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Chapter VII

TRANSNATIONAL CORPORATIONS, HUMAN RESOURCE DEVELOPMENT AND GROWTH

Human development is linked to economic growth through the relationship between human resources and production as well as the relationship between human welfare and consumption. Improvements in the quality of human resources through investments in health, education and training enhance the stock of human capital and increase the productivity of labour and other factors of production. Human resources are thus important determinants of economic growth. But human beings are not only “instruments for furthering commodity production...they are also ultimate ends and beneficiaries of the process.”¹ While greater investment in human development as a factor input contributes to economic growth, the resultant improved quality of life of the people of a nation is also an end in itself. Economic growth can thus be viewed as dependent upon, as well as a means for, human development, which includes human resource development or the development of human beings as productive agents as well as the development of human beings as the final consumers of goods and services.

To a significant extent, activities contributing to the development of human resources fall within the domain of Governments, which is especially true of health and education, for which the public sector is responsible in many countries. Nevertheless, the private sector, including TNCs, has a role to play in several respects. The present chapter describes and analyses the contribution of TNCs to economic growth through their impact on human resource development, that is, human development from a productive capacity point of view. First, it briefly outlines the relationship between the development of human resources and economic growth and examines the linkages between the main areas of that development

and growth. Second, it considers how the activities and operations of TNCs affect the development of human resources in host developing countries, drawing upon available empirical evidence. Third, it discusses the role of TNCs in the creation of employment opportunity, which is closely related to the development of human resources. Finally, the chapter assesses the role of TNCs in the development of human resources and considers some policy implications for strengthening the contribution of TNCs to that development.

A. Human resource development as a factor in growth

The development of human resources involves improvements in population quality through investments to make people more healthy, educated and skilled. Developing the quality of human resources through improved health, education and training raises the physical, mental and cognitive skills of the population and thereby enhances the productivity of human effort, which, in turn, contributes to economic growth. Improvements in population quality, which have economic value and can be augmented by appropriate investment, are investments in human capital.² A substantial body of empirical evidence now shows that such investment in human capital is a significant determinant of economic growth in developed as well as developing countries.³ The contributions to growth arise not only from increased labour productivity, but also from improved entrepreneurial and managerial capabilities that enable the human agent to take better advantage of economic opportunities and to deploy resources more effectively.

More specifically, the main areas of human resource development are linked to growth in the following ways:

- *Health and nutrition.* While improved health and nutrition are certainly desirable ends from a consumption point of view, strong evidence exists that improved health and nutrition also have a positive impact on economic performance.⁴ Additions to the quantity and improvements in the quality of food and medical services, while normally classified as consumption expenditure, have the attributes of investment in several respects, especially when the initial levels of consumption are low. Improved health and nutrition contribute to economic growth through their immediate effects on productivity as well as through the long-term effects of increased absorptive capacity for new knowledge. Immediate effects on productivity include increases in worker energy, reduction of illness and thus of work days lost through illness, and prolonged duration of working life. Improved health and nutrition affect absorptive capacity by enhancing the ability and motivation of both adults and children to learn.⁵ Improved health and nutrition for children also have an immediate effect on adult productivity in that parents need not substitute “nursing time”, caring for sick children, for “productive time”.
- *General education.* General education refers to literacy, numeracy and general skills and knowledge usually transmitted during primary and secondary education. The links between education, labour productivity and economic growth are well established in a number of

studies.⁶ A recent study of the determinants of real GDP covering 58 countries over the period 1965-1980 suggests that an increase of one year in average years of education could lead to a 3 per cent rise in GDP.⁷ Investments in human development through general education affect productivity by increasing the national level of willingness, as well as the capability to accept and adopt new techniques and knowledge. For example, it has been shown that the more educated workers are, the more willing and able they are to adopt new agricultural production techniques. The national level of general education of a people also affects the absorptive capacity for more advanced technical knowledge. Japan represents a classic example of a nation that succeeded in the rapid accumulation of technical knowledge based on a solid investment in the levels of general education of its human resources.⁸ Similarly, much of the success of the newly-industrializing East Asian countries, most notably the Republic of Korea, has been attributed to their significant investments in improving secondary and higher education.⁹

- *Vocational training.* The productive use of capital and technology for economic growth requires an appropriate mix of complementary vocational and technical skills in the work force. Unlike general education, which yields a broad range of benefits only indirectly linked to productivity, the benefits of training in skills in specific occupations are immediately and directly tied to the economy.¹⁰

Investments in vocational training succeed when workers use their skills efficiently and the returns are captured by enterprises in the form of increased efficiency and profitability and by workers in the form of increased wages.¹¹ For example, a study comparing vocationally trained workers with academically educated workers in a Chinese automobile factory showed that workers with vocational training have 6 to 11 per cent higher productivity than those with only academic education.¹² Specific vocational training in lieu of general secondary education can be positive for a young, growing workforce if such training leads to productive, remunerative employment, as has been observed, for example, in China, Egypt and Thailand.¹³ In the absence of sustained growth in employment, however, vocational training alone has little impact on unemployment rates.

- *Managerial capability.* Three key areas of human resource capability, which are often defined in the literature as fundamental requirements for national industrial growth, are entrepreneurial, technological and managerial.¹⁴ While the three capabilities may be separated conceptually, entrepreneurial and technological capabilities are essentially underlying components of general managerial capability. Human development in managerial capability has both cognitive and non-cognitive aspects. Cognitive aspects include the formation of competencies (such as reasoning and analytical abilities) and the transmission of information (such as technical knowledge, theories and facts).¹⁵ Non-cognitive aspects refer to the values, attitudes and beliefs underlying such capabilities.

Entrepreneurial ability includes the “skills needed to identify suitable investment opportunities, master the financial, technical and other resources necessary to mount projects ... at appropriate scale and with appropriate market orientation”.¹⁶ Entrepreneurs who perceive

profitable opportunities, take risks and have the ability to manage businesses have played an important role in the rise of all modern societies,¹⁷ and thus are critical for economic development. The 1989 World Bank Report on Sub-Saharan Africa, for example, called for an enlarged role for entrepreneurs and a correspondingly improved business environment, so that enterprises of all sizes could make a greater contribution to economic development of the region.¹⁸

Technological capability is necessary for a nation to develop its industrial and service sectors. It includes not only the ability to operate a plant or business, but also the ability to create new productive capacity and, most importantly, to innovate, or to adapt, modify and improve methods and products and to develop new ones.¹⁹ The acquisition of technological capabilities by developing countries with access to imported technology chiefly depends on training possibilities for local personnel, including those needed to adapt such technology to local needs.²⁰ In the services sector, a significant part of technology consists of skills and knowledge embodied in human beings, and it is only through training that most of this "soft" technology can be transferred.

Tertiary education in universities and other institutions, which provides some of the skills mentioned above, has been growing in developing countries. Nevertheless, the development of managerial capability has often been identified as one of the most critical needs for economic development. The lack of effective organizations is a serious bottleneck to economic development in many developing countries. Failures in private enterprise as well as failures in publicly managed development programmes, have often been attributed to inappropriate organizational forms and procedures, inability to plan, implement and evaluate projects and inadequate management information systems.²¹

Finally, human resource development for growth is closely linked to the opportunity for gainful employment. Employment contributes to economic growth through human resource development in two fundamental ways. First, gainful employment generates income for the former unemployed and underemployed; increased personal income permits individuals to make greater personal investment in health and education, both for themselves and for their families. The personal investments result in high private rates of return through better job opportunities, further income increases and improved family nutrition and health. Increased private investments in basic human capital in the aggregate contribute to overall increases in national productivity as well. Second, employment not only increases personal income, but also is a means for professional training and development. Employment and skill development are therefore complementary: while employment requires and is dependent on skills being present in the labour force, it also generates skills in a process of learning by doing. Lack of employment leads to a deterioration of skills. Thus, unemployment is not only a loss of potential output in the present, but, if sustained, represents a loss of potential output in the future as well.

B. Transnational corporations and human resource development

1. Impact on health and nutrition

Transnational corporations in pharmaceutical, health-care, agricultural, biotechnology and food-products industries potentially influence health and nutrition levels in both developed and developing countries through major breakthroughs in health and medical research and the introduction of new food products and food-production technology. While most of the actual effects of the innovations in developing countries are the result of local government or private-sector action, TNCs can play some role through their production and trade activities in host countries.

Research and development by large transnational pharmaceutical corporations has been responsible for a multitude of discoveries that have improved the level of human development world-wide in terms of health. Those firms show high levels of R&D expenditure as a percentage of sales, ranging from 5 to 15 per cent.²² Empirical evidence suggests that the R&D expenditure of pharmaceutical TNCs will remain steady or will increase in the future, as new products are their essential lifeline. In the past decade, none of the world's 30 largest pharmaceutical firms reduced R&D expenditures, even during periods of falling profits.²³ The actual benefits from the advances depend, of course, on the costs of improvements in health and nutrition in relation to the resources available. For example, drug prices in developing countries are very high in relation to wages and basic necessities. As a representative of the Belgian drug company Janssen pointed out:²⁴

“... far too often ... the drugs we found and developed after years of research, do not always reach the people who are most in need of them. It is often very difficult to reach the rural populations in developing countries. But the biggest problem for people who have to do with a strict minimum of existence ... remains the *price* of the drug”.

