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USERS OF INDUSTRIAL INFORMATION AND THEIR NEEDS*

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* The views expressed in this document are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. Mention of firm names and commercial products does not imply the endorsement of UNIDO.

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Definition of Industrial Information

Industrial information can be regarded as all information which can be useful in the process of industrial development. Industrial information is the information needed by industry and information on these industries, in other words, information for and on industry. The final user of industrial information is the enterprise itself, but an enterprise is influenced by national policies developed by the Ministry of Industry or its equivalent, the Ministry of Planning, Ministry of Commerce, or other government bodies and these, of course, could also be users of industrial information.

Industrial information is far more than scientific and technical information. It also includes all information which could influence the activities and development of industrial enterprises.

At the enterprise level, information is needed on the market: the clients and potential clients, the competitors, prices, etc. It also requires information on know-how, the methods of improving the operating conditions, improving the quality of the products, reducing production cost, etc. The objective of an industrial enterprise is, in fact, to make a profit and information is required to help achieve this goal. It is a very specific objective as compared to other institutions.

There is also a need for improving the general knowledge of the staff, a need to know what is going on in the field of activity, to know about the new processes in order to plan for future developments, in fact to know the surrounding.

Scientific and technical information represents a small percentage of the information required by enterprises and, therefore, the scope of industrial information is very wide.

We cannot really define industrial information. In practice, it can be better defined from the users' point of view.

Users' Needs

Information and documentation centres and services were established with specific objectives. Specialized documentation centres were created with the purpose of serving groups of users with specific needs for information in given fields of activity. The criteria for including or rejecting documents for particular databases are based on the subject field as well as on the content of the documents with regards to users' interests. It is therefore of the greatest importance to determine who are target users and to identify their common and particular needs.

In industrial information, we can distinguish between two main groups of users: the industrial enterprises and the institutions and governmental bodies concerned with industrial development. Their specific needs differ.

At the enterprise level in general, the needs are more or less limited to the field of activity of the enterprise. There is an information need for information generated by the enterprise itself. This is the case, for instance, with the determination of the production cost which is based entirely on information available at the plant level - consumption of raw material, salaries, utilities, etc.

There is a need for information coming from outside sources of information. This type of information can be required on an ad hoc basis when there is a specific problem to solve. A typical case is when a problem occurs during production. It involves the diagnosis of the problem and a search for a solution. The information could possibly be obtained from a colleague in the same organization but could also involve the assistance of a national institution: for instance, in the testing of products, identification of the problem, etc. These specific problems have to be solved quickly and an enterprise normally relies heavily on its staff to find at least a temporary solution to ensure continuous production.

On a short and medium-term basis, an enterprise is, or should be looking for information to improve production and reduce the cost. One need, for instance, is to assure the supply of raw material at the lowest possible cost. Who are the alternate raw material suppliers? Would a slightly different raw material be adequate? Can maintenance costs be reduced? This type of information is necessary to maintain the market of the enterprise in a competitive world. It is not a day-to-day requirement but it is necessary.

An enterprise has to be informed on what's going on in its environment. A new competitor has an influence on decisions to be taken for the future. The market trends are, in this case, of the greatest importance. The introduction of a new standard for the products it manufactures could probably also involve a modification of the manufacturing process in order to meet this standard.

Indeed, when a plant is in operation, there is little need or demand for scientific information. There is a need for all kinds of information described as "industrial information" but the frequency of this need is really at random.

However, plant staff have a need for continuous training. They must or should read papers, journals and other information material in order to improve their general knowledge of technical aspects, new developments, the market situation concerning the field of activity and interest. This type of information is not of immediate use and this knowledge is normally applied only when problems are faced. In a technical journal, publicity for new products, machinery and service is as important to plant staff as are technical papers themselves.

This was at the manufacturing level and now let's try to examine the needs of an entrepreneur wishing to start a manufacturing plant or of an enterprise looking at expansion or introducing new products. He must first study the market carefully, look at the available technologies, the manpower availability with regard to the technologies, raw material supplies, availability of utilities and cost, distribution channels, existing laws and regulations, contract information, government subsidy and incentive measures, financing, etc. The choice of a technology itself would be impossible without information regarding the environment of the production facilities. Most of the information required is not of a scientific nature.

In a ministry of industry or its equivalent, or a ministry of planning, the needs will be different. It covers all industrial sectors by opposition to an enterprise. The need is much broader and the information requirement is usually of a more general nature. A basic need in this case is information on industrial development of the country: the number of enterprises, their geographical distribution, the number of employees, the actual production, installed plant capacity, the products, the market, etc. This type of information is required for planning and establishing government policy. There is also need for incentive programs in other countries to develop strategies which are attractive to foreign investors.

