INDUSTRIAL INFORMATION IN INDIA

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This century, specially the post World War II period, has seen a revolution in the interrelation between applied research and industry. As a direct result of this revolution, the time-lag between innovation and application could be cut down drastically. In the last century, fifty years elapsed between Faraday's demonstration that an electric current could be generated by moving a magnet near a piece of wire and Edison's building of the first central power station. After World War II, the transistor passed from invention to industrial production in a mere three years and more recently research on lasers was hardly complete when the industry started using it to design new long distance transmission systems.

Now, what has really caused the time-lag between innovation and application to disappear? Many socio-economic as well as political factors responsible for this miracle are outside the scope of the present paper. However, apart from these factors, a very big role in it was played by proper and quick two-way communication between scientists and industrialists. This communication forms the essence of industrial information and it is the Information Scientist, the generalist in a crowd of specialists, the so-called 'backroom boy of science', who has made the world recognize the vital role of this type of information in industrial development. Industrial information is essential not only for the quick implementation of new innovations, but is also of prime importance at every stage of industrial development of a nation - from planning and policy formulation at the macro-level to the establishment of an industry and running it at the micro-level.

However, in spite of its importance, till recently very little concerted and systematic effort had been made in India to establish an effective machinery for collection and dissemination of industrial information. As a result, the industrial information collected in formulating the five year plans has been haphazard, chaotic and, we dare say, often subjective. The fault lies not only with the government and industrial research organizations, but also to a large extent with the industry itself whose generation of and demand for information have been minimal.

Lack of Demand

The inherent character of industry in India is such that it is content with conventional processes and techniques and seeks out only the minimum of ad hoc information needed for its day-to-day running or short-term planning. The main reasons for such comnacency are: (i) monopolistic nature of the industry, resulting in lack of competition and a sellers' market, (ii) easy availability of foreign know-how under collaborative arrangement, (iii) lack of risk capital and the will to experiment with new processes and techniques, (iv) cheap labour which precludes the need for labour saving devices, (v) little check on quality of products, and (vi) lack of a firm industrial policy.

The structure of the industry in India is notoriously heterogeneous. On one hand, we have multi-million rupee steel plants employing the most modern technology and equipment, while on the other we have cottage scale units manufacturing cheap washing soap in make-shift sheds, employing the most primitive methods. In between these two extremes, there exist a number of levels of sophistication which makes the Indian industry highly stratified. The information needs of the various strata of industry differ widely and so, necessarily, should be the means of satisfying these needs.

A serious drawback of this stratification is that the information generated by the different strata has a tendency of lateral and not vertical diffusion. For example, the information generated by the R&D sections of big industrial enterprises does not benefit the cottage or even the small scale industries. Moreover, a close secrecy is often maintained over new innovations and improvements of old methods and techniques for very obvious reasons, thus limiting even the lateral mobility of information.

From the preceding discussion it would appear that there should be a demand for industrial information at least from the middle and lower strata of the industry, which invariably do not have any R & D activity and are, therefore, unable to generate their own information. That this is actually not so is due to two main reasons: (i) the middle and lower level industries are largely not aware that industrial information is available (if they are aware, they often do not know how to obtain it and from where) and (ii) the existing facilities for storage and dissemination of industrial information in the country are not geared to meet the demand made upon it.

The second point needs a little elaboration. Our research is not tuned to the difficulties faced by the lower strata of industry. Therefore, the industrial information that we have is often at a more sophisticated level than what is needed by industries at those strata. Moreover, the language in which we speak is very often unintelligible to industrialists and technical personnel operating at these levels. A case in point is the soap-maker from Akola who came to the Publications & Information Directorate with some operational problem he was facing. In spite of our best efforts we could not satisfy him completely, because the primitive method he employed generated the particular problem, the solution to which could not be found in the learned books and journals. What this particular case highlights is that our industrial research and, consequently, our information retrieval and storage systems have no link with the industry at the lower strata. But what about the more sophisticated sector of the industry? Ironically, the higher strata of industry which we can help with the information available with us rarely ask for it.
Stimulation of demand

What is described above is then the situation which we have to reckon with before we can even think of establishing a comprehensive machinery for collection and dissemination of industrial information which may be helpful to all levels of industry in the country. The case is, however, not hopeless. Neither is the situation unique for our country. Most of the countries which can today boast of a high level of industrialization had to pass through such a phase and are even today trying to bridge whatever communication gap there exists between research and industry.

