefly described and discussed in this section. An information system generally refers to the interrelated process of gathering, organising, storing, retrieving and disseminating information items.

2:2.1 Information Sources, Resources and Services

The term 'Information sources' has two connotations. One is that of the stores or locations in which information kept Therefore, a sources information may be an object, a place, an organisation or a particular person, for example, an encyclopaedia, a database, a warehouse, a library, a telephone number, or an expert. Sources may be personal or impersonal, public or private, passive or interactive, stored locally or remotely, to which immediate or delayed access may be [g]able# In the second connotation, information sources are virtually indistinguishable form of information channels b cause the latter may be written such as a book, or words in some other printed or processed format, or verbal sounds, ±Ch as a telephone, or data line. In a discussion on information phenomena, the term channel is not reserved for the communication channel as in the telecommunications sense. In fact, in the telecommunications environment, identity of source and channels likely to be less obvious. In accessing to a telecommunications network, forget the ultimate address of the information is usually unknown and irrelevant to the inform, as is the ˛particular path through which information is delivered.

Confusion between information sources and information channels may be regarded merely as E2mAt replay of old arguments about form versus context. Thus, `information resources' are defined a having "two components: conduit, i.e., the physical facilities used for gathering, storing, proc0§n and distributing information; and content, i.e., information sources and elements".

The fusion of conduit and content aspects in the concept of information is well expressed in the statement "information reflects the synergic combination of medium and message".

But, there is distinction between information sources and information resources. Sources become resources when their relevance for the user has been recognised or optimised in some way and a suitable conduit has been engineered. It has been stated that information resources are information sources that have been iristitutionalised in some way arid can `thus' be reused. In other words, the idea of organisation for reuse essentially what distinguishes between the information source and the information resource. The source is in a sense the raw material and the resource the product least partially processed. As a simple example, a book on global warming in a bookshop is a source of information. Theme same book on library shelves and with entries in the library catalogue may become a resource. According to L v an "an information resource is an integrating mechanism. It stands at the mid point in the life cycle of information production and brings together, on a continuous basis, information sources with information users. The users may be end users or repackagers. To carry out its function, an information resource must coordinate agents and activities which

i) develop mechanisms of access to information sources;

ii) provide continuous access to the resource;

iii) manage and maintain the resources;

iv) repackage and distribute its products and services".

These-functions are carried out by any reasonably efficient library. The emphasis the definition is on the provision of information as a major function of the information service department and its staff. In this context, the term ‘major' connotes both the proportion m and available time spent in the repackaging of information for use according to particular needs of clients. It must be noted that an organisation or department of an organisation that is designated as an information service centre is often focused the provision access to some defined subset of available information or to a defined subset 3 of the population ˛.information users.

The difference between information resources and information services emerges as one of degree rather than of kind. Those information resources in which provision of information services is the primary function will be distinguished mainly by the quality of their interfaces with their users, in terms of variety, appropriateness and interactivity offered.

If a distinction has to be made between information resources and information services, it may be by the addition of a strong marketing emphasis to the four functions of an information resource mentioned earlier in Levitans definition of an information resource. In addition to providing mechanisms for continuous access to the information resource, managing and maintaining it, and distributing products and services, a stronger marketing emphasis would involve paying more attention to the definition of user needs in order for the products and services to be appropriately designed and modified.

In the provision of library and information services there has been, for at least twenty years, a strong interest in the study of user needs. It marks part of the changes in attitude of librarians from focusing on collections to focusing on users and marketing the services to them. There is enough professional literature on the theory, methods, and outcomes of user studies in the information field. A number of techniques have been developed for the study of information needs.

Self Check Exercise

3) Distinguish between Information Sources and information Resources.

Note: i) Write your answer in the space given below
ii) Check your answer with the answers given at the end of this Unit.

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2.3 DIFFERENT TYPES OF INFORMATION SERVICES

Modem libraries and information centres provide a variety of documentation and information services to support research and development, industrial productivity, management, marketing and trade activities and all other programmes of development of government and non-governmental institutions.

There has been a tremendous increase in the volume and variety of such services and products. As has been stated earlier, the information services provided may be categorised into anticipatory and responsive services. Since there are separate Units which would be describing and discussing Reference Services, Current Awareness Services, Literature Search and Database Services, this Unit will provide only a brief account of some of these services emphasising some generic aspects as an overview.