In response to developing-country needs, many pharmaceutical TNCs have expressed interest in supplying essential drugs for public health-service use in poor countries at lower cost.²⁵ Transnational drug manufacturers can also contribute by becoming actively involved in providing consulting services to advise on improvements in national drug policies and the logistics of supply. One example is the Burundi Pilot Project, the result of a collaboration between the Ministry of Health of Burundi, the World Health Organization and three Swiss pharmaceutical TNCs: Hoffmann-La Roche, Ciba-Geigy and Sandoz.²⁶

Transnational corporations may also engage in R&D in health-related fields within the developing countries in which they operate. Such activity can contribute to the professional development of indigenous researchers, and it can generate relevant knowledge locally about health issues. Although localization of R&D by large research-intensive TNCs takes place only rarely,²⁷ some exceptions to this trend have been noted. Four laboratories dedicated to research in developing new drugs to treat tropical diseases have been set up in developing countries by Wellcome, a British drug manufacturer.²⁸ And, in

1984, IBM established a regional health-industry centre in Singapore to design and develop applications software for health management.²⁹

Where no new technology or innovation is involved, TNCs in the health-care industry may internationalize operations. Several health-care enterprises based in the United States and other industrialized countries have established affiliates in developing countries.³⁰ More recently, the momentum for the economic integration of the United States, Canada and Mexico is encouraging the relocation to Mexico of subacute and nonacute health-care facilities owned and operated by United States corporations.³¹ Such a relocation enables health-care TNCs to benefit from the lower labour costs in Mexico. While the local population may not benefit from such centres as patients, the inflow of medical equipment and of more advanced health-care practices and standards potentially contributes to the development of local health-care practitioners. Training of health-care practitioners may also occur through autonomous programmes developed and supported by transnational corporations. Ciba-Geigy, for example, supports a programme to train general practitioners in epilepsy treatment that has been introduced in more than 15 developing countries.³²

Another area of health on which TNCs have a potential impact relates to nutrition. Affiliates of TNCs produce approximately 12 per cent of the processed food in developing countries; in the more advanced developing countries, with a heavier investment in the food industry, the percentage can rise to over 25 per cent.³³ Transnational corporations in the food-processing industry are thus in a unique position to influence the nutrition levels of the developing countries in which they operate. The activities of the H.J. Heinz company, for example, illustrate the potential for food-processing TNCs to contribute to increased health and nutrition levels (box VII.1). The positive impact of Heinz in particular regions, however, is the result of specific corporate policy and philosophy; in general, the contribution of TNCs to increased health and nutrition must be considered on a case-by-case basis.

Box VII.1. Examples of contributions to health and nutrition through joint ventures in the food-processing industry

The H.J. Heinz Company formed a 51 per cent-owned joint venture with Olivine Industries in Zimbabwe. As part of the arrangement, Heinz offered the Government of Zimbabwe assistance in agriculture, food production and training in new product development. Heinz agronomists introduced the Michigan pea bean, a hardy crop that supplies the home market with a nutritious, inexpensive source of protein (and which has also become a valuable export commodity for Zimbabwe). Heinz also made direct contributions of \$200,000 to build and run a medical clinic at Nyamatikiti, and \$50,000 towards the construction of a hospital at the Kutama mission.

In China, Heinz holds a 60 per cent-owned joint venture with the General Corporation of Agriculture, Industry and Commerce and the United Food Enterprise (UFE), which is a cooperative of food manufacturers linked to the China National Food Industries Association. Through a \$10 million baby-food plant employing 120 workers, Heinz introduced a highly nutritious affordable product to feed infants in the country—a need

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The introduction of new food products and food-production technology by TNCs may, however, also have deleterious effects on local consumption patterns,³⁴ which could be negatively affected in terms of health and nutrition through strong TNC advertising programmes for alcohol, tobacco, soft drinks, less nutritious processed foods and infant bottle formula. For example, United States cigarette manufacturers have implemented aggressive advertising and promotion campaigns in a number of Asian developing countries, in addition to exerting pressure to open the markets to foreign competition.³⁵ The new consumer tastes promoted by TNCs may induce a switch to higher-priced, imported brand-name food products that may be less nutritious than traditional diet staples, or harmful to health, although the extent to which that happens would depend on individual choice as well as on public and private efforts to promote awareness of health issues.

2. Impact on general education

The impact of TNCs on primary or secondary education in host countries, through direct investment or financial contributions, is minimal. Education is an area that is typically and entirely the domain of the Government or other domestic societal groups; the role of external participants, to the extent that it exists, is primarily confined to financial and other contributions by foreign public and non-governmental organizations. It has been observed, however, that some TNCs include training in basic educational skills in their training programmes when local circumstances make it necessary; for example, Unilever and Mobil Oil France have provided teaching in reading, writing and arithmetic to workers with little or no formal education in their developing-country affiliates.³⁶

(Box VII.1, cont'd.)

the Government of China had specifically identified. Along with the factory came a research programme into malnutrition in Chinese babies. Outcomes of the research programme include identification of regional variance in deficiencies of protein and iron; this research has been channelled through the China National Women's Foundation—a group which offers instruction on infant care and feeding to mothers throughout the country.

In Thailand, Heinz holds a 51 per cent-owned joint venture with Win-Chance Foods Company, Ltd., and built on the local company's flavoured milk powder line to introduce Heinz Infant Milk Cereals—a newly formulated, highly nutritious product aimed at decreasing malnutrition. A team of Heinz nutritionists worked with the faculty of Bangkok's Mahidol University on a research project to determine the effectiveness of a proposed four-month feeding programme to improve infant metabolism and nutritional well-being.

Source: Anthony J.F. O'Reilly, "Establishing successful joint ventures in developing nations: a CEO's perspective", *Columbia Journal of World Business*, vol. 23 (1988), pp. 65-71.

Transnational corporations could also have an impact on the relevance of a national education system. In an economy in which the rate and type of change of technology depend primarily on changes in the domestic economy itself, the degree of interface between the educational system and the economy is usually achieved with minimal effort. The knowledge and skills required for indigenous industries and organizations are generally institutionalized in national educational programmes. The presence of TNCs in a developing country, however, sometimes contributes to sudden technological changes. Such changes require new and rapidly-changing skills and knowledge that are often not synchronized with the knowledge and skills being provided by the local educational system:³⁷

“... when the rate of technological change becomes imposed ... by the sudden introduction of techniques of production that bear little resemblance to the emerging needs of the mass economy, educational relevance is somewhat undermined. How the educational systems and policy in the receiving economies adjust and respond to these strains has never been examined fully. It is believed that the adjustment processes are complex and difficult, and when, as is the case, the multinational corporation is the means for such transfers of technology, these difficulties could constitute serious constraints on the articulation and execution of educational-cum-manpower policy in the typically less-developed country.”

In economies that face rapid technological change (whether developing or developed), the expansion of general education is an important policy task.³⁸ Enhancing secondary education increases the willingness of the population to accept the new technology in addition to ensuring a basic level of literacy and analytical ability on which individuals may build further capability. General secondary education also provides graduates with more labour market flexibility than narrow vocational training.³⁹ In the face of rapid industrial advancement, however, one typical response to educational policy in developing countries is to substitute formal vocational training for general secondary education. The implications of such a policy are discussed below.

3. Impact on vocational training

Private vocational training capacity in developing countries is often weak; thus, formal training in vocational skills is largely provided by government agencies and ministries. The efficiency of public vocational education and training, however, has often been questioned. Most new technology enters into a developing country through private foreign enterprise; thus ownership of the equipment, technical information and training methods needed to develop the skills required to work with the technologies reside within TNCs. An important channel for government agencies to increase, improve and update their vocational training efforts is, therefore, through collaboration with TNCs. The Economic Development Board of Singapore, for example, has collaborated with various TNCs to establish and improve training centres and institutes (table VII.1). While vocational training, however, may at times be beneficial for employment opportunities in general, such training is industry-based and usually tied to the specific needs of TNCs. Thus, a structure of dependence may be created in which local human resources are being

supplied with skills suitable for employment in TNCs, but inappropriate for indigenous industrial or agricultural expansion.

The most important aspect of vocational training by TNCs consists, however, of training provided to production workers in host-country affiliates and subsidiaries of TNCs. Most of the training is conducted to satisfy staffing requirements essential for the functioning of the enterprise. According to available studies of manufacturing TNCs, the volume and quality of such training is important and extends to all categories of personnel, although training efforts are uneven and vary according to production sector, length of involvement in the country, the qualifications of the available indigenous manpower and local training policies.⁴⁰

The training of manual (unskilled and semi-skilled) production workers represents the bulk of TNC training efforts in terms of numbers. But it is usually less developed than training provided to skilled workers and management staff; rather, it is geared towards complementing existing skills as required for the immediate performance of a specific production-line function in an enterprise. Such training is usually brief, on the job and conducted by the host-country affiliate. It is typically more specific than in local enterprises and sometimes of limited use in the wider national labour market.

The training of skilled workers is provided only to a small proportion of the labour force in a TNC, but is generally of a high quality. Training of the workers apparently absorbs the largest share of expenditure by TNCs on training. Apprenticeship training is also reported to be important in a majority of TNCs, meeting significant standards and often going beyond the immediate needs of the TNCs.

4. Impact on management capability

Investment in health and nutrition, general education and vocational training constitutes investment in the basic quality of the human capital of a nation. As mentioned earlier, the basic quality of human capital is a critical factor affecting the national absorptive capacity for more advanced technical and managerial knowledge. Those specific capabilities are probably the most important areas in which TNCs can make a contribution.