Financial institutions, such as a development banks, require information to assess the viability of investment projects submitted. The information requirement covers market, technology, technology transfer contract data, etc.

An industrial research institute will, however, need information which is far more scientific and technical. It is, however, not limited to it. There also is a need for information on national priorities, the potential users of the research results, natural resources, and others to ensure that research results are being used.

There are other users of what we define as industrial information but the most important ones are the industrial enterprises and entrepreneurs, government ministries or institutions involved with industrial development and industrial research institutions.

Let's illustrate what is industrial information by a case study. For example, a developing country having plans to produce peanut oil, will first need to identify some of the data required to study this project.

- Market

- Import - export, and industrial production of vegetable oil for the last few years
- Projected demand for vegetable oil
- Market information breakdown for peanut oil
- Producing companies - the plant capacity - utilized capacity, importers, exporters
- Distribution channels
- Small-scale production (including artisanal production and home production data)
- Import prices, duty, etc.
- Expected potential market with relation to selling price, consumer acceptance
- Etc.

- Availability of raw materials

- Actual production of peanuts
- The geographical distribution of cultivated areas
- Length of the crop season
- Method of storage and variation in oil content during storage
- Production cost, farmers' selling price, etc.
- Agricultural planning for peanut production
- Method of transport to main market, actual sale methods
- Government incentives to farmers
- Etc.

- Manufacturing Technology

- Description of the various processes, with their advantages and disadvantages.
- What is the smallest viable plant using a solvent extraction process?

- Which percentage of oil remain in the residual cake with the process?
- What are the utility requirements, the temperature of water, the purity of water?
- What will be the use of the residual cake? For animal feed? At what price? Could bakery products such as cookies be made with the cake?
- Considering the source of raw materials and the main market, should the plant be built near the capital or in a rural area?
- Would it be better to set up two or three small plants in different locations or one large one?
- Is it possible to make other edible or non-edible vegetable oils with the same equipment during the off-season?
- Waste treatment.
- Etc.
- Technology acquisition
 - Type of contract - Does it involve a patent?
 - Provision for spare parts - maintenance
 - Manpower training requirements - assistance in training
 - Guarantees on the equipment
 - References to installed plant by the company
 - Standards
 - Etc.
- Plant site
 - Availability and cost of water, electricity, gas, etc.
 - Manpower availability near the site
 - Transport facilities for employees and raw material
 -

There are many more aspects to be looked at in studying the project and each one calls for the more information gathering. It, however, gives an idea of the broad range of information requirements.

We must make a difference here between users' needs and the demands for information. I gave a partial list here of the needs for information in the particular case of the feasibility study for the establishment of a peanut oil factory. This is a need for information or, in other words, information on the items listed should be obtained in order to take the best investment decision. Improper information could lead to the wrong choice of technology or selection of plant site, oversized plant capacity, etc. The need for information exists even if it is not requested.

When evaluating an information and documentation service, the definition of needs and demands are often confused. The evaluation is normally based on demand, and the conclusion is generally that a service meets the needs of the potential users. In fact, only the demand was analyzed. The real need for information was not determined. We feel a need when there is a demand but the need is not necessarily determined.

The exact determination of the potential user's needs has to be carried out for each particular case. To know that there is a need is easy but to say how much and what is needed requires a careful study.

Engineering Information

The Committee on Engineering Information of the World Federation of Engineering Organization (WFEO) recently prepared a study on a "Methodological Approach for Identifying the Information Needs of the Engineer" for publication by UNESCO. Another study of interest is "Information Needs of Engineers in Singapore - An Explanatory Paper" by Sabaratnan Selvarani, January 1983 (Master's Dissertation of a Master of Library Studies degree of the Loughborough University of Technology).

In both mentioned studies, the needs of engineers are studied as a function of their particular need as compared to other professions, their field of activities, the information-gathering behaviour, and others. It shows the importance of determining the individual needs of the potential users. There could be several different users in an enterprise with completely different needs. The needs of a plant engineer or maintenance engineer will be more technical in nature than the needs of a sales manager.

Studies are being carried out on the needs of engineers because they represent a high percentage of the professional staff involved in industrial development. Engineers are found in enterprises at the production and management level, in sales, in research and development, and at various levels of government departments. We can introduce a new term "Engineering Information" which is information that meets the specific needs of engineers.

Sources of Information

We have seen, with the example of peanut oil, that the information need is broad, and we can guess that this information would be available from several various sources both in and outside a country.

We cannot expect to find a computerized database in which all this information would have been recorded or a library, even the largest, where documents corresponding to all this need would be stored. Even in a specialized information centre, we would not expect to find data on manpower availability or the temperature of water at plant sites. However, one would expect to find information on various technologies, market trends, and other related information.

