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Long-Term View of Third World

Developing countries have come long way, but technology licensing will play significant role in the future

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The subject of the needs and requirements of technology licensing in developing countries in the coming years is a topic which may be of far-reaching significance for the overall concept of technology licensing. It should also be of specific interest to those corporations which are planning manufacturing operations in one or more developing countries in the next few years.

There can be no doubt that technology licensing to developing countries during the coming decades presents a tremendous opportunity and may, in fact, represent the principal means of entering the growing markets of developing countries and utilizing their production potential. At the same time, it also poses a major challenge because it may involve readjustments in corporate relationships and reassessment of certain features of licensing as they exist at present.

The problem and issues involved necessitate some degree of crystal-ball gazing. The international economic scene is fraught with uncertainties. Nevertheless, the crystal ball of the 1980s and thereafter does indicate certain significant trends which can be fairly clearly defined. It is necessary that the implications and likely impact of such trends are understood and appreciated. It is only then that both technology licensors and licensees in developing countries can formulate appropriate policies and strategies to ensure mutual benefit and long-term relationships between the parties concerned.

Issues

The question of industrialization and technological development of Third World countries raises a number of socioeconomic issues. The broader issues have been extensively discussed in other fora, particularly as part of the North-South dialogue. I shall concentrate on the specific and practical issues which are of relevance to technology licensing in developing countries and to review their impact and the trends they represent during the next decade.

There can be little doubt that technology flow to developing countries will grow greatly in significance during the coming years. In my view, technology licensing will increasingly emerge as the most important and enduring contractual relationship between enterprises in industrialized countries and those in the Third World, especially in those countries which have achieved a significant level of industrialization and are pursuing an active policy of developing their technological capabilities.

Measured in terms of technology fees and payments, the volume of technology trade to developing countries has risen from around $500 million in 1965 to over $1.2 billion by 1978. With rapid industrialization and technological absorption in a number of these countries, the pace of technology licensing is likely to be greatly accelerated during the next decade.

By 1990 it is expected that technology fees and payments for know-how and technical services by developing-country enterprises will increase to over $6 billion annually. While this may still constitute only 20-25% of the global trade in technology, it is indicative of the growing importance of technology licensing in corporate relationships with Third World enterprises and institutions.

The second important trend which is emerging is the growing importance of technology inflow as compared to foreign direct investment in several developing countries. While foreign investments continue to be important for the economies of most developing countries, a more selective approach is being adopted toward such investments.

With growing industrial and technological diffusion and increased entrepreneurial capability in several developing countries, the traditional form of investments through subsidiaries and affiliates is tending to be gradually replaced by joint ventures and licensing arrangements which enable national partners and shareholders in these countries to exercise a greater degree of participation and control.

National participation in ownership constitutes an important policy objective in several countries. This is not only because of the concern and sensitivity regarding domination by foreign transnational enterprises but also because of growing entrepreneurial and managerial capabilities in several countries.

At the same time, it is increasingly being recognized that technology and know-how is a crucial factor in economic and industrial development and the acquisition of technology and its rapid absorption and adaptation is constituting a major policy thrust in many of these countries, regardless of their political and socioeconomic systems. The growing demand for technology, together with varying degrees of foreign capital participation, is reflected in the growth of

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joint ventures in these countries.

Joint Venture

The joint-venture arrangement involves considerable give and take on the part of both foreign partner and national shareholders. Yet, together with licensing, it is likely to represent the most acceptable form of entry to the production potential and the markets of Third World countries. As long as foreign partners and licensors are assured of suitable levels of returns in joint ventures and nonequity licensing arrangements, there should be acceptance of the fact that national shareholders can and must participate effectively as genuine partners, rather than as prestanombres or name-lenders.

In this context, an important development in several Third World countries is the growth of state enterprises. Those engaged in petroleum and minerals, such as Pemex in Mexico or Pertamina in Indonesia or the state-owned petroleum and mineral companies in other developing countries are assuming increasing importance and foreign companies have adjusted to new relationships in the form of technology licenses and service contracts fairly effectively and successfully.