Foreign direct investment in developing economies can stimulate the development of managerial capability in various ways. Discussions in the current literature on human resource development via

Table VII.1 Contributions by transnational corporations to vocational training in Singapore

<i>TNC</i>	<i>Training provided</i>
Tata	Tool- and die-making; precision machining
Brown-Boveri	Tool and die production; toolroom machining; precision mechanics
Philips	Precision machining
Computervision Corporation	Mechanical design; drafting; numerical control; structural analysis; circuit board design
ASEA	Robotics applications; robotics programming; operating, maintenance and servicing; project engineering

Source: Hafiz Mirza, Multinational Corporations and the Growth of the Singapore Economy (London, Croom Helm, 1986), p. 68.

training commonly make a distinction between formal, non-formal and informal learning.⁴¹ Formal learning refers to a planned and evaluated sequential programme leading to a certificate, degree or diploma. Non-formal learning is organized learning that is usually ungraded, non-sequential and/or part-time. Informal learning is a lifelong process by which people acquire attitudes and values through daily experience, observation and exposure to their environment. The impact of TNCs on the development of managerial, entrepreneurial and technological capabilities will be discussed below in terms of each of three channels: through formal institutions such as management schools and technical institutions; through non-formal on-the-job training and professional development, both within TNCs and through collaborative agreements with TNCs; and through the informal transmission of values, attitudes and beliefs embedded in the organizational culture of the TNCs.

(a) Formal learning

A wide gap exists in many developing countries between the demand for and the supply of knowledgeable and skilled indigenous managerial talent. The gap represents a major constraint to the development of entrepreneurial activities and the utilization of foreign direct investment.⁴² For example, one study reporting on research in Latin America concludes that the "inability of Latin American managers to effectively utilize all factors of production, notably human resources, has been [an] ... important constraint on regional development".⁴³ One focus of transnational training institutions, therefore, has been on the development of management education in the developing countries. The potential for a substantial impact on management development through joint ventures between management schools based in developed and developing countries is considerable. Transnational business schools, to the extent that they are profit-seeking institutions, are transnational corporations (table VII.2). Even if otherwise, they remain important channels through which conventional TNCs contribute to human resource development in the developing world. The management-education programmes of North American universities are often influenced by large TNCs, which provide both direct financial assistance and input for curriculum development through executive advisory boards. As North American business schools develop linkages with developing countries, they transmit, in part, the strategies and philosophies of the TNCs that support them as well as provide much of the empirical base for their research and training activities.

Harvard University, for example, was instrumental in the development of INCAE (Instituto Centroamericano de Administración de Empresas) in Nicaragua and Costa Rica and maintains strong linkages with that institution. Both campuses offer graduate programmes (MBA) and executive MBA programmes patterned after the Harvard model, as well as numerous executive development programmes. Another example of extensive transnational linkages in management education exists between Canada and China (box VII.2). Several other North American and European business schools or universities have affiliates or joint ventures in various developing and Eastern European economies. Training in formal institutions such as those develops both the cognitive and non-cognitive components of managerial capability, even though both components are, to a certain extent, culture-bound. Western management schools, particularly those in the United States, concentrate on producing MBAs with the knowledge,

Table VII.2. Transnational affiliations of institutions of higher education, 1992

<i>Parent university</i>	<i>Home country</i>	<i>Name of associated institution</i>	<i>City of associated institution</i>	<i>Country of associated institution</i>	<i>Type of association^a</i>
European University	Belgium	European University	Antwerp	Belgium	Subsidiary
		European University	Brussels	Belgium	Subsidiary
		European University	Paris	France	Subsidiary
		European University	Toulouse	France	Subsidiary
		European University	Munich	Germany	Subsidiary
		European University	Athens	Greece	Subsidiary
		European University	Thessaloniki	Greece	Subsidiary
		European University	Rome	Italy	Subsidiary
		European University	St. Vincent	Italy	Subsidiary
		European University	The Hague	Netherlands	Subsidiary
		European University	Lisbon	Portugal	Subsidiary
		European University	Barcelona	Spain	Subsidiary
		European University	Lisbon	Spain	Subsidiary
		European University	Geneva	Switzerland	Subsidiary
European University	Montreux	Switzerland	Subsidiary		
European University	Sion	Switzerland	Subsidiary		
EAP Paris	France	EAP Oxford ^b	Oxford	United Kingdom	Subsidiary
		EAP Madrid ^b	Madrid	Spain	Subsidiary
		EAP Berlin ^b	Berlin	Germany	Subsidiary
Ecole Européen de Gestion — Groupe EBS	France	Paseo del Pinto Rosales and European Business School	Madrid	Spain	Subsidiary
		European Business School	Milan	Italy	Subsidiary
		European Business School	Munich	Germany	Subsidiary
		European Business School	Brussels	Belgium	Subsidiary
		Escola Europea de Gestio	Andorra	Andorra	Subsidiary
		European Business Management School	London	United Kingdom	Subsidiary
European Business School	Germany	European Business School	Prague	Czechoslovakia	Subsidiary
		European Business School	Paris	France	Subsidiary
		European Business School	London	United Kingdom	Subsidiary
Luigi Bocconi University	Italy	St. Petersburg University	St. Petersburg	Russia	Joint venture
The Netherlands International Institute for Management	Netherlands	Debrecen Agricultural University ^c	Debrecen	Hungary	Joint venture
		National Productivity Association	Singapore	Singapore	Joint venture
		University of Trisakti	Jakarta	Indonesia	Joint venture
		Intercollege	Nicosia	Cyprus	Joint venture
		Centre for Management and Human Resource Development	...	Yugoslavia	Joint venture
Malaysian Institute for Management ^d Intercollege ^d	United Kingdom	St. Katherine's College	Kuala Lumpur	Malaysia	Joint venture
			Athens	Greece	Joint venture
St. Katherine's College, Oxford University	United Kingdom	St. Katherine's College	Kobe	Japan	Subsidiary
University of Hartford	United States	The University of Hartford Business School (UHBS)	Paris	France	Subsidiary

Source: United Nations Department of Economic and Social Development, Transnational Corporations and Management Division, 1992.

a In the case of subsidiaries, ownership is 100 per cent.

b Management learning centre.

c Agro-based industries management programme together with University College of Dublin and the Agricultural University Wageningen.

d Facilities are not yet fully operational.

capability, even though both components are, to a certain extent, culture-bound. Western management schools, particularly those in the United States, concentrate on producing MBAs with the knowledge, skills and attitudes that enable them to achieve the profit-maximizing objectives of the corporations. Effective management for economic growth in other regions may require a different set of skills and attitudes. For example, it has been observed that organizations in Asia "place equally high importance on the Asian manager's intuitive and philosophical skills" and that "the Asian manager must be sensitive to the all-pervasive Asian value of familial relationships, which is evident across the range of Asian corporations".⁴⁴

In addition to differences in managerial values, countries differ in terms of institutional and economic environments. Western business schools primarily cater to the needs of the urban-based business community. In developing countries, however, managerial skill must also be developed for rural-based agricultural enterprises, for government agencies and state-owned enterprises and for cooperatives and non-profit organizations. Abilities and skills in the functional areas of management imparted through transnational business schools should therefore be made relevant to the actual environment of the students. If the goal of the transnational business school is to develop local capability, business cases and teaching materials used in developing countries should have a high level of local content and should emphasize the development of the particular managerial skills most needed for the region or country. INCAE, for example, has succeeded in doing so by developing a vast number of cases with Central American business structures and strategies, in Spanish.

In addition to the role played by transnational educational institutions in developing countries, TNCs in manufacturing and services also contribute to formal training of host-country nationals in management and technical skills. One avenue is the financing of university degree courses for senior employees and managers (from developed as well as developing countries). According to an ILO study

Box VII.2. Transnational management education: Canada and China

The Canada-China Management Education Program Phase II (CCMEP II) is designed to assist Chinese universities to meet the growing demand for management education in China. Under the auspices of the Canadian Federation of Deans of Management and Administrative Studies and China's State Education Commission, Phase II is an integrated network of approximately 25 Canadian and 25 Chinese schools. Since one of the primary strategies of the programme is to strengthen China's managerial training capacity (in addition to managerial capacity), doctoral programmes and in-China MBA programmes are important elements in the project. A National Executive Development programme responds to China's more immediate need to upgrade the skills of its line managers. Phase I of the programme began in 1983. Linkages were formed between 8 leading Chinese universities and 10 Canadian faculties of management. Phase II has also introduced a National PhD programme which grants a Chinese degree to 40 students jointly trained in China and Canada. Other activities include materials development, study tours and conferences. Additional linkages include the training of 145 visiting scholars, 50 master's students and 73 doctoral students in Canada and over 130 Canadian professors who will share their expertise by teaching in China.

Source: Canada-China Management Education Program II National Coordinating Office Bulletin (Montreal, December 1989).

or diploma) for students other than their own employees. Examples are the Philips International Institute or Alusuisse, both of which provide scholarships to students from developing countries, and the establishment of a training programme by German TNCs for managers in India.⁴⁶ Similar formal training is provided by transnational banks (TNBs) that develop the professional skills of their managers by sending a selected number to attend courses at business schools or management departments of universities.⁴⁷ Some TNBs have regional training centres outside their home countries, where they provide their staff with specialized training as well as more advanced and professional courses.