Joel Lundberg of the Swedish Textile Research Institute has found that even very large firms in Europe produce only 2 per cent of the knowledge necessary for the manufacture of their new products. May be a much larger percentage of the knowledge is generated in situ for improvement of already existing methods. These firms may bring out technically sound and economically feasible products with the marginal knowledge generated by themselves. But surely, in the larger interest of the industry as a whole and of the nation, it is imperative that more knowledge resting with sources outside the firms be utilized suitably. If this is the case with advanced industrial nations, it should be more true for the developing countries where the industry spends much less on R & D.

A need for industrial information, therefore, exists, although it may be in a dormant form and not easily recognisable from outside. The industry must be made to realise the need, so that a demand for industrial information should grow. The demand has to be stimulated at the beginning before it actually gets into its strides. And what could be a better way to stimulate the demand for a particular commodity - if there is a real use for it - than by building up an easily accessible supply of it?

Types of information

Before proceeding any further, we should consider what types of information should be actually needed by the Indian industry. As stated earlier, the diverse nature of the industry in India will necessitate the generation of a number of types of information. However, they can be grouped under three broad heads. These are:

(i) technical information on manufacturing processes;

(ii) statistical data relating to capacity, production and availability of raw materials for individual industries; and

(iii) economic and social information, which should pertain to both national and international trade of industrial products, areas of import substitution and technology transfer and other information which should generally help in planning the industrial sector.

Role of government

This brings us to an important question. Who will be responsible for the creation and running of a national machinery for industrial information? The industry is automatically ruled out due to reasons discussed earlier, although participation of the industry will always be welcome and in fact should be encouraged. The choice then
lies between the government and a government-aided autonomous or semi-autonomous body. Here, taking flexibility and non-bureaucratic functioning as the prerequisites for such a machinery, the scale is tilted towards the latter. If the machinery for industrial information were to be operated by the government, it might have the appearance of a controlling body, and the information scientists working for it might not be seen in their true perspective but as mere inspectors.

On the other hand, an autonomous body like CSIR, which is actually carrying out industrial research, lays emphasis in its charter on “the collection and dissemination of scientific and technical information in regard not only to research but to industrial matters generally”, and already possesses a skeleton system for industrial information, seems more suitable to evolve an integrated system for industrial information and run it. However, as the collection and dissemination of industrial information are going to be vital in the planning of a national policy for industrial development, the government has to play a crucial role in it. Moreover, the government through the public and joint sector, controls a sizable part of the industry. During the years to come, its participation in the industry is likely to increase significantly. Therefore, in its own interest, it should be the prime mover in the field of industrial information and the government controlled industries should set example to the industry at large in generating, absorbing and spreading such information.

Existing sources

Let us now take stock of the existing sources of information in the country. The CSIR has two central organizations, namely, Publications & Information Directorate (PID) and Indian National Scientific Documentation Centre (INSDOC). The PID is engaged in collection and dissemination of scientific and technical information through various publications like scientific periodicals, an encyclopaedia of raw materials and industrial products entitled Wealth of India, monographs, proceedings of scientific and technical conferences, etc.

The INSDOC has established an elaborate documentation service, and it acts as a national repository for reports of the scientific work done in India. In addition, the CSIR in its various research laboratories and institutes operates cells for the collection and dissemination of industrial information pertaining to the fields on which the laboratories are doing research. To develop contacts with the industry, and to promote the utilization of research and knowledge available with CSIR laboratories, polytechnic clinics are being set up in a number of states.

Small Enterprises National Documentation Centre at Hyderabad collects and stores data and documents useful in the technological and managerial advancement of small industries.