2.3.1 Reference Services

Reference services help the user define and identify his [query] correctly, bearing in mind how he intends to use the information, since this can affect the choice of source. The reference personnel then inform him what catalogues, directories, files, secondary publications or databases to consult to seek out the relevant information for himself, explaining, if necessary, how the user should go about his search (direct search). Alternatively, they themselves do the search for the user, if desired so by him i.e. the user (delegated research).

For both these types of searches, reference tools or aids readily available in the library or information unit, may be used. These aids include card files of the library or collections of secondary documents (indexes,, abstracting periodicals, etc.). Often a search may require Use of external information sources some of which cannot be accessed at once An example of

such sources is computerised databases which are not accessible online. In such a situation the query is recorded on a prescribed form for conducting searches subsequently and providing the required information.

2.3.2 Referral Services

Referral services are to be distinguished from reference service, discussed earlier. Referral services do not provide the user with the documents or information actually' needed for his query but refer him to the sources such as secondary publications, information units, professional organisations, research institutes and individual specialists, etc. and tell him where to find them. They utilise directories and files on sources, if necessary, specially created for the purpose. Referral services can function on their own or in cooperation with other services. It is very difficult to measure the effectiveness of such services unless they keep themselves in close touch with their sources and users. Such a task is easier only when referral services offered for the clientele is in a small geographical area.

2.3.3 Current Awareness Services

Current awareness services are designed to keep the user abreast of information in thier area of work or interest that has recently been published and received or identified by the libraries or information units, particularly in specialised subject fields. To accomplish this purpose, information products at various intervals of time *are* issued. Such services anticipate specific needs of users and draw their attention to new developments and, thus enable them to follow what is happening in their subject fields. These in updating the technical, scientific and managerial know-how of their clientele.

Selective Dissemination of Information (SDI)

Selective dissemination of information is a method of supplying each user or a group of users with the references of documents or abstracts relating to their predefined areas of interest, selected from documents published recently/received during the period in question. This service saves the user the effort of having to scan through a number of publications, which can be very time-consuming, and to choose the documents of interest to him. Although SDI can be highly convenient from the user point of view, it may not prove useful unless the user and document profiles are carefully constructed and their matching is exact. Thus, the effectiveness of SDI service depends on the quality of user profiles and relevance of the publications matched with them.

The `user profile' comprises of a set of `Key Words' organised as rigorously as the ‘system' permits, which describe the subjects of interest of the user. These key words are compared with the key words appearing in the descriptions of documents and a document is selected when the two coincide. The corresponding references or abstracts are then sent to the user, usually accompanied by a feedback form on which the user can indicate whether the document really interests him, whether he needs a copy or why it is of no interest to him. On the basis of feedback, user's profile is updated. The feedback, thus collected, forms one of the important components of the SDI service.

It must be noted that the task of designing or constructing a `profile' is a complex operation calling for skilled information specialists and the cooperation of users. It is generally worked out in several stages and the result has to be regularly checked and updated. If the number of users is limited, SDI service can be based on manual operations, but the rapid expansion of this service is due to the proliferation of machine-readable data bases. SDI services can be aimed at a single user (individual profile) or at a group of users with the similar interests (group profile). The group profile is obviously less expensive for individuals, than individual profiles. It may be stated that SDI service is one of the best current awareness services available at present.

It may not be out of place to mention here the retrospective search services. The purpose of these services is to provide users with the references of documents relating to a specific query, in most of the cases a single one. Unlike current awareness services, these services do not aid the user to keep abreast of developments in any specific subject field, but enable him to find solution to a particular problem. The problem may vary greatly from answering a simple practical question to compiling a list of references to the previous research on a subject.

2.3.4 Literature Search Services

Literature search service is considered as an extension of reference service. An important aspect of literature search service is ascertaining the purpose of search. In assessing this aspect one has to understand the scope, depth and precise field of inquiry. This may necessitate a dialogue between the user and the information specialist, A quick assessment of the nature and extent of enquiry will indicate whether the search to be carried out is for a specific information (mainly requirei oy a technical worker) or for a few select references (normally adequate for an administrator or policy maker) or for a comprehensive bibliographic information which is usually the requirement of a research worker. Once the parameters of a query are understood and analysed, a suitable search strategy can be formulated for searching different information sources. Much of the expertise in literature searching depends on identification and choosing the most appropriate sources to be searched and the order of searching them. Expertise in literature search can be developed only by experience. Knowledge of the subject field of search would be an asset in providing literature search service. On-line databases and CD-ROMs are increasingly being used for providing literature searches.