Furthermore, the direct operations of TNCs in developing countries can affect the national proportion of human resources that are induced to attend advanced formal training institutions. Transnational corporations draw on the existing pool of trained candidates, sometimes depriving local enterprises of competent personnel. The presence of TNCs offering relatively sophisticated employment opportunities can stimulate potential employees to invest in advanced training. A recent study in Brazil indicates that importation of foreign technology leads to an increase in university-trained personnel. By contrast, traditional industries based on established technologies with little foreign import did not substantially increase their technically trained personnel on their own.⁴⁸

(b) Non-formal learning

The second broad component of training and development concerns the process of non-formal learning. Transnational corporations have their most substantial impact on the development of managerial capability via non-formal training and development activity. The principal channels for non-formal learning are, first, direct training and development programmes offered by TNCs; and, second, the indirect absorption of knowledge and practices by local firms that enter into joint ventures, strategic alliances and collaborative arrangements with TNCs.

(i) Non-formal learning through direct training and development

Training and development in foreign affiliates takes place in two steps: first, a foreign affiliate recruits and trains local workers in skills (technological and managerial) necessary to master and implement the technology used by the affiliate in its operations in that country; second, as local workers gain experience, they advance within the affiliate, replacing expatriates and taking on assignments of greater responsibility.

Transnational corporations have a potentially significant impact on the development of managerial capability through direct training of the local staff they recruit. There is, however, limited empirical work throwing light on human-resource management in foreign affiliates, including the selection, recruitment and training of host-country nationals.⁴⁹ It appears that affiliates generally expend at least as much, if not more, in resources to train local managers as do indigenous firms. For example, a study comparing executive training of host-country nationals in TNCs with executive training of nationals in local firms in Turkey concludes that TNCs spent twice as much on training (as a percentage of payroll) than did

local firms (table VII.3). Other empirical research, including a major study by the ILO, supports the view that foreign affiliates train a substantial percentage of their employees, particularly in new industries, with emphasis on training programmes for high- and medium-level managerial staff and key technical personnel. Types of training provided include short internal and external courses at headquarters or in the host country, assignments to the parent company, study travel to keep abreast of products and techniques and deputation of trained personnel from the parent company.⁵⁰ In the services sector, which is now the principal recipient of FDI worldwide and of growing importance in developing as well as developed countries, TNCs are an important source of training in management and related skills, which is the main channel for the transfer of services technology (see box VII.3).

The capabilities of employees are further enhanced through professional development and advancement within the firm. Expatriate employment is an important factor influencing such development, since opportunities for local employee advancement depend at least partially on the extent to which TNCs rely on expatriates. The importance of expatriate employees appears to vary according to the origin, the maturity of the investment and the organizational and technical complexity of the enterprise.⁵¹ Recent evidence points to a noticeable replacement of United States expatriates by local (or third-country) nationals. In a major study of large United States-based TNCs (industrial companies and banks), half of the companies surveyed indicated a significant reduction in expatriates during the 1980s.⁵² Other research reported that 80 per cent of United States firms surveyed employed a host-country national as head of a majority of country operations.⁵³ Such significant replacement of expatriates with developing-country nationals in the managerial ranks of TNCs may be regarded as a positive sign for the growing managerial and technical competence of the local labour force.⁵⁴ Aggregate data for the United States confirm the trend towards decreasing employment of home-country citizens by United States TNCs. Similar replacement has not taken place in Japanese TNCs, whose investments are relatively more recent (table VII.4).

Even though TNCs may expend substantially more resources training and developing their local staff than do indigenous firms, the impact on growth of the host economy depends upon whether the

Table VII.3. Executive training programmes of transnational corporations and local firms in Turkey

<i>Item</i>	<i>TNC</i>	<i>Local firm</i>
Existence of standard executive training programmes (per cent)	72.4	54.8
Frequency of standard training programmes		
Once a year (per cent)	29.4	41.2
Twice a year (per cent)	70.6	58.8
Mean cost of training programme (thousands of Turkish Lira)	37 908	7 543
Mean total payroll of white-collar employees (thousands of Turkish Lira)	648 000	632 600
Ratio of costs of training programmes to total payroll of white-collar employees (per cent)	4	2
Cost of training per executive (thousands of Turkish Lira)	1 516	613

Source: D. Erden, "Impact of multinational corporations on host countries: executive training programs", *Management International Review*, vol. 28, No. 3 (1988), pp. 39-47.

Box VII.3. Investments in training by transnational service corporations in developing countries

Persons with technical training and cognitive and communication skills are of special importance in the service industries, where much of the technology is embodied in human beings. Transnational corporations in services rely heavily on the technical, administrative and managerial skills of local personnel in host countries to maintain company standards and contribute to innovations. For this reason, many of them have created extensive training programmes to develop these skills and further employee education.

A survey of the operations of its members in a sample of 15 developing countries by the Coalition of Service Industries, an organization of 17 major TNCs representing various service industries, indicated various forms of formal and non-formal training, including local programmes, developmental courses, fellowships and scholarships, regional and headquarters training centres, and support for outside academic and professional programmes. Some professions require a minimum number of hours of training each year, and one company indicated a strong commitment to training its suppliers and customers, as well as its employees. The average hours of training per year across the 15 countries in the respondent companies ranged from 26 to 103, with the average at 59.4 hours per year.

Eight companies maintained facilities in developing countries designed specifically for R&D or training. One firm built an Advanced Systems Center in the Philippines which provided state-of-the-art technology for computer systems development. This company also maintained a regional training centre for accounting and related services in Mexico.

Another company established a regional training centre in Indonesia for engineering and construction management, and another respondent maintained training facilities in Hong Kong and Singapore for information and telecommunications products and services. One company initiated the establishment of national institutes in Hong Kong, Taiwan Province of China and Thailand to stimulate professionalism and productivity of the local insurance industry.

In addition to training programmes for enhancing employee skills and management capabilities, service TNCs have implemented activities to improve the capabilities of local service providers. For example, in Thailand, an innovative training technique was developed to teach foreign currency trading skills to local financial institutions through the use of computer simulation of global exchange markets. In Malaysia, seminars have been organized and guides produced to improve management performance in restaurant and retail industries. In Mexico, the "Juntos Podemos" programme was established in cooperation with local tourist establishments to promote less well known regions of the country, to invoke local community awareness of the benefits of tourism and to train staff from local tourism and retail establishments.

An information centre was built in the Côte d'Ivoire by one of the respondent companies to aid African countries in maintaining a regional network for the exchange of news and data within the continent, and connecting to networks in Europe and the United States. The company provided the hardware for the facility and is responsible for training the local personnel.

Source: The Coalition of Service Companies, *Company Operations in Developing Countries* (Washington, D.C., The Coalition of Service Companies, 1989), pp. 4 and 7.

skills developed through TNC training are diffused and absorbed outside of the TNC, especially through the turnover of trained staff. In many cases, the training offered by TNCs is observed to be "incomplete, in the sense of enabling nationals to eventually run the industry successfully".⁵⁵ A survey examining the nature of training programmes for local managers by the subsidiaries of 21 TNCs operating in Turkey concludes that the training programmes provided successful results for the subsidiaries; however, the effect on the local industry as a whole was slight.⁵⁶ Thus, although the TNC effectively trains its own employees, thereby raising the level of employee expertise, the broader penetration of the expertise into the pool of human resources of the developing country can be relatively small. There is also some evidence, however, that, in more rapidly expanding developing countries, the turnover of trained technical and managerial staff in the host economy can be quite high. For example, poaching on trained engineers from TNCs by small or new enterprises, and job hopping, have become apparently quite common in Thailand.⁵⁷

In spite of its variable impact, training remains one of the most important channels through which TNCs can contribute to human resource development in the countries in which they operate, particularly if the training activities of TNCs may be extended to include human resources beyond the immediate employees of a TNC. The provision of training beyond the basic needs of the firm, however, is not the operating norm of TNCs: given the potential loss of competitive advantage to indigenous or non-indigenous rival firms, TNCs may be unwilling to invest heavily in either the training of non-proprietary skilled workers or of managers beyond what is perceived to be the minimum necessary.⁵⁸

In addition to government incentives for TNCs to invest in training beyond their own needs, which is discussed further in section E below, different mechanisms have been identified through which corporations can "train beyond capacity" to benefit the host nation as a whole. For example, a firm can

Table VII.4. Expatriate employment in foreign affiliates of United States and Japanese transnational corporations

(Percentage share of home country citizens in total employment)

Sector	United States ^a		Japan	
	1982	1989	1982	1989
All industries	0.8	0.4	2.0 ^b	3.0
Mining	5.3 ^c	2.6 ^c	1.2 ^b	2.5
Manufacturing	1.9	0.2	1.0 ^b	1.7
Services	1.3	0.5
Wholesale trade	0.6	0.4	10.2 ^{b,d}	8.8 ^d
Other services	1.7	0.6	5.4 ^e	5.1

Source: United States, Department of Commerce, *U.S. Direct Investment Abroad: 1982 Benchmark Survey Data* (Washington, D.C., Department of Commerce, 1985), and United States Department of Commerce, *U.S. Direct Investment Abroad: 1989 Benchmark Survey, Preliminary Results* (Washington, D.C., Department of Commerce, 1991). See also Ministry of International Trade and Industry, *Kaigai Toshi Tokei Soran: Kaigai Jigyo Katsudo Kihon Chosa*, No. 1 (Tokyo, Toyo Hoki Shuppan, 1983), No. 3 (Tokyo, Kaibun Shuppan, 1989) and No. 4 (Tokyo, Printing Bureau, Ministry of Finance, 1991).

