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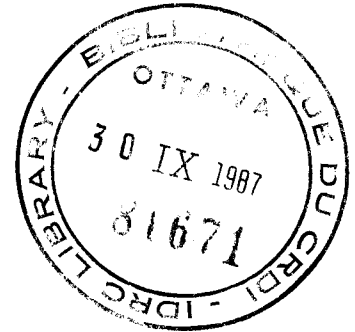
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THE ESTABLISHMENT OF NATIONAL INFORMATION
SERVICES FOR SMI - SOME ISSUES TO BE
CONSIDERED*

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INTRODUCTION

1. In the formulation of an Industrial and Technological Information Service System for small and medium scale industries (SMI), some basic issues have to be considered. These issues concern some specific characteristics of small and medium industries, the industrial environment as well as the resources and services already available to SMI in order to determine the characteristics of the service to be provided. In this paper, I am listing a number of these issues which should be considered in the formulation of a system.

ISSUES TO BE CONSIDERED

2. Small and medium scale manufacturing industries (SMI) need a wide variety of information for day to day operations as well as medium and long term development planning. This contrasts with large scale enterprises that can afford to have a documentation centre staffed with information specialists and other resources to gather information. Small scale manufacturing enterprises are limited to manufacturing facilities and staff and normally do not have at their disposal sufficient information to solve technical and commercial problems. SMI do not only lack documentation and information but also sources of information and where to obtain information when it is needed.

3. The specific needs of small and medium scale enterprises are not easy to determine because needs vary constantly on a daily basis. When applied to several industrial sectors, the needs involve a very wide subject scope and many different types of information. It is very unlikely that all this information could be found in anyone institution; therefore, information will have to be obtained from a large number of institutions and Government departments at the national level and access to information sources will also have to be established at international level.

4. We are concerned here not only with technological information which could be provided by technological information institutes such as the Institute of Scientific and Technical Information of China (ISTIC) but also with information concerning marketing, manpower, quality control, raw material supply, etc. that are essential for enterprises in order to sell the products they are manufacturing.

5. Industrial enterprises are usually widely scattered throughout a country with the result that information which might be available from several sources is not always readily accessible.

6. Methods of determining needs of industrial enterprises and specific needs of SMI were presented in an earlier paper at this meeting and I do not intend to list again these needs. I feel, however, that it is important to cite some of the key criteria that must be taken into consideration when planning the establishment of an industrial information service for SMI. User surveys can determine what to deliver but we must still determine a methodology to achieve the delivery of information that is needed.

7. Some criteria were given in a paper presented at a seminar on Information and Industry in 1979 (1) and listed in a paper published in World Patent Information in 1986 (2). The criteria which any information service for industry must meet were:

- (1) give only the information the client wants;
- (2) give immediately understandable and applicable answers;
- (3) give answers quickly;
- (4) be simple to use;
- (5) involve only familiar technology - e.g. the telephone;
- (6) be readily accessible, preferably locally based;
- (7) exploit existing tried, trusted and respected channels;
- (8) be stable (i.e. stay in existence and do not keep changing address/phone number etc.);
- (9) charge prices the client can afford.

8. To these criteria I would like to add:

- the number of potential users;
- the location of the users;
- methods of communication available (telephone, mail, electronic messages).

(1) M.W. Hill, The requirements of industry for technological information. AGARD Conference Proceeding No. 246 - Information and Industry. AGARD 1979

(2) M.W. Hill, Small and Medium Sized Enterprises. U.K. Research into their information needs. World Patent Information, Vol. 8, No. 4, pp. 261-265, 1986

9. In designing an information service, it is very important to take into account the number of potential users, in order both to determine the human resources necessary to provide the service and to decide on a development strategy for the service. It would be ideal to set up, in a short period of time, an industrial information service that could provide an efficient service at all potential users. However, if one has to take into consideration limited human and financial resources, the service should be gradually established, in order to enable the development of an efficient system and to provide for the training of staff, while at the same time providing progressively improved services to an increasing number of users.

10. A key element in the development of a service is to ensure that users are satisfied with the information requested and will therefore come back when they have other questions. The service must build-up the confidence of the users. One of the elements in building-up confidence is personal interaction between the users and the information specialist. At the industrial enterprise level users are not information specialists and in most cases don't have any knowledge of information sciences, computerized databases, bibliographies and other tools used by information specialists. What the users want is to be able to express a problem, leave it with the information specialist and later obtain a solution to the problem when it is not possible to provide a solution by themselves.

11. The problems initially expressed by the user are not, in most cases, the real problems and the questions have to be discussed in depth in order to arrive at the most relevant response. I am not aware of any statistics or studies on the subject but my own personal experience indicates that the problems initially identified and the real needs are different in more than 75% of the cases.

12. To be able to identify the real need, the information specialist must be in position to discuss the technical merit of the problem. It is, therefore, desirable that the information specialist have a technical background and preferably industrial experience to interact in an efficient manner with the users.