In the manufacturing sector, however, this has been more difficult, though there has been a growing trend in licensing to such enterprises in several countries such as Algeria, Brazil, India, and Mexico. It would be well to recognize that, in many developing countries, state enterprises have come to stay in sectors relating to basic industries such as steel, chemicals and fertilizers and in fields such as public utilities, telecommunications, transportation and capital goods manufacture. There is likely to be a growing demand for technology from these enterprises and, though these enterprises are generally in a strong bargaining position, they tend to adopt a fairly flexible and pragmatic approach in acquiring foreign technology and services. Any ideological reservations by licensors in dealing with such corporations is likely to be self-defeating.

The most important feature of technology licensing to developing countries, however, is the role of the state in these countries. The growing awareness of the critical role of technology has resulted in a number of developing countries following more specific and conscious policies for national scientific and technological development and of reviewing the implications and impact of foreign technology in various sectors. Foreign partners and licensors need to recognize that they may be required to negotiate their terms of entry at two levels.

First, there are the general or specific guidelines relating to foreign investment and technology licensing prescribed by law or administrative practice in several countries and which involve the screening or approval of such proposals by a governmental agency.

Second, there are the more detailed terms and arrangements which are negotiated with licensee enterprises, which may be an affiliate or a joint venture or licensee with no foreign equity participation. This looks far more frightening and frustrating than it actually is.

During the 1970s, when screening of technology agreements became common in several countries, particularly in Latin America and in some Asian countries, there was a general outcry that this would seriously impair the transfer of industrial technology to these countries. This has not happened and if one sees the growing technology payments by countries such as Brazil, India, Mexico, the Republic of Korea and the Philippines, it will be clear that the flow of technology has not been jeopardized but that fairly realistic and pragmatic considerations have prevailed.

At the same time, the terms and conditions of such contracts have significantly improved, from the licensee's viewpoint. For the licensor, a more lasting arrangement has been ensured which would stand the test of time and which would not be subject to varying degrees of pressure during the period of agreement.

What do the 1980s signify in terms of technology-supply arrangements to developing countries? It is my view that screening and prescribed guidelines will continue to operate but that increasingly these will be accepted as the normal pattern of technology licensing to developing countries. Technology regulation agencies in developing countries have generally displayed a high degree of sophistication and pragmatism in in dealing with foreign technology proposals and the 1980s are likely to see a much greater degree of pragmatism than in the past. The bargaining and negotiating capacity of developing-country enterprises is also increasing rapidly and, as such capacity achieves an adequate level, the role of the regulatory agencies is likely to get considerably reduced, particularly when the prescribed norms and guidelines become embodied in technology contracts largely as a matter of course.

It would be useful to recall that most technology contracts in Japan from 1950 to 1970 were screened by the Ministry of Trade and Industry in that country, and that an enormous flow of technology took place to Japan during this period despite its regulatory procedures. It is likely that, in several developing countries also, particularly where considerable industrial development has taken place, the flow of technology will become increasingly accelerated despite screening and regulatory procedures.

Technology regulation agencies in these countries should not and will not hamper the much-needed flow of sophisticated technology and know-how in various sectors. They will primarily provide the broad framework within which such transactions will be negotiated and entered into by enterprises from these countries.

Increasingly, however, the approach is likely to be positive, flexible and pragmatic within the overall guidelines which are likely to be adopted by a large number of countries. There is growing recognition in these countries that they must be within the mainstream of technological development in various sectors and this is likely to be reflected in their policies and attitudes toward technology licensing and related foreign capital participation. At the same time, licensors from industrialized countries need to recognize that negotiating capability in several developing countries, both in the regulatory agency and at enterprise level has increased very significantly in recent years. This capability is likely to be reflected in the terms and conditions that licensees from these countries may be willing to accept.

Other Issues

Apart from these general trends, it is also necessary to consider certain other issues, which are both of general application and of particular relevance in technology licensing to developing countries.