- a Data are for majority-owned non-bank affiliates of non-bank United States parents.
- b For 1981.
- c Petroleum.
- d Data are for "commerce".
- e For 1986.

train in excess of its own needs and absorb the additional cost as a contribution to human development in the countries in which it operates (an approach pioneered by Goodyear).⁵⁹ Or, as practised by Daimler Benz, a TNC may simultaneously train employees of other firms along with its own and be subsequently reimbursed by the other firms.⁶⁰ That practice may be a cost-effective strategy for smaller firms to have access to high-quality training programmes, and could also include the upgrading of skills of the non-employed. (Firms that later hired the “excess trainees” could reimburse the TNC for the initial training costs.) Another alternative is for TNCs to set up autonomous training institutions that supply skills to an entire industry, as Toyota Astra and National Gobel have done in Indonesia.⁶¹ Finally, as box VII.4 shows, there are also possibilities of assistance through the cooperation of international institutions and TNCs, such as, between the Transnational Corporations and Management Division and a number of individual TNCs.

Training by TNCs can also extend beyond the firm through vertical linkages with local suppliers. For example, strong vertical linkages have been created by numerous TNCs in the electronics industry in Singapore.⁶² One TNC, for example, has actively helped to set up and develop locally owned supporting industries. The TNC encouraged firms to become suppliers to it by offering technical training and advice from local and expatriate engineers and consultants flown in from Europe. Years of training are invested in some suppliers to enable them to improve the quality of products and develop cost-efficient practices. When new products or techniques are introduced, the suppliers are also retrained. The streamlining of the production methods of the supplier benefits both the TNC that offers the training (as the supplier becomes capable of producing cheaper inputs), as well as the supplier whose increased level of technological and managerial capability makes the local firm more competitive.⁶³

(ii) Non-formal learning through collaborative arrangements

A second major channel for non-formal learning relates to the transfer of technological and managerial knowledge and practices through collaborative arrangements between local firms and TNCs. As noted in the previous chapter, contractual arrangements can be important vehicles for the transfer of technology by TNCs to developing countries, in addition to direct investments by TNCs.⁶⁴ Such arrangements allow for the transfer of embodied or disembodied know-how to a contracting partner in the host country, providing opportunities for training in technical and managerial skills.

In principle, collaborative arrangements are likely to provide good opportunities for human resource development, since the local firm retains control over operations and develops its own management systems, conducive to local industry and practice. Thus, it can benefit from the introduction of management systems and the provision of training that are usually a part of the technology-import package, without implying a continuing dependence of the local firm on the TNC. There is, in fact, considerable evidence that “unpackaged” forms of technology transfer and joint ventures may be preferable to FDI or majority-equity participation by TNCs, from the point of view of effective transfer of technology and the building up of local technological capacity.⁶⁵ But the unpackaged forms may not be a realistic option in the case of more sophisticated technologies, which TNCs are reluctant to provide except through FDI, or for countries at an early stage of development. Several studies have shown that

Box VII.4. Training with transnational corporations

The development of entrepreneurial capabilities is one of the most crucial bottlenecks in many developing countries. The following projects, undertaken by the Transnational Corporations and Management Division of the United Nations Department of Economic and Social Development, suggest how an international organization can, in cooperation with TNCs, make a contribution in this respect.

China management training

One of the factors slowing down China's economic modernization efforts is the shortage of personnel competent to establish joint ventures, manage Chinese affiliates abroad, conduct import and export business and guide domestic enterprises more efficiently. This bottleneck is particularly acute at a time when the country embarks on its new development plan, in which greater emphasis is being placed on the absorption of more FDI and on the expansion of China's international business. Existing management education suffers, however, from a shortage of experienced teachers and teaching materials and, in particular, opportunities to gain hands-on experience in modern enterprises.

To address this problem, the Transnational Corporations and Management Division, the Ministry of Foreign Economic Relations and Trade of China and UNDP launched a programme to improve practical managerial and business skills of managers working in state enterprises, joint ventures of small- and medium-size TNCs and government offices involved in dealing with TNCs. After a structured and merit-based selection process, the candidates (persons with key decision-making responsibility) enter a two-month formal management training programme in China. (It is envisaged that the curriculum specifically designed for this programme will eventually be transferred to Chinese universities.) The best qualified candidates will then be sent to TNCs for an on-the-job training experience of about one year. During that time, the participants in the programme will be involved in practical work in their host TNCs, with a view towards obtaining a better understanding of how modern, profit-oriented enterprises function in a competitive international environment.

Participating companies

AKZO	(The Netherlands)	Arthur Andersen	(Germany)
ASEA Brown Boveri	(Sweden)	Avon	(United States)
Cable & Wireless	(United Kingdom)	Coopers & Lybrand Deloitte	(United Kingdom)
Crédit Suisse	(Switzerland)	Ellicott Machine Corporation	(United States)
Ericsson	(Sweden)	Ivo International Ltd.	(Finland)
Lieberherr	(Switzerland)	Logitech	(United States)
Mobil	(United States)	Nestlé	(Switzerland)
Olivetti	(Italy)	Otis Elevator/United Technologies	(United States)
Ransburg/ITW	(United States)	Rauma-Repola	(Finland)
The Royal Bank of Canada	(Canada)	Sandoz Chemicals Ltd.	(Switzerland)
Sulzer Brothers Ltd.	(Switzerland)	Valmet Paper Machinery	(Finland)

/.....

(Box VII.4, cont'd.)

The programme is financed by UNDP and the Governments of China, Japan and Switzerland. The participating TNCs (see inset) contribute the training and the living expenses of the Chinese participants.

EMPRETEC

Entrepreneurial qualities have traditionally been regarded as innate or culturally derived, leaving little room for promotion other than broad measures to change the social environment or economic conditions. However, recent research has identified 21 personal entrepreneurial competencies consistently demonstrated by successful entrepreneurs. These consist of traits such as opportunity-seeking and initiative, risk-taking, persistence and goal setting. The research also concluded that the behaviour of successful entrepreneurs occurred invariably in the different countries in which the study was conducted.¹

That research opened up the possibility for encouraging and developing entrepreneurship through training and business support programmes. Selection procedures and training workshops emphasizing the personal entrepreneurial competencies can be developed. Support centres can be designed to provide ongoing business education and consultancy to assist the entrepreneurs in realizing their business projects. Entrepreneur networks can be encouraged to provide peer support and stimulate national and transnational business. To provide a solid underpinning and ensure long-term viability, government/private sector coalitions can be organized to ensure community support. Transnational corporations can be enlisted by these initiatives to lend executives who provide hands-on expertise on specific business problems. Linkages with TNCs can also result in subcontracting, material and equipment financing, licensing and marketing arrangements.

One example of a programme pursuing those objectives is the EMPRETEC Entrepreneurship Development Programme launched by UNCTC. Started in Argentina in 1988, the programme has expanded to Brazil, Chile, Ghana, Nigeria, Uruguay, Venezuela and Zimbabwe. The programme has involved some 1,000 entrepreneurs. Over 150 new businesses were established and some 200 existing businesses have been re-focused and expanded. More than 60 intra-EMPRETEC national and regional joint ventures, sales agreements and technology transfers have been consummated. Businesses range from genetic plant breeding, computer programming and pollution control to plastics and textile manufacture and food products.

Transnational corporations have been central to the success of the programme. Training and executives have been provided by companies such as the Bank of Boston, Ogilvy and Mather, Siemens and Techint. Du Pont has provided materials and financing to new ventures. Licensing and technology transfer agreements for vehicle emission control have been negotiated with a Canadian company. IBM has been a source for subcontracting. Banca Nazionale de Lavoro has provided start-up financing.

The EMPRETEC entrepreneurs' associations, in cooperation with the EMPRETEC programme, have organized three regional business exchange meetings in Latin America in which nearly 500 of their members have participated and negotiated business arrangements. Several have formed joint ventures, making them mini-TNCs.

¹ See Robert McBer, *Report on Entrepreneurship Training and the Strengthening of Entrepreneurial Performance* (Washington, D.C., USAID, October 1990). See also Albert Berry, *The Future Role of Small and Medium Industry in Latin America and the Caribbean* (Toronto, University of Toronto, October 1991).

active local efforts at the firm level, as well as through national policies for building up education (general, as well as scientific and technical), are necessary.⁶⁶ Thus, the impact of collaborative agreements on the development of technological and managerial capabilities depends on the specific conditions of the contractual agreements concerning access to information, the level of technology and know-how shared and the efforts by host-country participants.

With respect to the sharing of technology, the size of a TNC also appears to be an important factor. In particular, some of the smaller TNCs in developed countries have demonstrated a strong interest in helping developing countries industrialize, particularly through the mechanism of technology transfer. Swedish firms appear to have taken the lead in that area, while, in contrast, United States firms seem to guard their technology more closely.⁶⁷ It has also been observed that, for countries with weak domestic technological capability, TNCs from developing countries may have more to offer in terms of technology transfer and building up local capabilities, although their operations are generally concentrated in mature technologies.⁶⁸

A final aspect of the impact of TNCs on capability development through non-formal training concerns the extent of R&D undertaken by TNCs in developing countries. As discussed in the previous chapter, TNCs engage in relatively little R&D, the major source of their competitive advantage, outside of their home countries and, especially, in host developing countries. Some exceptions to this general practice were noted. The extent of R&D by TNCs in developing countries, however, tends to be correlated with the level of development of the host country: TNCs are likely to carry out more R&D in countries with fairly well-developed scientific and technological infrastructures than in those that are at an incipient level of economic development. Thus, countries at an early stage of development are unlikely to gain in terms of human resource development from the R&D activity of TNCs.