13. SME have information needs on a rather constant basis. Many have, however, learned to live with a lack of information and continue production with the result that the products are not always of the highest quality. In some cases, the poor quality of the products can lead to course closure of the manufacturing plants. Experience has shown, that in cases where an industrial information service is established, potential users will not readily use the service. It must be promoted. A good part of the activities of an industrial information service is the promotion of the service itself. The service must be promoted and proven. It must prove to the user that being informed pays and that the enterprise will benefit from information. It is a slow process and it could take up to 10 years to attain a good percentage of the potential users.

14. I have given above several criteria that must be taken into consideration while planning the development of an industrial and technological information service for small and medium scale enterprises. I am not pretending that it is a complete list of criteria but an indication of the concept of an information system must be based on the needs and characteristics of the target clientele.

Characteristics of an Industrial Information Service

15. The establishment of an industrial and technological information service does not require the establishment of a library or a documentation centre but must have access to information available in libraries and documentation centres nationally and internationally.

16. The Institute of Scientific and Technical Information of China (ISTIC) is a rich source of technical and scientific information to users. It already provides literature searches for users and the locating of documents required by users. However, unless the situation is different in China, such bibliographic information services are not used much by the personnel of small and medium scale enterprises and do not fulfill their needs. Such services are excellent for researchers in research institutions, university students and other professional staff but are not very efficient at the SME level

17. The resources of ISTIC must be combined with the resources of other institutions in order to provide an effective information databank for industry. An industrial and technological information service should therefore have the role to improve the flow of information from these sources to industry. Because of the wide variety of information needed by SMI, all the information required cannot be found in a single institution, even in an institution rich in resources such as ISTIC. There are however a number of other institutions such as statistical bureaux, technology registries, patent offices, bureaux of standards and others that have information essential to the satisfaction of the needs by SMI.

18. An industrial information service based at ISTIC would benefit from easy access to its collection of scientific and technical documentation which represents a major source of the industrial information service. On the other hand, an industrial information service based in an industrial research institute would benefit from the smaller resources of its library/documentation centre but will have the added advantage of the technical advices that would be provided the researchers of the institution.

19. The important factor in the selection of the most appropriate institution where the industrial information service will be housed is that it should be easily accessible to the users since interlinkage between institutional resources must be an important prerequisite.

20. Such a service does not require the establishment of a large documentation centre but rather of information specialists who will gather information from different sources, and answers to questions. The service can, therefore, be regionalized to be closer to the users. For instance, the core of the service could be implemented within an institution such as ISTIC and regional offices progressively established as the system develops.

21. Some of the services that could be provided by the industrial information service for SMI are:

a) Referral Service

To identify requests for information from SMI and then refer to users to the appropriate institutions. This service may be useful but may require users to contact several sources of information. This process is time consuming and might discourage users from obtaining the information. Another problem with such referral service is that it is not easy to monitor and find out if the users have been satisfied.

b) Technical Enquiry Service

One of the best services that can be provided is in the form of a technical enquiry service. The user discusses his problem with an information officer and later receives his answer in a packaged form. It goes much further than supplying bibliographic information which then requires the selection of documents, ordering of publications. In this case the user gets the answer to his question.

The establishment of such a service requires:

- Excellent knowledge of the resources of other institutions;
- The building up of a reference collection; and
- A team of information specialists to identify information needs, gather the information, process it in order to deliver an answer to the user.

c) Consultancies

Another level of industrial information service is consultancy service. In some cases, it is not possible to solve a particular problem with documentation or simple information and the problem needs to be examined by a specialist to provide a solution. Such a service calls for hiring specialists or consultants to solve specific in-plant problems. This approach results in better productivity but it is time consuming and can be quite costly if the costs are absorbed by the industrial information service.

OTHER MATTERS

22. The choice of the structure and type of services to be offered depends on many factors that have to be taken into serious consideration. At least during the initial phase, the service should be provided free-of-charge or at a highly subsidized cost until the service has proven its efficiency; later a higher fee can be charged to recover expenses. The choice of the type of services will have to take into consideration the expenses that will occur and the Government policy on how information for small and medium scale enterprises should be subsidized.

23. I would like to reimphasize the importance of the promotion of the service to potential users. Probably the best method of promotion is visits to enterprises by the information staff. It is well known that staff of SMIs are not always aware of their information needs; visits allow for determination of the needs in the context itself. It would also help the information specialist get a better idea of industrial problems and approach.

IDRC INVOLVEMENT IN INDUSTRIAL INFORMATION

24. The involvement of the Information Sciences Division of IDRC in the field of industrial information first came about with support to Technonet Asia. Technonet became an independent legal entity, acquiring international NGO status in 1980 at the end of IDRC financial support. This network is now regarded as a model in industrial information and industrial cooperation to improve the quality and efficiency of production of small and medium manufacturing industries. Several countries are now interested in establishing such a service.

25. IDRC does not currently support Technonet but in 1983, financial assistance was granted by IDRC to Technonet to undertake the preparation of the "Industrial Extension Manual for small and medium industries in developing countries". This manual, published in 1985, was produced as a field companion for the industrial extension officer, as a desk handbook for the industrial extension manager, and as a reference book for the industrial extension trainer. Two thousand copies of the two volume manual were published and distributed mainly in the Asia and Pacific Region. Discussions were initiated to consider the translation of this manual into Spanish and French as well as in other languages. Technonet activities have been described during this meeting and I will, therefore, not elaborate on this institution.

