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THE INTERNATIONAL TRANSFER
AND ACQUISITION OF TECHNOLOGY
Executive Summary



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THE INTERNATIONAL TRANSFER AND ACQUISITION OF TECHNOLOGY

Executive Summary

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**This report is contained in
three separate volumes:**

- **Executive Summary**
- **Final Report**
- **Documentary Review**

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EXECUTIVE SUMMARY

When viewed from the perspective of a developing country, technology transfer becomes technology acquisition; and the ultimate responsibility for development-related technology acquisition inevitably rests with the entrepreneurs and the officials responsible for a country's development. Acquisition is a complex and dynamic process. It is influenced by the policy environment, by a succession of participants with different capabilities and needed skills, by the supporting infrastructure including R&D institutions, and by the role which multinational firms may assume.

It was with some understanding of this process, having been personally involved in such transfers for over a decade, that we undertook this analysis based on published data, case studies, evaluative materials, and academic works. Emerging were three principal themes:

- The systemic nature of the process
- The importance of human factors
- The effect of policy on the process

A Systems Process

Perhaps the clearest perception resulting from this research is that the international transfer and acquisition of technology is a systems process. Part, and sometimes a small part, is concerned with technological questions. Other factors requiring attention are: the contributions made by infrastructure support institutions such as research institutes, financial institutions, and transportation and communication systems. Legal and policy factors, behavioral patterns and customs, incentives and disincentives, organizational considerations, and "the market" are also system components. (See pages 33-38 of the Final Report.)

We found little evidence that the systemic nature of the transfer and acquisition process is widely understood. Further we found a paucity of research on the process within the Agency for International Development (AID) mandated areas of primary health care, nutrition, fertility limitation, literacy and numeracy, and vocational and technical training. As development is largely a process of acquiring technology, the process is a subject that all concerned parties--the transferor, the acquirer, AID, and other intermediary organizations--should know a great amount about. Because of the importance of technology transfer and acquisition to AID's mandate, we believe that AID should take the lead in gaining and disseminating information on the subject.

We singled out developing country entrepreneurs, nonagricultural R&D institutions, and multinational corporations as three components of the system which deserve increased AID attention.

Developing country entrepreneurs seldom make a thorough search for the optimum technology from the perspective of a technology's maximum profitability based on the country's factor endowments. This is because of (1) the complexity of and uncertainties associated with commercial technology acquisition in LDCs, (2) technological optimization being only one of several ways to increase a venture's profitability, (3) the lack of technological choice if a venture is to proceed at all, (4) the pressures resulting from limited time and funds, (5) the costs of international searches for technology as well as a lack of knowledge as to how to conduct such a search, and (6) the desire to move swiftly to counter perceived threats from competitors or to ephemeral arrangements. There are two approaches that AID can take to assist LDC acquirers in obtaining more appropriate commercial technology. One is to improve the acquirer's skills in obtaining access to and assessing information on available technology. The other is to improve access to information and technical assistance needed by the acquirers. (See pages 20-23 of the Final Report.)

Developing country R&D institutions have a great potential for effective assistance to local industry, entrepreneurs, and government agencies in acquiring technology. The building and strengthening of self-supporting contract R&D institutions create indigenous capability to acquire technology. This capability will continue to serve the country long after AID programs have ceased. The success of agricultural research institution building in developing countries can be an indicator of the potential development pay-off of a similar investment in nonagricultural indigenous R&D institutions. (See pages 27-29 of the Final Report.)

AID may be able to find synergistic ways to work with multinational firms in their transfers of technology. Such possible collaboration could lead to the local acquisition of supporting technologies which in turn could attract other technologies thus providing a development multiplier effect. This may be a topic for both experiment and analysis. (See pages 30-32 of the Final Report.)

Human Factors

Attempts to transfer technology internationally have failed as a result of the transferors' inability to establish effective interpersonal relations with the acquirer more often than they have because of their lack of technical skills. The human atmosphere surrounding a technology transfer transaction is a critical element of the system. (See pages 12-14 of the Final Report.)

Technology acquisitions involve uncertainties and often have significant barriers to overcome before they reach fruition. To shepherd

a venture through this process often requires someone with a personal commitment to the venture's ultimate success--a "technology champion" willing to push ahead in the face of resistance. In AID-supported technology acquisitions, program managers need to be aware of the role of the technology champion, and be sensitive and supportive to his or her needs and requirements. (See pages 14-17 of the Final Report.)

In the public sector, interest groups assume an important role in supporting, or in resisting, acquisitions of technology. AID project officers, while intellectually aware of the significance of interest groups, have often been remiss in explicitly assessing the likely reactions of these groups to judge their impact on the probability of project success. (See pages 18-20 of the Final Report.)

Many developing country technology acquisitions founder as a result of a lack of management skills of the acquirer, the transferor, or of intermediary institutions. Matching styles and methods of management in the technology transfer transaction is as important as matching technologies to resources or factor inputs. The "brokerage" skills needed in this aspect of development are dependent on the human qualities of the participants, not the technologies being moved. (See pages 23-27 of the Final Report.)

National Policy

To enhance national acquisition of technology and concomitant development, some countries have attempted to protect their indigenous industry and strictly regulated international technology transactions. Others have tried to create an environment to encourage international transfers of technology, and have opened their economies to international competition and encouraged their entrepreneurs to compete in international markets. The latter approach has proved more successful than the former. (See pages 6-11 of the Final Report.)