(c) *Informal learning*

The third broad channel for the development of technological and managerial capability concerns the process of informal learning whereby values, attitudes and beliefs embedded in organizational cultures are transferred to the host country. As local staff members advance to higher levels of responsibility within a TNC, they may change cultural, social and psychological values and attitudes.⁶⁹ The development of the values, attitudes and beliefs—the non-cognitive components underlying technological, managerial and entrepreneurial capabilities—occurs through a process of socialization into the organizational culture of a TNC. Underlying values and beliefs of the culture of an organization are manifest in the tangible artifacts of the firm. For example, “evaluation criteria are a direct reflection of corporate values and norms. Items like press releases, interoffice memoranda...procedures for expenditures or decisions, policy statements, speeches by company officers, the physical layout of offices...and telephone manners each reflect the company’s culture”.⁷⁰

Organizational culture is also embedded in the culture of the home country of a company and thus reflects its national socio-cultural values. Thus, TNCs operating in developing countries socialize employees into an organizational culture that reflects the values of their home countries. That may be of

significance in host countries in which certain cultural values may be inconsistent with the values (non-cognitive components) underlying particular managerial capabilities that are required for economic growth. For example, entrepreneurship is the fundamental link between productivity and growth in a market economy. Entrepreneurship requires moderate risk-taking and the personal acceptance of responsibility. Most Western TNCs have organizational cultures that place a high value on individual (or group) achievement and responsibility and, to the extent that the values transmitted by TNCs correspond with the values underlying the particular managerial capabilities required for development within a host country, such acculturation may be considered growth-promoting.

The process of acculturation directly affects the local employees of a TNC; in addition, inculcation of corporate values and attitudes occurs through backward and forward linkages, thus affecting the local suppliers and customers as well. Furthermore, the development of entrepreneurial, technological and managerial capabilities is encouraged by certain modifications in values and attitudes in the general populace. For example, an increased national propensity of a people to accept new products stimulates innovation and the creation of new markets.⁷¹ The presence of TNCs in a developing country contributes to such value-and-attitude modification through its stimulation of demand, through the provision of new products and services and through marketing efforts that enhance the perceived attractiveness of modern living and values. The stimulation of demand for Western consumer products, however, also encourages greater development of the luxury consumer-goods sector, rather than of products that benefit a broader base of the people of the nation. The “know-how” unique to TNCs that produce luxury consumer goods is also centred more on marketing and packaging than on production and technological innovation. As developing countries are more in need of building capability in the latter than in the former, the stimulation of demand for new products may not always be growth-promoting.

C. Transnational corporations and employment opportunity

Transnational corporations have three main impacts on the opportunities for employment in developing countries: directly through the provision of employment within TNCs; indirectly, through the creation of employment opportunities in other organizations; and qualitatively, through changes in employment policies and practices, allowing greater access to employment for particular groups, including women, who may experience discrimination in employment.

1. Direct effects

Direct employment by TNCs in host developing countries was estimated at approximately 7 million in the mid-1980s (out of a total of 22 million employed by TNCs outside their home countries), which represented less than 1 per cent of the economically active population of developing countries.⁷² Thus, employment by TNCs, in its overall dimensions, is quite small; furthermore, it appears that its percentage-share in the world-wide economically active population may be declining.⁷³ The preliminary results

of the 1989 benchmark survey of United States direct investment abroad confirm the trend: employment by (non-bank) foreign affiliates of United States TNCs on a world-wide basis remained virtually unchanged during the period 1982-1989, at a level of 6.6 million workers; by contrast, world-wide assets of those affiliates of TNCs grew by 78 per cent and world-wide sales by 34 per cent during the same time period.⁷⁴

The overall magnitude and trends, however, conceal the importance of TNCs as providers of employment in industries that are of particular significance for the transmission of industrial and technological know-how. As shown in table VII.5, in more than half of the developing host countries for which data are available for the 1980s, foreign affiliates accounted for more than 25 per cent of paid employment in the manufacturing sector. Furthermore, the importance and influence of TNCs can be particularly significant in the modern and technologically advanced activities in manufacturing and services of host developing countries.⁷⁵

The generation of employment by TNCs is a direct function of the amount of their capital investment and of the labour intensity of the production process. Trends and inter-host-country disparities in capital investment have been noted in chapter II. As regards the latter factor, TNCs in industries that bring advanced production technologies to developing countries may have a positive impact on the capability-development aspect of human resource development, but they have a small impact on employment when compared with TNCs in industries that use labour-intensive production processes which are less technologically advanced. For example, the decline in manufacturing employment of United States TNC affiliates between 1977 and 1986 reflected, in part, the adoption of labour-saving technologies.⁷⁶ Over the same time period, employment by United States foreign affiliates increased rapidly in services (excluding banking). The increase, however, was insufficient to offset the overall trend of declining employment of United States TNCs abroad, as the manufacturing sector accounted for a much higher share of affiliate employment (63 per cent of affiliate employment as compared with 30 per cent in affiliates in services in 1989).⁷⁷

A substantial share of TNC employment in developing countries is provided by foreign affiliates in export processing zones (EPZs) and other offshore plants with EPZ-like conditions. About 2 million workers are employed in EPZs (excluding China), mainly in traditional labour-intensive manufacturing (such as textiles, clothing, electrical and electronic appliances), but also in services such as data-processing. Although some of this employment is in domestic enterprises, most of it is linked to equity, non-equity or subcontracting relationships with TNCs.⁷⁸ The direct employment contribution of EPZs is high, and growing relatively rapidly in newer recipient countries of export-oriented industrial production. It is generally agreed, however, that EPZs do not necessarily contribute significantly in terms of employment quality or stability. In most zones, TNCs have been observed to adopt "casual labour strategies", and to follow a distinctive pattern of employment in terms of gender, age and skill composition that has undergone few changes since the mid-1970s and involves primarily an exceptionally high share of young unskilled or semi-skilled women.⁷⁹ Overall, the pattern of EPZ employment seems to hold limited scope for training or for the development of skills.

2. Indirect effects

Transnational corporations may contribute substantially to indirect employment generation in several ways. First, TNCs may induce competition with other TNCs and with local firms in related industries and thereby stimulate employment in other firms, although they could also crowd out local firms or force them to rationalize and reduce employment. Second, as discussed in chapter V, TNCs have extensive backward and forward linkages and may generate employment among their suppliers, as well as distributors and service agents. Rough estimates derived from case studies of individual TNC subsidiaries by the ILO suggest that backward and forward linkages could each create employment two or three times higher than the number directly employed by TNCs, depending on the product. The overall assessment, however, after considering jobs displaced, is that indirect employment is at least of the same order of magnitude as the direct employment generated by foreign affiliates.⁸⁰

3. Quantitative and qualitative changes in employment of women

The third main impact TNCs may have on employment opportunity is by effecting qualitative changes in employment by allowing greater access to employment for particular groups, especially women, who may experience systemic discrimination. The underutilization of women is a critical concern with respect to the effective deployment of the national human resources. The causes of such underutilization are not merely economic, but are also embedded in the social, cultural and political heritage of a nation. Transnational corporations may promote the greater utilization and involvement of women in developing countries, through direct employment and through acculturation processes whereby the values of the home country are transferred to the host country via the practices of TNCs.

Total direct employment of women by TNCs in developing countries is relatively small, amounting to about 2 million women in the mid-1980s.⁸¹ As mentioned above, a large proportion of women are employed by TNCs in EPZs. A newly emerging trend in direct employment of women by TNCs in developing countries is the rapidly growing job market in offshore data processing and office administration services, facilitated by the growing tradability of those services over computer-communication lines. American Airlines and "up to 70 other firms" are now using offshore clerical workers in mainland China and in Barbados for data-processing work; American Airlines estimates that it saved in excess of \$3.5 million per year, a figure that will surely encourage other TNCs to follow suit.⁸² Jamaica, the Philippines and Singapore are other developing countries that have emerged as popular locations for "back office" jobs.⁸³ It is estimated that as many as 250 of the Fortune 1,000 companies may be using such off-shore employment.⁸⁴ Many data-processing and keyboarding jobs are held almost exclusively by women. Although such jobs are important sources of income, they are isolated from the organization, with minimal opportunity for advancement in the firm. Consequently, little development of skills takes place either through formal or informal learning processes.

Thus, most of the employment generated by TNCs for women is concentrated in the manufacturing and services sectors in low-skilled jobs. While it offers benefits in terms of income generation, with wages and working conditions, which are often above average, it provides little opportunity for training or skill development. Furthermore, such employment patterns do little to change the prevailing circumstances in developing countries that largely confine women to lower-paid, lower-skilled jobs.

Transnational corporations from industrialized countries, however, have the potential to influence the employment of women in developing countries through the more subtle effects of acculturation. In developing countries, the low levels of participation of women in paid economic activity mean that the incentives for poor households to invest their scarce resources in human resource development for their female members are often weak. By contrast, developed countries have less gender distinction in human resource-development investments and have absorbed many more women into the labour force (59 per cent) than the developing countries (49 per cent), including a greater proportion of women into managerial positions (see table VII.6). Exposure of the local workforce to women in managerial positions within a TNC can assist in breaking the constraints upon the participation of women in advanced education and in responsible positions within organizations. Unfortunately, however, few TNCs send female managers abroad. A survey of 686 North American firms revealed that only 3 per cent of the 13,338 managers sent to Asia were female.⁸⁵ A reason commonly cited for corporate resistance to sending female managers abroad is that foreign prejudice renders them ineffective.⁸⁶ Thus, the lack of development and acceptance of women in managerial positions in developing countries becomes a self-fulfilling prophecy because of the absence of female managerial precedents. Transnational corporations could potentially play a pioneering role in that respect.