First, there is likely to be much greater transparency in respect of technology-supply arrangements in different countries. The degree of confidentiality on the commercial terms and conditions of technology transfer is being significantly reduced. I, for one, have always believed that there should be no confidentiality in respect of such terms and conditions. Some years ago, the late Marcus Finnegan and I jointly authored a paper on "Confidentiality Issues in Technology Licensing" and I consider it a tribute to his perception and vision that, despite our different backgrounds, we were able to agree on the need for less confidentiality in respect of such arrangements. In recent years, there has been considerable exchange of information between institutions in developing countries, both on the terms of technology licensing and on the experience of such licensing from different sources. This trend is likely to increase considerably and most licensors, whether from industrialized or developing countries, must recognize that the terms imposed by them and the success or failure of their production or licensing operations in particular countries will become generally known and will be taken into account in future negotiations.

Second, the technology market is getting increasingly competitive for a wide range of products and services which are in demand in developing countries and for which, technology is sought. Licensees from these countries are becoming increasingly aware of alternative sources of technology where they exist and are now in a position to evaluate such alternatives in relation to their respective factor endowments and conditions of application.

Technological alternatives in most sectors exist not only among enterprises in different industrialized nations but also from some developing countries. The growing competition in the technology market in a number of sectors requires reconsideration by licensors of the terms and conditions of supply of technological processes and production techniques and of various technological services.

Licensors from certain countries, particularly Japan, are often proving more dynamic and flexible than others in accepting arrangements for minority-equity participation and in respect of several contractual provisions. Ten years ago, a prospective licensee from a developing country would generally be presented with a standard license agreement by one or other transnational corporation in a particular sector. Today, the chances are that a licensor may well be presented with standard licensing provisions by a prospective licensee which are approved by the government of that country and negotiations may largely be confined to the provisions of payments by the licensee and the services to be provided by the licensor.

If one licensor does not accept the terms, there are likely to be others to take its place. With greater exchange of information among developing countries regarding licensing provisions and similar norms and guidelines being adopted in several countries, it is likely that there will be much greater homogeneity and uniformity in respect of several provisions generally embodied in license agreements with enterprises in developing countries.

Competition

The increasing competition in technology licensing also highlights the role that medium enterprises from industrialized economies, particularly the U.S.A. can play in this regard. The growing demand for technology and know-how in developing countries for a wide variety of products and services represents a major opportunity for such enterprises. Hitherto, a considerable proportion of technology licensing to developing countries has been through transnational corporations and between parent corporations and their subsidiaries and affiliates in these countries. This pattern is likely to change in the coming decades. Licensees from these countries are increasingly likely to seek partners and licensors from among medium and smaller enterprises, which may be more closely related to their plant sizes and manufacturing programs. In recent years, the number of licensors to these countries has already increased considerably and this trend is likely to be accentuated in the coming years, provided adequate initiative and response is forthcoming from such corporations in developing countries.

It would be useful to briefly examine some of the issues and provisions which cause special concern in developing countries and which may require to be reviewed by foreign partners and licensors. One important issue relates to the unpackaging of the technology package. In several countries, licensors would be required to disaggregate various elements of the technology package, particularly where it includes capital participation in the form of capitalization of technology payments and various technical and engineering services, apart from the supply of the basic production technology. This is considered necessary both to ensure that the various elements of the technology package are suitably priced and are obtained under acceptable conditions and in order that national enterprises are utilized in providing inputs and services to the maximum extent.

Another important issue relates to local content requirements. Enterprises using foreign technology and particularly those having a significant proportion of foreign equity ownership would generally be required to achieve increasing levels of manufacturing integration on a phased basis. This would be particularly applicable to assembly-type industries, including the production of automobiles and transport equipment, agricultural machinery and various types of capital goods such as electrical and mechanical equipment.