Some of the other sources of industrial information are the Directorate General of Technical Development (DGTD), Ministry of Industrial Development and other ministries relating to particular industries, Planning Commission, Export Promotion Councils for various industries, Indian Institute of Investment, Trade Development Authority, Indian Institute of Foreign Trade, National Council of Applied Economic Research, Central Statistical Organization, Department of Commercial Intelligence and Statistics, Indian Standards Institution, National Research Development Corporation,

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and Development Commissioner for Small Scale Industries (DCSSI) which operates the Small Scale Service Institutes (SSSI) in the states. At the state level the Directorates of Industries are potential sources.

All the organizations named above are either government departments or semi- or fully-autonomous bodies. In addition, some major public and private sector enterprises disseminate selective information mostly through their house journals. Other sources of information are the various trade associations related to different industries.

None of the information sources listed above covers the entire gamut of industrial information. Some of them may deal with facts and figures, while some may have technical know-how. However, it seems that we do not have to start from a scratch in building up an integrated machinery for the collection and dissemination of industrial information. The task before us is to develop a comprehensive system which would have interlinkages with the existing centres. The system should be viable to the present industrial scene and ensure that the right information is made available to the right party and at the right time.

National Industrial Information System

This brings us to the final stage, that is the structure and functioning of a national industrial information system. The National Science and Technology Plan prepared by the National Committee on Science and Technology has already considered the establishment of a National Information System for Science and Technology (NISSAT) during the Fifth Plan (1974-79). The system for industrial information, therefore, will have to be a component of NISSAT.

It is the avowed principle of the Government of India to develop the industrially backward areas of the country. This is a laudatory gesture and is perfectly justified in the context of the socio-economic development of the country. Any such development, to have a significant impact, should necessarily start at the bottom rung of the ladder. Collection and dissemination of industrial information should, therefore, be started at the grass-root level of industry, that is, to be specific, at the level from which the soap-maker from Akola operates. To achieve this we would need, besides stationary librarians, documentalists, and information scientists, what we may call industrial 'legmen'. The legmen are particularly necessary for establishing a first hand, personal contact with the industry. For only one thing is better than personal contact - more personal contact! Needless to mention that the legmen besides having a broad-based knowledge of industry, should be able to speak and write in the language of the particular region.

The roving information operators or legmen should operate from bases which should preferably be district headquarters. The idea is that, like Block Development Officers appointed by the State Governments, these legmen will form a body of 'Block Information Officers'. A central office at the district level will co-ordinate the work of this team and will supply them with necessary industrial information drawn from the SSSI, national laboratories in the region and bigger centres which have to be located at the state capitals. These centres at the state capitals should work in close collaboration with state departments of industries and industrial development corporations. Needless to say, the centres at the district headquarters and those at the state capitals should have adequate facilities for documentation, information retrieval and reprography.
To co-ordinate the working of these regional centres, a national organization will have to be established. The responsibility of this national organization will be manifold and flexible according to the demand made upon it. Besides co-ordinating, guiding and recording the work done by the two tiers of regional information centres mentioned above, the national organization should be responsible for maintaining a central data bank for all industrial information, acquisition and manipulation of Indian and foreign literature, bringing out current awareness journals on various groups of allied industries by a synthesis of information available from all available sources, organizing training facilities in industrial information work, and developing cooperation with similar information centres in India and abroad. Thus, the integrated system will be a three-tier one with ample flexibility and facility to make industrial information move both laterally and vertically.

**Personnel**

Finally, a few words regarding the personnel required to operate the machinery for industrial information seem to be relevant. It should be realized that industrial information is a commodity which attains its true value to society only when it is applied in the production of goods and services. Hence, those who work for the information system should be, first of all, agents for and promoters of this commodity. They will have to assume a great responsibility towards the clientele, which in this case, will constitute not only the industrial sector, but also all the organizations responsible for the economic and social development of the country.

Conventional information scientists, editors, librarians and documentalists are not strangers to the basic functions of informatics. They should play a very important role in collaborative arrangements between research and industry and also between industry and industry, and in the collection and dissemination of selective information. However, for a far-flung industrial information network to succeed, it would also require industrial extension officers. These officers would be mainly responsible for establishing an appropriate and meaningful dialogue with the staff and management of factories and workshops. This would require that these officers be in possession of an adequate knowledge of particular industries (and those allied to them) with which they are to deal.