
MULTINATIONAL CORPORATION: CHARACTERISTICS, ENTRY MODE AND TECHNOLOGY TRANSFER IN DEVELOPING COUNTRIES

Hamisu Ibrahim
Department of Business Administration
Kwararafa University, Wukari, Taraba State
E-mail: hameezabc@yahoo.com

ABSTRACT

Technology transfer perhaps is the most important benefit that could be brought by multinational corporations to host economies, but they are not guaranteed, automatic, or free. The geographical spread of Multinational Corporation especially in developing countries creates a link between foreign direct investment and technology transfer in those countries. But the findings indicates that technology transfer to countries by multinational is mostly to labour-intensive industries with low technology and further shows that the major channel of technology diffusion to local industries in developing nations is through "learning by watching" or by spill over effects. Thus based on the findings the following recommendations were made: That developing nations should strengthen their industrial absorptive capability in order to diffuse technology to local industries and also they should strengthen their intellectual property right in order to attract foreign direct investment

INTRODUCTION

For centuries, smaller countries especially third world nations have played host to large enterprise involved in foreign direct investment. These enterprise commonly called multinationals are based in a given country called the home but possess network of subsidiaries and affiliates spread over several countries, but the control is exercised from the headquarters which is usually located at home country. The activities of such large corporations have had significant impact on the process of socio-economic development of the developing Nations. These developing nations are largely located in Africa, Latin America and Asia and are characterised by low technology, low capital base, slow economic growth and absence of meaningful industrialization which is contrasted by high population, availability of untapped natural resources and labour availability. These features of third world Nations provide a fertile ground for the multinationals to sow their seed of economic investment, largely from Europe and America.

In the recent literature on international economics and economic growth, the link between technology transfers and foreign direct investment (FDI) made by multinational corporations (MNCs) seems to have been prominent. Theoretically, there is a widely shared view that technology may be transferred to host developing economies through

- a. MNCs backward and forward linkages with indigenous firms and consumers
- b. Imitation of domestic firms by "learning by watching" in the presence of domestic MNCs.
- c. Induction of trained workers and managers by MNCs.
- d. Relocation of MNCs R&D activities to host economies. On the other hand, however it is sometimes suggested that MNCs may
 - (a) restrict diffusion of technology (especially advance one) to their subsidiaries abroad
 - (b) transfer technologies that are inappropriate for the host country's factor proportions;

- (c) prefer imports of key components/parts from parent factories to local suppliers, reducing linkages effect; and
- (d) Maintain their technological advantage by forcing host economies to follow strict rules of intellectual property rights.

CONCEPTUAL ISSUES

Multinational corporation have been defined by different scholars and categorizing them into different perspective.

Onimode et al (1983) describe multinational as "those companies having production facilities in many lands. Having access to capital worldwide and having a "global outlook" among their management".

According to Hodgetts and Luthans (2000) multinational enterprise is refer to as a firm having operation in more than one country which seeks to operate strategically on a global scale.

Hodgetts and Luthans (2000) see the MNC "as firm having operations in more than one country, international sales and a nationality mix of managers and owners". They further look at a multinational company as any firm, which performs its main operations either manufacturing or the provision of services, in at least two countries." This emphasises the geographical spread implying therefore, that it is only when an enterprise confronts its problems of production and distribution within foreign nations that it becomes a time multinational. Robock and Simmonds (1989) on the other hand, defined a multinational firm as "one that allocates company resources without regard to national frontiers but is nationally based in terms of ownership and top management. In this regard, a multinational is viewed as a cluster of corporations controlled by one headquarters but the operation of which are spread over many countries.

Dunning (1993) defines the multinational as a firm engages in foreign direct investment and owns or controls value-adding activities in more than one country. Typically the multinational would not just own value-adding activities, but might buy resources and create goods and/or services in a variety of countries. While the central strategic planning takes place at the headquarters, considered latitude will usually be given affiliates (subsidiaries) to enable them to operates in harmony with their local environment

From the above definitions MNC can be view as large business corporation with operations and divisions spread across several countries but controlled by a central headquarters clearly demonstrating behavioural and structural characteristics and perhaps the strategic values orientation of a MNC.

