

Industrial Information Policies of Developing Countries*

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INTRODUCTION

I am greatly privileged to be invited to give the opening keynote address at this meeting. My task as the keynoter is to state the principal issues and parameters of concern at this Congress on national information policies. Firstly, I will attempt briefly to review some of the policies for the provision of industrial information recently followed by the Korean government. Secondly, I will be talking about who are the people concerned with the formulation of the national industrial information policy, who are the people concerned with the implementation of the policy, and how it is formulated and implemented by them in developing countries in general and in Korea in particular.

As I conceive my task, I should not analyse specific problem areas in other countries, offer solutions or recommend plans for action. These are the tasks of the speakers that follow. I will begin with definitions of industrial information and industrial information policy.

*The keynote address given at the 11th Congress of FID/CAO held at Academy House, Seoul, 29 October-1 November 1990.

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Industrial Information

The concept of industrial information is difficult to define. This difficulty arises from the fact that "industry", as we call it, is in no sense a unity. It is a broad and complex grouping of many differing and competing undertakings, relatively unorganised.

Since industry does not grow without markets and sources of capital, similarities in the economic preconditions for industrial development have been identified. These bases for the development of an industrial sector include an available labour force, markets for finished production, access to raw materials, a source of investment funds, and finally access to technology. Equally important to the development of industry is information on how to produce goods and services, information on sources of supply, information on consumer markets, and information on manpower available now and in the future. The efficient use of such technological, marketing, and management information is vital in all activities of any branch of modern industry.

The term "industrial information" is commonly used to refer to such information and know-how that are required and utilised by industries in order to facilitate their activities for production and sales of goods and services. A mistake that is often made is to equate industrial information with scientific and technological information. The broad expanse of industrial information is often underestimated. The intellectual activities within industry are very diverse and embrace quite a number of sciences, technologies, and other specialist fields.

Industrial Information Policy

Industrial information policy refers to a broad range of the objectives for which industrial information services in a country should strive. In the field of industrial information, as elsewhere, the determination of national policy lies with the government. The government gives leadership and guidance through the declaration of a national industrial information policy, and directs impetus to the policy's implementation by the provision of adequate funds and resources to a designated national authority.

The formulation of an industrial information policy is important. And the policy formulated must be workable for the country concerned. It is a waste of time to formulate a policy which is too idealistic. Preferably, policies should be in writing. Some feel that a policy actually does not exist unless it is written. Verbal and implied policies are frequently too nebulous and limited in their meaning to all interested parties.

The primary object of an industrial information policy is, to provide research and development workers, engineers, technicians, managers, and more generally all who have some part to play in industrial activities with access to the information they need and this as economically as possible.

REVIEW OF INDUSTRIAL INFORMATION POLICIES EXISTING IN THE DEVELOPING COUNTRIES

Few countries of the world can be said to have a coherent, comprehensive information policy for their industrial activities. Certainly, no

developing country appears to have such a policy. Some are, however, undoubtedly developing industrial information policies in conjunction with their economic and social development plans. I will review briefly some of the implicit and explicit policies for the provision of industrial information recently followed by the Korean government.

Overall Industrial Information Policy Framework

The overall industrial information policy of the Korean government implicitly stated in the Sixth Five-Year Economic and Social Development Plan, 1987–1991, is that “the government will foster a closely co-ordinated structure which interconnects existing and future industrial information facilities at a national level to collect and process systematically information on internally and externally generated industrial technologies, research and development results, manpower, and others which are essential to the activities of modern industry, and disseminate it through a convenient local service unit and with a minimum of delay to engineers, technicians and managers in the industrial field who need it. The four major components of the national industrial information network will be Korea Institute for Economics and Technology(KIET), the information departments of the government-run research institutes, the Library of Korea Advanced Institute of Science and Technology (KAIST) and the National Science Library of Korea which is to be established in Daeduck Science Park. The government will strengthen the function by the government-run research institutes of gathering information on industrial technologies recently generated in foreign countries. The government will also foster on-line information retrieval services to industry through the new Consolidated National Information

Management System which will be operational during the Sixth Plan period" (Ministry of Science and Technology, Korea, 1989, p.90–92). Finally, "the government will foster the market for technological information by developing a technological information-gathering and marketing system and by supporting the development of commercial services for technological information" (Korea, 1986, p.81).

The Korean government's commitment to the promotion of industrial information services was also underscored in the Revised Sixth Five-Year Economic and Social Development Plan. The policy stated in the Revised Plan is that "the government will foster the industrial information supply system and increase the amount of the Fund for Overseas Investment with the Export-Import Bank of Korea to promote the overseas ventures" (Korea, 1988, p.95).