26. The industrial and technological information program of IDRC began its real development in 1984 and this activity was officially included in the program of work and budget of the Information Sciences Division with the fiscal year 1985/86. This program is still at its orientation phase with limited budget but a significant increase in funding is anticipated in future years. Some of the IDRC supported projects concern the development of basic information and documentation infrastructure while others developed consultancy service.

27. For example, in Africa, IDRC recently approved a grant to the African Regional Centre for Technology (ARCT) in Dakar. Since information is a key in reaching the objectives of ARCT, this project will strengthen the resources of the information and documentation centre at ARCT. Databases will be established and documentation technology appropriate to Africa will be published to facilitate an information exchange, especially about food production and energy. This project will also lay the groundwork for future networks for information dissemination and exchange about new technologies. The project of 2 years duration will be completed in 1988. ARCT is a regional focal point of INTIB and IDRC's support to ARCT should enhance INTIB's activities in that region.

28. Patent documents are a very important source of technological information which is under-used but which could be of significant benefit to small-scale enterprises and industrial research institutions. In 1985, IDRC granted its support to the "Organisation Africaine de la Propriété Intellectuelle" to enable strengthening of its documentation centre as well of OAPI's national antennas in the region. This project will enable the development of a technological information program from patent literature. Such a program is currently being developed by the Economic Commission for Latin America and the Caribbean with the support of IDRC.

29. Standards information is also of importance and IDRC recently granted a subvention to the African Regional Standards Organization, to enable the development of a regional information network on industrial standards.

30. IDRC recently approved a project with the Botswana Technology Centre in Gaborone to evaluate new forms of technology dissemination at the rural level in Botswana. Audio-visual methods are being considered as an alternative to conventional dissemination with publications.

31. IDRC provided assistance to the assistance centre for small enterprises in Cameroun, to organize a national seminar on industrial information for small and medium scale industries with the view of establishing a program in industrial information. It is likely that a request for assistance to IDRC and other donors to develop an industrial information program in Cameroun will result. CAPME is an INTIB focal point and cooperation between INTIB and IDRC could be envisaged in the framework of the development of CAPME's program.

32. In the Caribbean, IDRC is currently supporting a project house within the Caribbean Development Bank. The Caribbean Technological Consultancy Service (CTCS) was established as a result

of the Technonet-Asia experience. The Technonet model was initially used in the design of the concept but it had to be adapted for the needs of the region which has a different structure than that of the institutional structure found in the Asian Region.

33. The CTCS program was designed to help industrial enterprises of the smaller islands of the Caribbean that do not have the institutional resources available which are on the larger islands such as Trinidad and Tobago and Jamaica. The objective is to make use of the resources available in the Region before using resources from other parts of the World.

34. Because of geographic considerations, cost of travel, lack of knowledge of institutional capabilities or of local specialists and consultants, several enterprises were contacting sources of information or consultants outside of the region for solving their problems with the result that high costs were involved and information was not necessary applicable to the local context. Or simply, the enterprise lived with the problem with the result that it could not be competitive on the market.

35. In order to promote the industrial development of the region, the option chosen was to have two engineers visit manufacturing enterprises to identify specific problems and then find a solution to the problem using as much as possible resources available in the Region.

36. In 1986, nearly 300 enterprises were contacted or visited by the engineers. As a result, many problems were identified, many of which could readily be solved by the engineers with their expertise. More than 150 other problems needed more research but over 100 of them could be solved using documentation gathered from the CDB documentation centre or from institutions in the Region. In 27 cases during this period, the expertise of local specialists and consultants had to be used to solve the problems.

37. Although information in the form of documentation and advice was provided free of charge, the use of resource persons required a basic fee. In all cases, the intervention of a resource person was successful and resulted in positive results which will have a long term impact on the development of these enterprises.

38. I met by chance the Director of an enterprise that used the services at CTCS at the beginning of 1986. He had a technical problem for 5 years which he could not solve. After the visit of a CTCS engineer, a resource person was sent to his plant and within a few weeks his problem was solved with the result that he now has a product of better quality.

39. CTCS does not have a large documentation centre and computerized information system; it uses external sources of information in most cases. The concept is based on the interaction between and information specialist/engineer, the users and the information resources available in the Caribbean Region.

40. This program is a typical example of an industrial information service which provides a consultancy service, has a problem solving approach without having by itself a lot of resources. It relies on resources available in institutions of the region.

CONCLUSION

41. In this paper, have not tried to suggest a particular national industrial and technological information service system for small and medium industry for China rather I have tried to indicate some basic criteria which I consider important in the formulation of a service. Some of these criteria may not apply to China but many others could possibly be added in the context of China that could make the difference between a successful service and a less successful one.

42. The essential aspect is that the system should be custom designed to meet the particular needs of Chinese small and medium industry and should be user oriented to fullfil the needs. Since such an information system can take several years to develop, activities could be developed in a progressive manner and adjusted during the development phase if necessary according to the feedback obtained from users.