Table VII.6. A cross-cultural comparison of the roles of women in management

<i>Country</i>	<i>Representation of women in management</i>
United States	Women hold approximately one-third of managerial positions.
Canada	Women hold approximately one-third of managerial positions.
Indonesia	Four times as many men as women hold managerial positions in the private sector.
India	Women have fewer opportunities for promotion than men.
Singapore	Women hold fewer than 18 per cent of positions in administration and management.
Philippines	Less than 3 per cent of working women have administrative or managerial positions in Government or business.

Sources: Nancy J. Adler, "Pacific basin managers: a gaijin, not a woman", *Human Resource Management*, vol. 26, No. 2 (1987), pp. 169-191; Nancy J. Adler and Dafna N. Izraeli, "Women in management worldwide", in Nancy J. Adler and Dafna N. Izraeli, eds., *Women in Management Worldwide* (New York, M.E. Sharpe, 1988); Virginia R. Crockett, "Women in management in Indonesia", in Nancy J. Adler and Dafna N. Izraeli, ed., *Women in Management Worldwide*, op. cit.; D. Singh, "Women executives in India", *Management International Review*, vol. 20 (August 1980), pp. 53-60; Audrey Chan, "Women managers in Singapore: citizens for tomorrow's economy", in Nancy J. Adler and Dafna N. Izraeli, eds., *Women in Management Worldwide*, op. cit., pp. 54-73; and B.F. Ople, *Working Managers, Elites: The Human Spectrum of Development* (Manila, Institute of Labour and Management, 1981).

D. Assessment

In assessing the overall impact of TNCs on economic growth via human resource development, it is important to note that the presence of TNCs affects the quality of human resources and their deployment through the regular operations of TNCs, as well as through specifically focused investments in human resource development beyond what is required for the standard operations of a TNC. In the area of health and nutrition, TNCs in the pharmaceutical, agricultural and food-and-beverage products industries have considerable potential for both positive and negative effects, although the actual impact depends upon host-country policies and conditions. The effects of the production and sales activities result in the introduction to consumers of new medicines, vaccines and certain nutritious food products that raise health and nutrition levels; however, they may also disrupt healthy indigenous consumption patterns which, in turn, lowers the quality of health and nutrition. By contrast, the specifically focused investments of some TNCs in those same industries have had a substantial and uniquely positive impact on health and nutrition in many developing countries. Transnational corporations in those particular industries also have specialized knowledge that may be directed to locally specific issues through R&D programmes, training and consultancy.

In the area of general education, TNCs have a small role to play. In vocational training, the effects of TNCs on human resource development through standard operations are somewhat mixed. On the positive side, TNCs introduce new technology and train their employees in the required skills. The new skills acquired, however, may be TNC-specific and not always readily applicable in local firms. Furthermore, the introduction of new technology by TNCs may influence local Governments to make changes in educational policy and programmes that may not necessarily be consistent with educational needs for the broader development of the national economy. For example, the substitution of vocational education and training for general secondary schooling may yield in the short term a larger pool of ready employees for TNCs, but excessive emphasis on such training could limit labour-market flexibility and the absorptive capacity of workers for more advanced knowledge. In terms of specifically focused investments in vocational training beyond what is required of their own employees and what is necessary for standard operations, several instances show that TNCs collaborate with local institutions to establish and improve training centres, and to extend their training to host-country nationals other than their own employees.

In the area of managerial capability, the contribution of TNCs to host-country human resource development is largely positive, but the potential is underutilized. Through standard operations, TNCs train and develop local employees in their management policies and practices. The scope of impact of managerial training on human resource development is thus dependent on the extent of direct employment by TNCs; as direct employment by TNCs is small, the effect on managerial capability through employee training is in the aggregate correspondingly low, although the indications of a declining share of expatriate employment in some TNCs are a positive sign. Given the larger role of TNC employment in more sophisticated industries, however, training effects are likely to be more significant in those industries. Spill-over effects to the industry and economy can materialize to the extent that there is job mobility

between foreign affiliates and local firms. Moreover, the impact of TNCs is likely to be greater when collaborative agreements are taken into account, through which they indirectly impart both cognitive and non-cognitive aspects of competent management practices to the collaborating partners. Local capability is particularly enhanced in collaborative arrangements in which TNCs adapt their technology to local conditions and form strong linkages with the local infrastructure. In addition, TNCs can substantially increase their impact on local human resource development by opening their regular training activities to local people outside their firms.

Finally, in terms of providing employment opportunities, the aggregate impact of TNCs on human resource development is quite small. In economies with few other options for remunerative employment, or in which links to the world economy are very important, however, TNCs have had a substantial impact on the development of human resources through direct employment. That is also the case as regards modern manufacturing employment in a larger group of countries. In those cases, employment by TNCs not only enhances the material well-being and productivity of the employees concerned in the present, but also allows for greater private investments in health, nutrition and education for their families, thus having an even greater impact on the national productive capacity in the future.

In summary, the overall impact of TNCs on human resource development through their regular activities and standard operating procedures is, on balance, positive; their contribution through additional investments specifically oriented to local human resource development is positive, but the potential is underutilized. The extent to which individual host countries benefit from those contributions depends on the forces determining the complex relationship between TNCs, human resource development and economic growth. The literature on corporate strategies suggests that one of the critical challenges for TNCs in an increasingly global environment is to balance the competing requirements of global-scale efficiency of operations with locally responsive strategies.⁸⁷ The relationship between TNCs, human resource development and economic growth is characterized by a similar tension between the forces of globalization and local responsiveness. A TNC, in its efforts to operate efficiently on a global scale, is inclined to behave in a way that often competes with the requirements of the host-country for local human resource development.

The empirical evidence discussed earlier suggests, however, that many TNCs do engage in activities that correspond to the requirements for local human resource development in host developing countries. Generally, however, TNCs will not pursue such strategies unless they perceive a potential benefit for the firm, or unless they are encouraged to do so by the policies of Governments of host countries. Given that dynamic, it may be appropriate to consider a TNC as being simply a stock of resources, knowledge, technology, management practices and values. The impact of TNCs on economic growth via human resource development then depends on the extent to which that stock of resources is outwardly invested, and the extent to which such knowledge, technology, practices and values are disseminated in host countries and adapted to fit the particular needs of a given host country for economic growth. Most importantly, therefore, fuelling economic growth through human resource development requires policies of the Government of the host country that strike a balance between benefiting TNCs, extending global operations to the host country and ensuring that local human development goals are supported.

E. Some policy implications

Governments of host countries can affect the contribution by TNCs to human resource development in two ways: first, through policies that are directly related to human resource creation and deployment; and second, through policies that attempt to channel FDI into areas particularly relevant for human resource development, and to encourage specific investments by TNCs in human resource development.

Although an in-depth discussion of developing-country policies and programmes relating to health, education, vocational training and employment is beyond the scope of this chapter, it is important to understand the role that such policies play in the relationship between TNCs and economic growth through human resource development. Government policies can affect positively the creation and efficient deployment of human resources, whether through domestic firms and organizations or TNCs, by establishing an institutional framework that enhances incentives for investment in health, education and training that removes impediments to resource mobility and resource mobilization and that increases participation in decision-making. National programmes to increase the levels of health, education and skills of human resources not only increase labour productivity, but also raise the level of national absorptive capacity for more advanced knowledge. Such policies enhance the potential for human resource development through TNC activities in two ways. First, the quality of the labour force is an important determinant of the amount and type of FDI a country receives and the extent of FDI in higher value-added industries with greater scope for human resource development. Second, the extent of advanced knowledge and expertise that a developing country can acquire as a result of TNC investments largely depends on the national absorptive capacity in terms of the basic quality of the human capital. Enhanced national programmes to create a population that is healthy, literate and skilled thus enable the country to receive and take greater advantage of the investments of TNCs.

High levels of investment in human resource development by TNCs (or other entities) do not, however, necessarily lead to economic growth for a country, unless the "developed" human resources are deployed in a way that benefits the nation as a whole. The institutional framework that governs the labour market, including employment and wage policies, determines the income structure of a country that in turn determines how human resources will be deployed. If particular skills or professions are considered critical for development, the national income structure must encourage the native human resources to pursue such professions. Among other things, the income structure affects the "internal brain drain", of a nation, whereby human-resource movements take place across sectors or regions within the same country. Although internal brain drain may not constitute a net loss in human resources for the country as a whole, "it can cause serious dislocations and management problems leading to delays in development, especially in those countries where the government plays a leading role in the management of the economy".⁸⁸ Transnational corporations can exacerbate the internal brain drain by drawing local managerial talent away from the indigenous sector where it is needed to develop and modernize domestic firms. Yet, the hiring of local staff by TNCs represents a potentially important channel through which advanced knowledge may enter developing countries.

Capitalizing on the training potential of TNCs requires a concerted programme for the national diffusion of the increased capability resulting from TNC investment. Such a national diffusion of capability takes place through the movement of TNC-trained and experienced managerial and technical personnel to employ their acquired skills and expertise in starting new firms or modernizing existing organizations.⁸⁹ To increase the movement of TNC-trained staff to indigenous organizations requires, as mentioned earlier, an institutional framework that encourages labour mobility. Necessary also are cooperative efforts on the part of indigenous private- and public-sector actors to minimize salary and benefits differentials between TNCs and indigenous public and private organizations; to enhance career and professional opportunities within local organizations; to remove discriminatory employment policies and practices; to develop staff exchanges between TNCs and local organizations; and to institutionalize incentives for TNC-trained staff to enter the local public or private sector (that is, bonuses, pension plans, benefits packages etc.).