"A Plan for Industrial and Technological Information System" drawn up by the Agency for Administrative Development was submitted to and approved by the National Council for Science and Technology chaired by the Prime Minister in 1980. The main objectives of the Industrial and Technological Information System are: (1) to ensure that basic minimums of information services adequate to meet the needs of the whole industrial community are satisfied, (2) to strengthen existing nation-wide industrial information resources, (3) to co-ordinate existing national programmes of industrial information services, (4) to encourage the private sector to become an active partner in the development of the national programme, and (5) to establish a nation-wide network of industrial information services (Agency for Administrative Development, Korea, 1980).

These policy-related statements in three different documents jointly imply the recent intention of the Korean government to establish a

greatly improved and closely co-ordinated system to collect industrial information and to disseminate it to those who need it effectively for the nation's industrial development.

Technological Information Policy

The recent technological information policy of Korea officially stated in the Sixth Five-Year Economic and Social Development Plan, 1987–1991, is “to help the existing technological information supply services based on KIET evolve into a more effective nation-wide technological information network, and establish standards in the field of technological information services” (Ministry of Commerce and Industry, Korea, 1986, p.38). In 1982, the Korean government merged Korea Scientific and Technological Information Center (KORSTIC) and Korea International Economics Institute into KIET so that it could concentrate on industrial research and the dissemination of technological information.

Following the establishment of Korea Institute of Science and Technology(KIST) in 1966, eight other specialised research institutes were established in such areas as machinery, electronics, chemistry, etc. to meet the increasing demand for higher technologies and to complement the functions of KIST. Each of these research institutes has a busy Technological Information Department engaged in the handling of technological information to provide information services to Korean industry (Ministry of Science and Technology, Korea, 1984).

In compliance with the national technological information policy, the Korean government approved the Proposal to Design the National Technological Information System submitted by KIET, which was implemented in 1985. The National Technological Information System

is now operating with a centralised database to provide one-stop service.

Information Policy toward Small and Medium Industries

The policy of the Korean government for the provision of information required by the small and medium industries has evolved in conjunction with the basic philosophy of the policies for development of small and medium industries, which are mainly directed toward, among other things, *technology improvement and management rationalisation*. The policy for information for small and medium industries stated in the Revised Sixth Five-Year Economic and Social Development Plan, 1988–1991, is to “provide local companies with better extension services on technology and market information by increasing the number of branch offices of KIET and the Small and Medium Industry Promotion Corporation (SMIPC)” (Korea, 1988, p.87).

SMIPC is a non-profit organisation established in 1979 in accordance with the Small and Medium Industry Promotion Law for the purpose of implementing various programmes for the promotion of small and medium industries including the provision of quality management and technology guidance to them. The major activities of SMIPC related to information for small and medium industries cover: (1) improving and co-ordinating the delivery of managerial and technical assistance by the various supporting agencies for small and medium industries, and (2) operation of its extension services that encompass virtually all areas of business management and production.

Marketing Information Policy

Because of its poor natural resource endowment and small domestic

market, the Korean government adopted in the early 1960s an outward-looking development strategy emphasising the growth of export. This necessitated the government to institute a policy measure to facilitate the provision of the latest overseas market information to the nation's industry. The marketing information policy toward industry pursued by the government in the past three decades was "to strengthen the information functions of Korea Trade Promotion Corporation (KOTRA) and KIET" (Ministry of Commerce and Industry, Korea, 1986, p. 51).

KOTRA was established in 1962 when the first Five-Year Economic Development Plan was introduced. It is a non-profit organisation financed by the Korean government. The principal activities of KOTRA and the services it provides include (1) providing foreign traders with information on products available for export from Korea and the names of suppliers of those products, (2) forwarding specific enquiries received from traders throughout the world to the appropriate suppliers in the country, and (3) collecting up-to-date marketing information through its world-wide network and disseminating it to local firms (Korea Trade Promotion Corporation, 1985).

Since its creation, KIET has also been playing an important role in providing the Korean industry with marketing information. KIET's five Area Studies Divisions conduct market research on target geographical areas of potential interest to help private enterprises identify trading opportunities overseas.

Financial Information Policy

In order to successfully implement the industrialisation programme,

it is essential to provide entrepreneurs with information on financing possibilities. They should be informed of the various financial sources which can be used for purchase of production equipment and facilities and for working capital. Korea lacks a stated national policy on the provision of this type of information, and hence there is no unifying concepts on which the operational policies for the various financial information services can be based.