2.3.5 Document Delivery Services

Information searches conducted by library or information specialists from databases usually are from bibliographic much less on full-text databases. Since the biblio-graphic databases provide only bibliographic references and abstracts, the users often request for copies of full-texts of certain references that are of interest to them. Supplying the full texts against such requests is called document delivery service. The full texts can be sent to the users as photocopies, microforms or through electronic transfer through online networks. While the photocopies and microforms are sent by post, electronic transfer can be made by fax, electronic mail, or Internet or any other available network. Normally, the copies are not supplied by fax or electronic mail, etc., due to various reasons.

Document delivery service is a restrictive service and is usually constrained by the provisions of copyright and intellectual property rights.

Self Check Exercises

4) List different types of information services indicating against each whether it is `on demand' or `anticipatory'.

5) What is document delivery service?

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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2.4 VALUE-ADDED INFORMATION SERVICES

'**Value-added'** is a term now widely and increasingly used in the context of information systems and services. It is however a highly nebulous term with several different connotations. Nevertheless, the processes, functions, attributes and components of information services which are denoted as `value-added', are highly important for making the ' services highly useful to the users.

In this section, an attempt is made to discuss in detail, the attributes and functions of information services which could be considered adding value.

It may be mentioned that the `value-added' terminology has been in use to describe information service operations, since 1980. It appears that the term has been borrowed from accountancy. Cronin and Gudim (1986) made an interesting comment on the specific nature of value added processes within information services: "...there is no inherent value in a quantum of information, but that information has potential worth. Value-added processes are those which can signal the potential or can relate the potential to the needs of a specific environment."

In general, most descriptions of `value-added' information services do roughly follow this approach in trying to relate value-added directly to user need. Generally, there seems to be an acceptance that value-added services are those which are somewhat different from the run-of-the-mill routine offerings; and that there is something special about them.

For example, Taylor (1986) considers the whole of a library's activities in the value addition context, and concludes that its principal value adding activity is providing physical access, and this is the most important activity in any library.

There are a number of advantages in the value addition of information services. Taylor suggests three of them:

- Making choice easier, by labelling information and reducing noise;
- Classifying a situation by providing a new structure to information;
- Increasing the possibilities of better decisions by providing better quality, better formatted, and more precise information, adapted to the problem or situation.

Bawden (1990) taking value addition attributes to be those which enable an information service to offer something more common facility to store and retrieve information, give six main categories of value addition processes:

- information enrichment, by analysis, indexing, etc.;
- selection and evaluation of information;
- customisation or tailoring for a particular group of users;
- integration with other sources;
- improved presentation of information;
- provision of better searching facilities.

Based on the most commonly expressed views in the literature, value addition aspects of information services could be organised into the following groups.

- selection and packaging;
- subject analysis;
- information analysis;
- the user interface;
- context setting;
- information for innovation; and
- information rich environment.

2.4.1 Selection and Packaging

Added value is often claimed for information services on the grounds that they bring together, in a convenient form, items of information which would otherwise be impossible to find in one place, and, therefore, difficult to access.

The value addition stems from the convenience, thus, offered to the user. If some attempt is made by the information provider to collate, relate or link information from different

sources, then greater value addition is likely to be claimed. The expression 'value-added' is likely to be used especially when the information put together is of different kinds, for example, bibliographic and numeric/factual or formal and informal, or information coming from different sources such as, internal and external. This process of integration is known as repackaging. The integration and repackaging concept can be applied to numeric data sources also as much as to the text.

The advent of CD-ROM as a delivery medium for different types of information products and services has given a boost to the concept of added value as it can deliver repackaged information of different forms combined together. Datex Business Inform Service is cited as an example of such service. Datex allows the merging of bibliographic, textual and numeric information from a number of sources, with facilities for data manipulation and presentation.

2.4.2 Subject Analysis

Subject analysis is one of the longest established forms of added value in information services. It extends to the intellectual processes of indexing, classifying, cataloguing, abstracting, etc., which form much of the traditional activities of an information professional. The added value is claimed on the basis that intellectual input of the analysis makes the information much more easily accessible and the information store more comprehensible. Value would be added in terms of reduction in complexity of the access points.