In addition to the policies discussed above that have direct effects on human resource development, Government policies of host countries on foreign direct investment may also encourage human resource development by TNCs. Policies performing that role may focus on human resource development arising from the normal effects of the standard operating procedures of TNCs, as well as those arising from investments by TNCs, which are specifically focused on local human resource development beyond the minimum required for standard operations.

Impacts on human resource development that occur normally through the standard operating procedures of TNCs include hiring local workers, training them in the basic skills required to perform the functions of a TNC within a given country and collaborating with local firms and institutions. The essential role of the Government of a host country in this respect is thus one of channelling the normal activities of TNCs into directions that enhance human resource development through appropriate policies and regulations on FDI. In order to derive the greatest human resource development benefits from the normal activities of TNCs, Governments of host countries must pursue policies that encourage TNC activity in the industries and in the forms that are most vital for importing knowledge, and for developing and diffusing skills and managerial capability for national economic growth. Policy measures could include fiscal, financial and other incentives and/or promotional measures. The effectiveness of such policies for human resource development depends, however, on the existing human resources pool of a country and on other factors influencing decisions of TNCs to invest, which are closely related to the level of national income and development. In particular, given the interrelationship between the prevailing stock of qualified human resources and the willingness of TNCs to invest in sophisticated manufacturing and service industries, countries at low levels of development are likely to be able to induce FDI only into low-technology activities with limited scope for developing human resource capabilities. Moreover, less developed countries are often able to absorb foreign technology only in the form of imported capital goods, whole production systems under foreign ownership, or the product technology contained in licences to use patents and brand names, all of which tend to offer a smaller scope for the development of local capabilities than joint ventures and other non-equity modes of TNC participation. In contrast, a number of developing countries with a relatively advanced level of industri-

alization have pursued a more active strategy for the management of FDI and the complementary development of local capability.⁹⁰

Beyond the impacts that naturally occur as a result of standard operating procedures, TNCs also make investments that are more specifically dedicated to human resource development in the countries in which they operate. As discussed, such activities include specific research efforts for local health, nutrition and food-growing issues; financial contributions to and the provision of consulting services for health, research and educational institutions; and the provision of training and development programmes beyond what is minimally required by a TNC (that is, to members of other organizations or to the unemployed). Transnational corporations may make such investments for a number of reasons: to enhance their public image in the country of operations; to make an investment that will enhance their operations in the future (for example, building a school might ensure a future group of literate workers); or, as a result of host-government incentives or mandated performance requirements.

The role of the Government of the host country in increasing the potential contributions of TNCs through specific human resource development investments is primarily a negotiating role. Many developing as well as developed countries have established legal or administrative requirements for the provision of training for employees by national firms as well as by foreign affiliates.⁹¹ Requirements for training and localization or increased participation of local personnel in management, over time, are also incorporated into contractual arrangements with TNCs, which is especially important in extractive and certain services industries in which non-equity arrangements are often more common than FDI. In addition, in return for increased investment areas such as health, education and training, Governments of host countries might offer TNCs certain incentives. Or, more directly, investments in human resource development beyond the basic needs of a TNC may be mandated by a Government as an essential performance requirement for the TNC to operate within its borders. For example, Malaysia has negotiated with United States electronics TNCs to produce in Malaysia on the condition that the companies provide education for a number of Malaysians who are *not* employed by the TNCs, but who would then have the competencies to work for Malaysian firms.⁹²

Policies of Governments of host countries relating to FDI thus play a dual role in mediating the impact of TNCs on national human resource development: a channelling role, to draw investment into industries in which technical skills and managerial capability most need to be developed; and a negotiating role, to increase the levels of specific investments by TNCs in human resource development. By exercising the two roles, the Government of the host country would focus on the national long-term objectives for human resource development, without losing sight of short-term objectives. A proper policy mix can increase the potential contribution that TNCs can make to human resource development for economic growth.

Notes

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³See, for example, Robert J. Barro, "Economic growth in a cross section of countries", *Quarterly Journal of Economics*, vol. CVI, No. 2 (May 1991), pp. 407-443.

⁴See Giovanni Andrea Cornia, "Investing in human resources: health, nutrition and development for the 1990s", in Keith Griffin and John Knight, eds., "Human development in the 1980s and beyond", *Journal of Development Planning*, No. 19 (1989), pp. 159-188.

⁵See The World Bank, *World Development Report, 1991: The Challenge of Development* (Oxford, Oxford University Press, 1991), pp. 54-55.

⁶See, for example, T. W. Schultz, *Investing in People: The Economics of Population Quality* (Berkeley, University of California Press, 1980); N. Hicks "Economic growth and human resources", World Bank Staff Working Paper, No. 408 (Washington, D.C., The World Bank, 1980).

⁷G. Psacharopoulos, as cited in *World Development Report, 1991*, op. cit., p. 80.

⁸*World Development Report, 1991*, op. cit., pp. 57-58; see also Ryokichi Hirono "The human role in the development process: experiences of Japan and Singapore", in Khadija Haq and Uner Kirdar, eds., *Human Development: The Neglected Dimension* (Islamabad, Pakistan, North South Roundtable, 1986).

⁹Carl J. Dahlman, "Technological change in industry in developing countries", *Finance and Development*, vol. 26, No. 2 (June 1989), pp. 13-15.

¹⁰John Middleton, Adrian Ziderman and Arvil Adams, "Making vocational training effective", *Finance and Development* vol. 27, No. 1 (March 1990), pp. 30-31.

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¹⁴See Sanjaya Lall, "Human resource development and industrialization, with special reference to Sub-Saharan Africa", in Keith Griffin and John Knight, eds., "Human development in the 1980s and beyond", *Journal of Development Planning*, vol. 19 (1989), pp. 129-157.

¹⁵See Daniel Cotlear, "The effects of education on farm productivity", in Keith Griffin and John Knight, eds., "Human development in the 1980s and beyond", *Journal of Development Planning*, vol. 19 (1989), pp. 73-99.

¹⁶Lall, op. cit., p. 132.

¹⁷See P. Kennedy, *The Rise and Fall of Great Powers* (New York, Vintage Books, 1989).

¹⁸The World Bank, *From Crisis to Sustainable Growth: A Long-Term Perspective Study* (Washington, D.C., The World Bank, 1989).

¹⁹See, for example, Carl J. Dahlman, B. Ross-Larson and L. E. Westphal, "Managing technological development: lessons from the newly industrializing countries", *World Development*, vol. 15, No. 6 (1987), pp. 759-775; Carl J. Dahlman and Francisco C. Sercovich, "Exports of technology from semi-industrial economies and local technological development", *Journal of Development Economics*, vol. 16, No. 1-2 (1984), pp. 63-99; Carl J. Dahlman and L. E. Westphal, "The meaning of technological mastery in relation to transfer of technology", *Annals of the American Academy of Political Science*, vol. 458 (November 1981), 12-26.

²⁰See, Lascelles Anderson, "The multinational corporation and educational relevance in developing countries", in Lascelles Anderson and Douglass M. Windham, eds., *Education and Development* (Lexington, Mass., Lexington Books, 1982), p. 92.

²¹See, for example, R. A. Fehnel, H. Freeman, A. Murray and L. Picard, "Interim evaluation of development support training project: USAID/Pakistan" (Washington, D.C., National Association of Schools of Public Affairs and Administration (NASPAA), Contract No. DAN 0000-1-00-5051-00, United States Agency for International Development, Bureau for Science and Technology, Office of Rural and Institutional Development, 1985); Moses N. Kiggundu, *Managing Organizations in Developing Countries: An Operational and Strategic Approach* (West Hartford, Conn., Kumarian Press, 1989); B. Z. Dasah and M. N. Kiggundu, *Report on the Briefing of the Canada-Kenya Business Forum* (Hull, Quebec, Canadian International Development Agency, 1985); F. A. Chenoweth, *Ministry of Agriculture and Water Development: A Study of the Organization and Planning Process of the Planning Division* (Hull, Quebec, Canadian International Development Agency, 1986).

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²⁴As cited in D. Melrose, *Bitter Pills: Medicines and the Third World Poor* (Oxford, OXFAM, 1982), p. 183.

²⁵See Melrose, op. cit., p. 183, for an example.

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²⁷See, Taggart, op. cit.

²⁸Melrose, op. cit., p. 183.

²⁹Hafiz Mirza, *Multinationals and the Growth of the Singapore Economy* (London, Croom Helm, 1986), p. 65.

³⁰See, UNCTC, *Foreign Direct Investment and Transnational Corporations in Services* (United Nations publication, Sales No. E.89.II.A.1), p. 28.

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³⁷Anderson, op. cit., pp. 75-76.

³⁸Middleton, Ziderman and Adams, op. cit., p. 32.

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⁴⁰See, for example, ILO, *Multinationals' Training Practices and Development*, op. cit. The discussion in this paragraph and the next draws mainly upon this publication.

⁴¹See, for example, Canadian International Development Agency (CIDA), "Human resources development: working paper for the 4As" (Ottawa, Ontario, CIDA, 1989), mimeo.

⁴²See J. E. Kerrigan and J. S. Luke, *Management Training Strategies for Developing Countries* (Boulder, Colorado, and London, Lynne Rienner Publishers, 1987).

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⁵²See Stephen J. Kobrin, *International Expertise in American Business* (New York, Institute of International Education, 1984).

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