At present, each financial institution with information activity sets and implements its own separate policy. The Financial Information Service of Korea Development Bank, for instance, concentrates almost entirely on the needs of its own customer group chosen in accord with the development strategies of the government which are stated in each Five-Year Economic Development Plan (Korea Development Bank, 1983). Through its Enquiry and Answering Service, SMIPC provides small and medium industries with information on various funds available to the industries (Small and Medium Industry Promotion Corporation, 1985). The Small and Medium Industry Bank, and Korea Credit Guarantee Fund provide similar information services.

Management Information Policy

Decisions made by industrial managers can only be as good as the information on which they are based. This makes it extremely important that industrial managers have access to information. In real situation, they have great difficulty in getting relevant information when it becomes critical to have it within a short period of time.

The basic characteristic of management information activities in Korean industry is that they are, for the most part, responsibilities of

individual enterprises. As in most other developing countries, these activities have so far developed without any plan to seek to interconnect them nationally. The large enterprises have established their own information departments to collect information necessary for their managerial decisions. But there remain a very large number of small-and medium-sized firms that are unable to run information departments of their own. Thus, the provision of government-supported management consultancy services established in such institutions as SMIPC, KIET, the Small and Medium Industry Bank, and Korea Productivity Center, is aimed largely at the small and medium enterprises.

Policy for Communications Services

Communications services are closely related to the modern industrial information services. The stated policy of the Korean government for communications services is "to improve and expand communications equipment and facilities to meet the rapidly increasing demand for greater and faster exchange of information. During the Sixth Plan period, increased emphasis will be placed on developing communications systems—particularly video-meeting and telex networks—to build an integrated communications network. A public communication service system will be developed"(Korea, 1986, p.137)

During the period of the Fifth Five-Year Economic and Social Development Plan, 1982–1986, a total of approximately ten billion U.S. dollars was invested in the projects for expansion of telephone switching systems and the accelerated development of data communications networks. In order to implement these projects, Korea Telecommunications Authority was established in 1982 as an autonomous operating

body for public telecommunications, and the Data Communications Corporation of Korea in the same year with the responsibility of developing nation-wide data communications networks and services.

FORMULATION OF NATIONAL INDUSTRIAL INFORMATION POLICY

Industrial information is an essential resource and one which should be administered by the establishment and implementation of a national policy. Some questions could be raised here. Who are the people concerned with the establishment of national information policy? How is it linked to industrial policy?

Industrial Information Policy as an Integral Part of the Industrial Development Policy

The economic growth of the developing countries requires a strong policy for industrial development. The development works mainly through the creation within the individual enterprise of a willingness to modernise and go forward. An industrial development policy will be fruitless if it is not supported and complemented by an incisive information policy, which aims at establishing a climate of modernisation and progress. Thus, industrial information policy should be incorporated in the policy for industrial development, which in turn should be incorporated in the policy for achieving economic growth and other national goals.

Mechanisms for the Formulation of Industrial Information Policy

Industrial information policy is a set of policies to be used in con-

junction with more general policies, i.e. industrial policy and technological policy, and principally to secure specific objectives, e.g., certain kinds of structural changes, improvement of particular kinds of services, or promotion of services to particular industry. It is therefore common practice in many countries including Korea that industrial information policy is formulated by the same people who establish industrial policy in parallel with those policies.

A set of new industrial policies were established in the early 1960s to stimulate the economic development of the nation. Export-oriented industrialisation was adopted as the strategic course of development. The "administratively planned growth" of the Korean economy during the 1960s and 1970s was faster than the foreign-aid stimulated growth in the 1950s. Thus, it is viewed that the Korean government played a significant role in industrial development as well as trade expansion over the past three decades through effective formulation and implementation of policies. Throughout the period, the industrial information policies of Korea were formulated within the framework of the successive Five-Year Economic and Social Development Plans.

Formulation of General Economic Policy

General economic policy in Korea is formulated by the Economic Planning Board(EPB); industrial policy, by the Ministry of Commerce and Industry(MCI); technological policy, by the Ministry of Science and Technology(MOST); monetary and fiscal policy, by the Ministry of Finance and the Bank of Korea; and communications policy, by the Ministry of Communications.