It must be emphasised that this sort of added value to information service costs money, and users may well not be willing to pay the premium for higher quality information.

2.4.3 Information Analysis

Information analysis is done for improving the authenticity and usability of information. This is done by specialists in the concerned subject areas keeping in view the requirements of the potential users of the information. The generally accepted process of information analysis includes such activities as:

- Selection
- Evaluation
- Validation
- Standardisation
- Summarisation
- Synthesis

Generally, all these operations require considerable subject expertise on the part of the analyst. The outcome is that the analysed data are more reliable and, therefore, more usable.

The information analysis process also opens the way to new knowledge, through the synthesis of information, and to an appreciation of gaps in knowledge. Such analysis has been the preserve of Information Analysis Centres (IACs) and Data Analysis Centres. One of the best examples of such centres is Cambridge Crystallographic Data Centre.

It is worth noting at this point that the information analysis process, demanding as it is of human expertise, is inevitably expensive. Many of the information analysis centres face economic pressures and the services are expensive and so do not attract many users.

2.4.4 The User Interface

User interfaces are mechanisms built into information systems and services to enable the users to utilise these services in an effective manner. The interface is an obvious factor in bibliographic on-line searching systems, and Value Added On-line Systems (VAOLS). Value may be said to be added in any of the areas of input, retrieval, manipulation and output, that is, at any point which affects the user. Usually, added value is claimed on the basis of either ease of retrieval, or facilities provided for dealing with the information retrieval: processing, analysis and other forms of manipulation and presentation.

In on-line databanks of numeric or factual information, value added features may also refer to the interface, in terms of simple menu-driven options and convenient gateways to other services and sources.

2.4.5 Information for Innovation

Innovation is based on new ideas, and new combination *of* old ideas, the utility of which is tested with applications using different kinds of information. Empirical evidence reveals that it is the quality of the information activities and of the information possessed by an organisation which makes its innovations commercially successful and give it the competitive edge. Thus, information plays a large role in the process of innovation.

Information systems and services may add value in their operations to enable their users to generate genuinely new ideas. This may be done in a variety of ways, some of which are:

- Providing an information rich environment
- Including peripheral and speculative material in their information service
- Providing inter-disciplinary information
- Indicating gaps in the knowledge
- Providing browsing facilities in the information services, etc.

6.4.6 Context Setting

`Context setting' implies that the significance and inter-relatedness of individual data items be made explicit, and piece of information in the entire scheme of things is known. It is an important part of the transformation of mere data into usable information.

This naturally means something beyond simple packaging and standardisation. The information must be expressed in the form which is most appropriate for the individual user, so that its significance can be clearly appreciated. Context setting, by its *very* nature, implies a particular context and a particular user need.

The context setting aspect is most important for inter-disciplinary areas, where selection and presentation of material is also *of* great importance. *Oceanographic Literature Review* might be cited as an example of this type of information service.

From this brief description of `value-added' information services, it may be stated that value-added procedures provide high-quality form of information and value-added systems and services are generally most useful to users. Therefore, an increase in the availability of such services is to be welcomed. But, it must be stated that value-added options are expensive to provide and might lead to the emergence of high-cost information services which could be availed only by those who can afford the cost. This may lead to complex problems and deprive a large category of users from availing the benefits of such services.

Self Check Exercise

6) What is a value-added information service

7) State the steps involved in the process of information analysis.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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2.5 IMPACT OF NEW TECHNOLOGIES ON INFORMATION SERVICES

The influence of Information Technology on the provision of information services and on modern society generally is both pervasive and profound. Digitization of symbols and signals underlies all applications of Information Technology and the same enlarges the possibilities for new applications. This section examines the effects of digitization of text and telecommunications in the design and distribution of information products and services.