It would, however, also be applicable to resourcebased industries such as minerals, pulp and paper, chemicals and petrochemicals, fertilizers and other process industries where a greater degree of backward and forward linkages would generally be sought and which would constitute an important feature of negotiations with foreign partners and licensors. A third issue of significance would be the development of export capability for processed and manufactured products from these countries. The requirements of local manufacturing integration may often be modified if these can be compensated by exports of certain categories of products. Foreign capital and technological participation is particularly welcome in these countries if it is expected to contribute to exports of processed goods and conditions relating to foreign capital ownership would generally be waived in the case of export-oriented enterprises.

Emerging Trends

With respct to contractual provisions generally embodied in license agreements, certain trends are emerging. Particular provisions generally would be sought to be applied to licensing arrangements in several developing countries. These would, of course, depend on the particular sector or branch of industry but certain general norms can be identified.

An important feature of technology agreements in the future is likely to be a more comprehensive description of the technology and services to be supplied by licensors. This often tends, at present, to be rather sketchy and can give rise to considerable difficulties in implementation, both for licensors and licensees.

For licensees, it is necessary to ensure that the technology and know-how supplied is complete and fully adequate for the purposes intended. This may also be in the longer-term interest of licensors, particularly in respect of joint ventures. It is also likely that the period of agreement would generally be stipulated at a maximum of 5 to 10 years, with renewals being generally subject to supply of new techniques and processes. More specific warranties may be sought regarding the technology supplied, particularly in the case of process technologies. Where royalty payment provisions are incorporated, the royalty would generally be calculated after deducting the value of imported inputs from the licensor.

Restrictive provisions, particularly in respect to territorial sales rights, would be sought to be minimized. A provision generally would be incorporated providing for access to improvements effected by the licensor during the duration of the agreement. Tie-in provisions relating to the supply of equipment, parts and components by the licensor may not be approved in a number of countries and considerable negotiations may center around the question of pricing of imported components and materials.

Restrictions on the use of other technologies, including competing technologies, by the licensee also may not be accepted. Provisions relating to training would be of special importance in most developing countries and the number and categories of persons to be trained and the period of training of each category would need to be carefully defined. Provision may also need to be made for training in designs and in production and marketing techniques. The governing law applicable generally would be that of the country of the licensee.

There also may be important developments during the 1980s in respect to industrial property rights, particularly patents and trademarks. While most developing countries will continue to accept the patent system, there is growing concern regarding the non-utilization of patents taken out in most developing countries. This may well result in a greater degree of compulsory licensing of patented technology in certain fields such as drugs and pharmaceuticals, food and agro-industries and the production of engineering goods of various categories. Contractual provisions prescribing the licensee's responsibilities in respect to infringement of third party patent rights are not likely to be approved in several countries. In respect to trademarks, there is likely to be a growing trend toward the use of local brand names in conjunction with foreign trademarks and brands. It is also likely that foreign trademarks and brand names would generally be discouraged, particularly for mass-consumption products in domestic markets in these countries. With regard to trade secrets, it is unlikely that these will be protected by confidentiality beyond a period of time.

Duration

An important issue would relate to the use of licensed technology beyond the duration of the initial agreement. Where such technology or know-how is not protected by patents, it would generally be considered to be in the public domain after the period of agreement, and contractual provisions denying the use of such technology during a post-agreement period would not be acceptable in most developing countries.

At first glance, the above list of issues and likely trends in licensing provisions may look formidable. It is only when these are analyzed in detail in the context of particular contracts that these aspects can be viewed in an appropriate and realistic perspective. Most of these issues already form part and parcel of norms and guidelines for technology licensing in countries such as Brazil, India and Mexico. Hundreds of licensing contracts in these and other countries have incorporated the salient features of most of the issues and provisions which have been mentioned.

There is every reason to expect that, despite the adoption of these norms and criteria in other developing countries, technology licensing arrangements will grow significantly, both in number and in the fields where foreign technology is sought by developing-country enterprises and institutions.