EPB was established to institutionalise the government's planning

function in 1961. It is responsible for economic planning, national budgeting, foreign capital management, and statistics. It sets macroeconomic growth goals—including growth in trade, gross national products, production, prices, consumption, and government income and expenditures in economic plans which cover a five-year period. The economic plans provide a policy framework for the future, as well as data on the direction of the economy, that can be used by private enterprises and policy planners in their decision-making. EPB has formulated six economic plans.

Preparation of a Five-Year Economic and Social Development Plan starts long before the beginning of the actual plan period, utilising an input-output matrix and a dynamic projection model for testing the consistency of the overall plan as well as estimating sectoral investment and import requirements. The initial work is primarily macro-analysis to provide overall structure.

To work out the details of the tentative plan prepared by EPB, about thirty specialised working groups, each headed by a high-ranking government officials from a concerned ministry, are organised. Each group consists of government officials of concerned ministries, and experts from research institutes such as Korea Development Institute (KDI), banks, industries, labour associations, consumer groups, and universities. EPB officials act as secretaries to each team.

The detailed plans developed by the working groups are co-ordinated by the Economic Plan Co-ordination Committee chaired by the Vice-Minister of EPB. These plans co-ordinated and integrated by the Co-ordination Committee are then examined and approved by the Economic Plan Deliberation Committee chaired by the Prime Minister.

This Committee debates on and approves the drafts with relatively

minor adjustment. Actual plans are prepared by young bureaucrats in close co-ordination with KDI staff. KDI sponsors about ten Economic Policy Conferences in important policy areas. At these conferences, related working groups' plans are presented and commented on by participants from all walks of life. Suggestions made by the participants are valuable and greatly assist not only in determining the best policy but also in winning their acceptance, understanding, and co-operation.

Formulation of Industrial Policy

The Ministry of Commerce and Industry(MCI) has principal responsibility for formulating the industrial policies of Korea and ensuring their success. Along with its responsibility for the establishment of industrial policy, MCI is responsible for trade policy, the regulation of distribution systems, patent policy, industrial standardisation policy, and small industry.

MCI's Industrial Policy Bureau has prime responsibility for the formulation of industrial policy. The process begins with developing draft policy on the framework of the Five-Year Economic and Social Development Plans, which do not, as a rule, contain more than broad general guidelines on the course of industrial development. The draft policies are confirmed pending evaluation and review by various industry-related committees as well as consultation with relevant ministries. Important policies and plans are determined after review by the National Council for Industrial Policy, which is responsible for the evaluation of industrial policies.

To reach a broad national consensus on the nation's industrial policy, a Private Sectors' Consultative Meeting on Industrial Development was

formed under the National Council for Industrial Policy in 1985. The Meeting, which consists of representatives of industries, consumer groups, banks, the press, R & D institutes, and universities, seeks out a broad range of public opinions. The Meeting seeks out business opinions on industrial, fiscal and financial policies and recommends them to the government.

Formulation of Technological Policy

In developing countries, where the scientific and technological level is low and industry is almost incapable of developing industrial technology, governments must play a leading role in all areas. With this in mind, Korea made some achievements in laying a foundation for the development of science and technology in the 1960s and 1970s. Recognising that systematic efforts to develop science and technology must be preceded by a realignment of administrative agencies responsible for science and technology, the Ministry of Science and Technology (MOST) was established in 1967. MOST formulates basic policies on R & D, cultivation of skilled manpower, international technical cooperation, development of research organisations and resources, and creation of a favourable societal climate for scientific and technological development.

Responsibility of the Information Profession

Korea possesses the mechanisms needed for setting up its industrial policies, of which the industrial information policy is an integral part. These mechanisms have functioned to draw up some policies for in-

dustrial information in parallel with the industrial policies and technological policies, but not in an integrated manner. Industrial information policy problems should be made more clearly heard by the government. That is, of course, the responsibility of the information profession in Korea.

MECHANISMS FOR THE IMPLEMENTATION OF INDUSTRIAL INFORMATION POLICY

Once a national policy has been formulated, it must be implemented. This link is by no means automatic. Implementation represents one tier of means while policy planning represents the other tier of ends. It is in this context that policy planning and implementation could be viewed as a continuing process of action rather than separate processes, though the concept implies two distinctive stages of action. Nevertheless, a gap between policy planning and implementation may exist, as policy planning by the government tends to be incomplete while implementation is left mostly to the private sector.

There is a crucial discontinuity in the means-ends chain at the point where the government's control stops and the private sector takes over the remainder of the chain. The crossing of this interface is critical bottleneck in implementation. The lowest tier of the government planning is a set of mechanisms whereby individual and enterprise compliance is stimulated, forced, or cajoled. A discussion of implementation can usefully concentrate on these means whereby the crucial interface is crossed, i.e., intervention mechanisms.