2.5.1 Telecommunication Technologies

Telecommunication today involves microprocessors, digitization of information (audio, video and text) and its transmission across communication networks. It also involves communications within a single office, between offices, branches, within or among single towns, regions, countries continents or even encompassing the entire globe. It involves linking the mainframe computers of all sizes and capacities via telephone cables, microwaves satellites to terminals anywhere in the world. Let us discuss as to how information is transmitted. The information may be in the form of sound (human voice) or it may be visual (printed page, microfilm, video picture) or it may be digital data. Whatever be the form, it must be converted into electrical signals (electromagnetic waves) before it can be transmitted over a given medium. The amount of information that can be sent over a given channel, in a given time, is dependent on the bandwidth of the channel. The bandwidth is dependent on the carrier frequency. Different channels possess different frequencies. Some of the channels are: twisted pair cables, coaxial cables, optical fibre cables and microwave and satellites channels. All these are also referred to as transmission media. The decision as to which medium to use is determined by such factors as distance involved, the areas to be covered and the type of information to be transmitted.

The new technologies in telecommunications have led to new developments in equipment and facilities for creating, accessing, storing and receiving information as well as distributing it. Let us briefly discuss some of the information services which make use of recent developments in communications.

2.5.2 Information Services

Some of the significant information services which have been evolved as a result of developments in communications are: electronic delivery of documents, online searching of databases, online ordering, electronic directory, teleconferencing, electronic mail, electronic messaging, community information (on TV), news/business information and recreational information.

We can categorise the information services provided by utilising telecommunications technology into three groups: library type information services, domestic type information services and business information services.

The domestic type information services which provide quick and convenient information for home use, include videotex, teletext and the electronic directory. These services can also be used by the business community. In addition, a number of other specialised services, such as electronic mail and facsimile have also been developed with the business community in view. Some of these services are being adopted for domestic use also.

Almost all these services can also be used by libraries for providing information services, but not many are presently doing so in the developing countries. In India, while use of communication technologies is fast picking up. The situation is better in the libraries and information centres attached to research institutions and institutions of higher learning (like the Indian Institute of Technology, Indian Institute of Science, Bangalore, University of Roorkee and some universities supported by the Information and Library Network of the UGC). However, more and more libraries are likely to use the communication networks for providing information services in the coming years. Such enhanced use of technologies will be due to *the* increased demand from the users for network-based information services which will occur, as the public will have more and more easy access to the communication services.

Self Check Exercise

8) What is the impact of recent developments in the communication technologies on information services? Explain in four to five sentences.

Note: i) Write your answer in the space given below

ii) Check your answer with the answers given at the end of this Unit.

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2.6 VALUE OF INFORMATION SERVICES

At the outset, it must be emphasised that there is no consensus of opinion among information scientists and professionals regarding the "concept of value of information". Neither is there any agreement on the extent to which information has a quantitative value. Also, it is necessary that we distinguish carefully between value and cost. It may be possible to determine the cost incurred in operating an information service, that is to say, its purchase price, staff time, hardware and software costs, etc., but this does not reflect the true value to the users. A great deal of effort has been made in on attempt to produce some realistic way of assessing the value of information services. The fact remains that information cannot, in general, be evaluated in the same way as other resources. Therefore, the value of information, unlike that of more tangible resources, is simply not quantifiable. It must be mentioned that information has no intrinsic value. Its value depends upon its context and its use by particular users on particular occasion, and the,value of information to its users is not possible to determine in advance. We should remember in particular that it is usually only meaningful to speak of a piece of information having value to a specific user in a *specific* context.

Estimates of value differ according to the time, place, and personality of the person (or culture of the group) making the estimate as well as the intrinsic properties of the phenomenon being judged. It must be stated that all judgements of value must be based on the subjective deliberations of a person or group., The degree to which judgements may be, considered objective is bound with measurement and units of measurement.

It may be emphasised that at the working level, the purpose of an information service has to be consonant with the objectives of the organisation for which it is designed. At the broader level, the discussion of value may serve to point out the necessity of inquiring into what value an organisation wishes to derive from its information services. Thus, the guidelines set out for evaluation of information services will be based on a particular purpose or the general purpose of providing information support for the organisation for effectively meeting its objectives. It is, therefore, essential to develop performance indicators for information services, keeping in view both the user and the management. it must be rioted that in the evaluation of different types of information services, the interaction which takes place as part of the process is as important as the product or report at the end of that process. • Ongoing evaluation, aimed at improvement in the service, and necessary changes to policies and resource allocation, is central to good management.

