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# UNIT 2 INFORMATION SERVICES: AN OVERVIEW

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## 2.0 OBJECTIVES

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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.

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## 2.1 INTRODUCTION:

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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 that 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.





## 2.2 DEFINITIONS AND CONCEPTS

To have a good comprehension of information services, it is necessary to understand certain 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 source of 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 possible. In the second connotation, information sources are virtually indistinguishable form of information channels because the latter may be written such as a book, or words in some other printed or processed format, or verbal sounds, such 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, 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 a replay of old arguments about form versus context. Thus, 'information resources' are defined as having "two components: conduit, i.e., the physical facilities used for gathering, storing, processing 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 institutionalised in some way and 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. The 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 in 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 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 on the provision of access to some defined subset of available information or to a defined subset of the population of 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

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Modern 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 <sup>query</sup> 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 their 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.





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.







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## 2.5 IMPACT OF NEW TECHNOLOGIES ON INFORMATION SERVICES

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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**

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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 an 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 noted 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.



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## 2.7 SUMMARY

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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.

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## 2.8 ANSWER TO SELF CHECK EXERCISES

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- 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) 

<b>Topic of Information Dissemination Service</b>	<b>Example</b>
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.

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## 2.9 KEY WORDS

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<b>Added Value:</b>	The services or products that are provided in a col- lated, refined and convenient form to make them readily usable by the users. The added value stems from the convenience, thus, offered to the user.
<b>Bandwidth:</b>	The difference between the lowest and highest fre- quencies 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.
<b>Channel:</b>	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.
<b>Conduit:</b>	The physical facilities used for gathering, storing, processing and distributing information.
<b>Content :</b>	The information sources and elements.
<b>Electronic Document Delivery:</b>	The transfer of information from publisher or library to user by electronic means such as videotex, E-mail, online network, or on CD- ROM.
<b>Information Resources:</b>	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.
<b>Online Searching:</b>	Searching (of databases) in an interactive mode.
<b>Referral Service:</b>	A service which directs enquirers to an appropriate source for the information or data required.
<b>Transmission Medium:</b>	The physical link (line) between a transmitting station and a receiving station through which transmission of data or information is done.
<b>Value-added Information Services:</b>	Those information services which are somewhat dif- ferent 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.
<b>(The) User Interface :</b>	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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## 2.10 REFERENCES AND FURTHER READING

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