The extent of government intervention can be defined by two major variables: the mode of control and the instrument of intervention. In

a country where economic control by the government is limited, two modes of government control are applied: (1) direct control by which government undertakes certain activities by itself, and (2) indirect control by which government stimulates private initiative and participation in certain activities. Government utilises two instruments: (1) finance made available primarily through taxation, and (2) power stemming from national sovereignty. By combining the two major variables one can visualise four intervention mechanisms: (1) government budgeting, (2) public institutions, (3) regulation, and (4) inducement.

One of the characteristics of the Korean implementation system in the field of industrial information policies has been the emphasis placed on the utilisation of public institutions and regulation.

CONCLUSION

It would seem difficult to make identical recommendations on the formulation and implementation of national industrial information policy for an entire group of developing countries since there is no single general formula in the field, and the developing countries are by no means a homogeneous group. There is great variation between the developing countries not only in terms of economic growth but also in terms of information activities. Each government must develop its national industrial information policy in the light of its own circumstance. The developing countries could, however, benefit from the policies existing in a country at a similar level of development, by assessing their constraints and opportunities. This keynote address is intended to serve the purpose of such a reference to policy makers in the other developing countries within the Asian and Oceanian region.

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개발도상국의 산업정보정책

최 성 진*

이 글은 1990년 10월 29일부터 11월 1일까지 서울 아카데미 하우스에서 열린 제11차 국제문헌정보연맹 아시아·태평양위원회 학술회의에서 행한 기조연설의 내용이다. 이 학술회의의 주제인 국가정보정책의 현황과 주요 문제를 정리하여 제시하는 것이 기조연설자가 맡은 과제라 보고 첫째, 최근 수년간 한국정부가 입안 실행한 산업정보정책을 살펴보고 둘째, 일반적으로 개발도상국에서 국가산업정보정책은 누가 입안하고, 입안된 정책은 누가 실행하며, 한국의 경우는 어떤지를 살펴보았다. 산업정보정책은 한 나라의 산업정보봉사활동이 이루고자하는 여러 목표들을 열거한 것이며, 다른 분야의 경우와 마찬가지로 정부에 의하여 결정된다. 산업정보정책을 심의 결정하여 공포하는 것도, 지정된 기관에 재정지원을 제공하거나 법적 의무를 지워 공포된 정책을 실행하는 것도 정부의 책임이다.

제6차경제사회발전 5개년계획(1987-91) 속에 표시된 한국정부의 전반적 산업정보정책은 「산업기술정보 유통지원을 강화하여 현행 산업연구원내 기술정보유통센터의 운영을 대폭 강화하고 전국적 온라인 전산망을 구축하여 산업연구원을 명실 상부한 국가의 중추적 기술정보유통기관으로 육성해 나가는 한편 이를 토대로 기술정보 거래시장(테크노 마켓트)을 설치 운영」하는 것이다. 산업정보정책은 산업발달을 위한 정책 속에 통합되고, 그것은 다시 경제발전 및 기타 부문의 국가발전 정책 속에 포함되는 것이 바람직하다. 한국에서 일반경제정책은 경제기획원이, 산업정책은 상공부가, 기술정책은 과학기술처가, 재정정책은 재무부와 한국은행이, 통신정책은 체신부가 심의 입안한다. 산업정보정책의 일부를 이루는 산업정책 입안의 주요 책임은 상공부의 산업정책국에 있다.

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모든 개발도상국에 꼭 같이 적용할 수 있는 국가산업정보정책 입안 및 실행 지침 같은 것을 마련하기는 어렵다. 그것은 이 분야에 개발된 일반 모형이 없고 또 개발도상국이라고 하는 것이 동질집단이 아니기 때문이다. 개발도상국 사이에는 그 경제 발전면에서 뿐만 아니라 정보활동면에서도 큰 수준차가 있다. 각 개발도상국은 그 나라 고유의 전통과 형편에 맞는 산업정보정책을 마련하여야 한다. 그렇지만 발전 수준이 비슷한 다른 나라의 산업정보정책을 검토하여 자국의 가능성과 제한점을 바르게 이해하는 일은 적절한 정책 입안에 있어서 도움이 될 것이다. 본 기초연설은 아시아와 대양주의 다른 개발도상국 정책 입안자들에게 그러한 검토자료를 제공할 목적으로 행해진 것이다.