Underlying the foregoing discussion is the understanding *that* information is a trinity consisting of content, conduit, and context. Although this notion is abstract, it is useful in avoiding the practical dangers associated with information overload. If the information services are to be related to use and users, then overall timeliness, currency, ease of use and accuracy of information services and products are considered most important. These factors would certainly be considered valuable in judging their relevance to users.

2.7 SUMMARY

In this Unit, an attempt has been made to provide a brief overview of information services. Before briefly describing different types of information services, terms like Information Sources, Resources and Services have been discussed and differentiated, The distinction between each of them has been clearly indicated. It has been emphasised that information sources become resources only when their relevance for the user has been recognised or optimised in some way and a suitable conduit has been engineered. It has been stated that the idea of organisation for use is essentially what distinguishes an information source from an information resource. An information resource is an integrating mechanism and brings together on a continuous basis, information sources with information users: Since there are separate units, which exclusively describe different services, only general aspects of these services have been discussed briefly in this overview.

An added feature of this Unit, is the description and explanation it furnishes relating to `Value-added information services'. Some of the services which can be considered as value-added services, have been explained with examples.

2.8 ANSWER TO SELF CHECK EXERCISES

1) The everyday approach to information is when a user is looking for specific answer to his problem and the library provides it either from its own resources or getting it from external sources. Exhaustive approach is one when one wants to know all the information published on a specific subject area or topic. This is generally done for starting research on a topic. On the other hand, the current approach to information is one when a user wants to be kept himself abreast of current information published in his area regular basis.

2)

Topic of Information Dissemination Service		**Example**
Information dissemination service on demand	-	Reference service
Anticipatory information dissemination service	-	Current awareness service

3) Information source is the stores or location where .information is kept. Examples are encyclopaedia, database, a library, etc

   Information resource is information sources that have been institutionalised (or organised into a set-up like library) in some way and can be reused again and again.

4) The different types of information services are:

Reference services	-	On demand services
Referral services	-	On demand services
Current Awareness services	-	Anticipatory services
Literature search services	-	On demand services generally but at times can be anticipatory
Document delivery services	-	On demand services

5) When a user is provided with a bibliographic information service, generally with references to documents with or without abstracts, the user may request for full texts of documents which he would like to study. Supplying copies of such original documents is called document delivery service.

6) When the information is analysed and presented by the information specialists in such a way as to help the user to directly use the information, it becomes value-added information service. In this process the information is selected, evaluated, analysed, integrated, repackaged and customised (tailor-made) to the user's requirement. Thus value-added information is enriched and better presented to meet the user's requirement.

7) The steps involved in the information analysis process are selection, evaluation, validation standardisation, summarisation and synthesis.

8) The recent developments in telecommunication technologies have led to the extensive use of databases, online and to publication of online journals that are made available through the online networks. In addition, information dissemination services --both on demand and anticipatory services ----are also extensively done over the telecommunication networks, Remote access to library collections, i.e., telereading is becoming more and more common.

2.9 KEY WORDS

Added Value: The services or products that are provided in a collated, refined and convenient form to make them readily usable by the users. The added value stems from the convenience, thus, offered to the user.

Bandwidth: The difference between the lowest and highest frequencies transmitted through a communication channel. Bandwidth is usually referred to by the range they cover. For example, cellular phones are on the 1000-900 megahertz and so their bandwidth is 100 megahertz.

Channel: The medium on which information is stored e.g., a book is a written channel. The term Channel is not reserved for the communication channel as in the telecommunications sense.

Conduit: The physical facilities used for gathering, storing, processing and distributing information.

Content : The information sources and elements.

Electronic Documeut Delivery: The transfer of information from publisher or library to user by electronic means such as videotex, E-mail, online network, or on CD-ROM.

Information Resources: Information resources are those sources that are institutionalised so that they can be re-used. An information resource is an integrating mechanism and brings together information sources with information users.

Online Searching: Searching (of databases) in an interactive mode.

Referral Service: A service which directs enquirers to an appropriate source for the information or data required.

Transmission Medium: The physical link (line) between a transmitting station and a receiving station through which transmission of data or information is done.

Value-added Information Services: Those information services which are somewhat different from the run-of-the-mill routine offerings. Value-added processes are those which can signal the information potential or relate the potential to the needs of a specific environment or user.

(The) User Interface : A mechanism built into information systems and services to enable the users utilise the services in an easy and effective manner. These interfaces make the services more user friendly.

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