The identification of the proper sources of information is not easy and requires an excellent knowledge of those sources of information, and on what they can really provide in what timeframe.

Furthermore, a major problem of an information user is to identify its own need. We could expect that an economist studying the peanut oil project would not know, at the beginning, which information he should look for. He would probably begin his project with the collection of market information, such as consumption statistics and with information on the technology involved.

It is only after the consultation of the first information material that he would identify his future needs for information. He would probably have more problems identifying technical information than market information. On the other hand, an engineer handling the same project would find technical information more easily than market information. This is because they have a different training and also different contacts.

Personal contact is the most frequently used source of information. An engineer, for instance, would ask his colleague, a friend, the members of his association or those he is normally dealing with. He might get the information he is looking for or be referred to a source of information. An economist in a ministry of industry would also have his own contacts.

The second most commonly used source of information is the "personal information collection." Most professional staff at the enterprise or government level receive a number of periodicals, newsletters, catalogs, which are consulted and kept for future reference in case of need.

In an enterprise, a good deal of information is obtained from suppliers of raw material and equipment, salesmen and other sources which are close to the enterprise.

It is of greatest importance to know that users of information begin to look for it at the closest place and from sources familiar to him and where he expects to find the desired information. He must have confidence in the source of information and, should he not obtain what he wants several times, this source of information would be ignored. This factor must be taken into consideration when setting up information services.

Since personal contacts are frequently used, it implies that the "correspondent" has a knowledge of the subject, talks the same language. In the same order, the answer should also be understandable.

Information centres, documentation centres, national libraries and regional or international organizations are rarely used directly by staff in industry. There are several reasons for this:

- Engineers and other professional staff in small- and medium-scale enterprises are not familiar with information, particularly documentation. They do not receive any training in this field.
- The staff of information and documentation centres are mostly trained as librarians and documentalists with little or no industrial background which renders communication difficult on technical matters.
- Answers provided to specific information requests are generally rendered in the form of a bibliography. This implies the selection of relevant documents, the order of documents which can be received over a period of time could be long. It often involves a payment which is more often a burden rather than a concern about the cost of the document.
- When an information need is identified, an answer is wanted immediately. The user won't wait for the reply of the documentation centre. He will look elsewhere to obtain at least a minimum amount of information. Time is an important factor and a need which is felt one day, could be forgotten the next day.

On the other hand, if the enterprise has a small library, it is frequently used. The library is close to them, it responds to the needs of the enterprise and the librarian or documentalist become familiar with the technical subjects and this facilitates communication. It becomes a personal contact. The staff get to know the library holding and make better use of it, often without assistance from the documentalist.

Enterprises are in frequent contact with government ministries. This contact can be initiated by the government in order to collect data on the performance of the plant. Ministries are sources of information but are more than often not well organized. The main problem is that the ministries do not have a documentation centre where the various studies could be collected. These are often kept with the departmental officers and it is often difficult to identify the proper responsible person in a Ministry.

The bureau of statistics is mostly known by its publications. The basic problem in this case is that production statistics and trade statistics are compiled in broad categories and should specific data be necessary, one has to compile it from the questionnaires or declaration sheets in the case of trade. Statistical information can be confidential if the number of producers or importers is small. It is often possible to obtain unpublished, unofficial, statistical data from officers of the bureau.

The patent office is rarely used as a source of information. The patent document is known as a legal document but not for its technological information content. They are not known at the enterprise level, and this situation is the same in developed countries. It is an indispensable tool in research and development and an excellent source of information to identify possible sources of technology from the name of the assignees. Patent documents often contain information which is not published elsewhere.

Only a few contacts are made outside the country by industrial enterprises and those are normally limited to contacts with suppliers of equipment and raw materials. Contacts with international organizations such as those in the UN systems are done by government departments, normally at the planning level and have little to do with information. Documents published by organizations such as UNIDO, FAO, the World Bank and others are mailed to various government bodies and to a certain extent, to documentation centres.

All UNIDO documents, for instance, are sent to ministries of foreign affairs of most countries. These documents relate, in part, to forthcoming meetings and news but many of them are documents containing industrial information. Unfortunately, those are not disseminated to the relevant persons.

Only a small number of documentation centres receive a small portion of the UNIDO collection. There is no systematic general distribution of all UNIDO documents to documentation centres and a systematic distribution is done only for some publications. Unfortunately, this resource is not used to its full extent. The same situation occurs with the International Trade Centre documents, those of the World Bank and from other UN organizations.

Documentalists in developing countries all know the above-mentioned UN organizations, at least by name, but only a few actually know how to obtain information and which information services are available.

There are many more information sources but the above illustrate the variety of sources of information.