At the same time, these norms and guidelines, which represent the likely trends in the 1980s, do require reorientation in the approach of foreign partners and licensors. Technology licensing has been a seller's market so far and will continue to be so in respect to technological innovations and high-technology processes and know-how which are controlled by particular corporations. However, with the growing number of potential licensors from different countries for a vast majority of products and services in demand in developing countries, the pattern is changing significantly and this trend will undoubtedly continue in the 1980s as greater technological diffusion takes place in most sectors of production. This fact has to be recognized and has to be taken into account in the licensing strategy of corporations.

It is also important that, in their respective fields of production, corporations and potential licensors in industrialized economies, particularly the U.S.A. should recognize the emerging role and potential of developing-country enterprises. The number of suitable partners for joint ventures in these countries has increased considerably and these can play an important role in ensuring that domestic manufacture and foreign licensed technology are effectively dovetailed. With expanding domestic markets and with growing technological infrastructure combined with availability of cheap, skilled labor, several developing countries have special factor endowments and advantages, which would enable them to compete effectively in international markets for an increasing number of products and services.

More Diversified

In the 1970s, shoes, textiles, electronic components and several categories of engineering goods were increasingly imported from developing countries. In the 1980s, the range of such goods and services is likely to become much more diversified. One can visualize, for example, the rapid growth of chemicals and petrochemicals in the oil-producing countries and competitive production of electrical, mechanical and transport equipment from countries such as Brazil, India, Mexico, and the Republic of Korea, apart from electronic products from the Southeast Asian region and from parts of Latin America. The so-called international division of labor in terms of manufacturing capability is likely to undergo a radical transformation during the coming decades, with several developing countries assuming an increasingly significant role in a number of production sectors. In these countries, technology licensing may represent the most acceptable method of entry to their markets and their manufacturing potential.

If corporations and licensors from industrialized countries are to participate in the restructuring of global industry in these sectors, they would need to adjust to the conditions of operations and licensing in these countries. Neither the rapidly expanding markets in these countries nor their production capability and potential can be ignored by companies intending to operate on an international scale.

The global trends in industrial restructuring are also likely to have considerable impact on the application of new technologies in the coming decades. We are undoubtedly on the threshold of a new era of technological innovations. The microelectronics revolution, with continuing technological innovations in respect to semiconductors and microchips, the developments in telecommunications and in respect to data processing and other activities through electronic and optical computers, are likely to have a major impact on production techniques in various fields.

Developments in biotechnology and genetic engineering also will open a new era to technological expansion. Materials research is likely to result in new synthetic materials and major technological developments in respect to ceramics and metallurgical products. Developments in the energy field, particularly in solar technology and other forms of renewable energy, are likely to have a considerable impact on the cost and use of different forms of energy. Technological growth in the aerospace industry and in respect of exploitation of ocean resources would introduce new dimensions in communications and availability of scarce non-renewable resources.

These technological developments are largely taking place in the industrialized countries and the technological lead of these countries will undoubtedly be maintained in these fields for some time to come. At the same time, the growing absorptive and adaptive capacity in several developing countries is likely to generate a growing demand for such high technologies, together with varied forms of application designed to meet the specific requirements of these countries.

The sustained technological gap which prevailed between industrialized and developing countries during the past decades is increasingly being narrowed in several of these countries in respect to traditional processes and techniques in the basic production and service sectors of special priority to these countries.

In the new, high-technology areas also, the process of technological absorption is likely to be more rapid, since a much stronger technological base now exists in many of these countries. An important trend in the 1980s will be the application and use of such new technologies to both the requirements and to the special factor conditions and potential of several developing countries.

The role of technology licensing will undoubtedly continue to be of vital significance to developing countries in the coming decades. One can visualize a far more comprehensive network of licensing arrangements in which a much greater number of enterprises in developed countries and those in the Third World will be participating on mutually-acceptable terms and conditions and within an overall framework of norms and guidelines. This should strengthen the concept of licensing and should ensure more stable and sustained corporate relationships. The coming decades should be viewed as a new era of technological cooperation and partnership. They present a great opportunity for mutual benefit and it is up to all of us to ensure that the challenge is effectively met.