The United Nations has identified over 60,000 MNES, but the largest 500 account for 80 percent of all the worlds foreign direct investment.

Table 2.1: The World Largest 500 Multinational Enterprises, 2000

Country	Numbers of MNEs
United	185
European	141
Japan	104
Canada	15
China	12
Switzerland	11
South Korea	11
Australia	7
Brazil	3
Russia	2
Norway	2
Mexico	2
Venezuela	1
South Africa	1
Singapore	1
Malaysia	1
India	1
Total	500

Source: Adapted from Fortune, the Fortune Global 500, 2001.

The Table 2.1 shows the distribution of the world largest 500 MNEs, of these, 430 are from the "triad". There are 185 from the US, 141 from the EU, and 104 from Japan. The fact that 430 of the world's largest 500 MNEs are from the core triad is highly significant, it means that the triad is the basic unit of analysis for MNE strategy. Also, about 80-85 percent of the entire world's top MNEs have been from the triad for the last 20-30 years (UNCTAD). Total annual sales of these 500 firms are no excess of \$12.5 trillion and they collectively employ over 43 million people (UNCTAD). These firms are engaged in a wide variety of operations including autos, chemicals, computers, consumer goods, financial services, industrial equipment, and oil and steel production. Clearly, these large enterprises have a significant impact on international business and the world economy

CHARACTERISTICS OF MULTINATIONAL ENTERPRISES

Rugman&Hodgetts(2003)opined that one way of identifying the characteristics of MNEs is by looking at the way in which they operate. They further stressed that two of the major concern to the MNE viz:

- (i) Home Nation: This is the country which has acted as the base for the expansion and initial development of the MNE. It may no longer be the either the largest sales office or area or the locus of the majority of share holders. It will normally remain the base from which ultimate control is exercised.
- (ii) Host Nation: Is one of the countries in which the MNE operate, regardless of the relative size of that operation, by and large it's the countries in which it does business.

Rugman&Hodgett (2003) described one characteristics of MNEs is that their affiliates must be responsive to a number of important environmental forces, including competitors, customers, suppliers, financial institutions and government. In some cases the same

forces are at work in both the home and host country environments. Similarly, MNEs often use the same suppliers overseas that they employ domestically and it is common to find home country-based suppliers following their MNE customer to other geographic location in order to provide the same types of services worldwide.

A second characteristic of an MNE is that it draws on a common pool of resources, including assets, patents, trademarks, information and human resources. Since the affiliates are all part of the same company, they have access to assets that are often not available to outside. Similarly, if an affiliate needs expansion funds, an MNE will often help out by working with the affiliate to raise the money. If a loan is needed, the affiliate is likely to find many financial institutions that are willing to provide the money since the MNE will back the loan.

A third characteristic of an MNE is that it links together the affiliates and business partners *with* a common strategic vision. Simply put, all of the forms with whom the MNE works fits into the company's overall plan of what it want to do and how it intends to go about implementing this strategy. Thus, this leads us to the link between foreign direct investment (FDI) and technology transfer made by multinational corporations

THE NATURE OF TECHNOLOGY TRANSFER

Technology means different things to people and organizations. According to Megantz(2002), to a scientist, technology is the end product of research, inventions and know-how that may be developable into a commercial product, while to an engineer, technology is a tool or process that can be employed to build better products.

Technology is defined as a set of tool both hard ware (Physical) and software (algorithms or procedures) that helps us act and think better (stuhman, 2007). Technology could be viewed as the technique used by human and machine to support daily activities. This technology could be used at work place or at home. Technology could also be seen as the ensemble of theoretical and practical knowledge and skill that are used by firms to develop and produce its goods and services (P.K.De, 2004).

Technology and innovation are basic factors in determine firms and countries competitive advantage. Most developing countries build their technological and innovation strength and capabilities though foreign direct investment (FBI) by multination corporations. Nations, people, and organizations increasingly depend on technology for prosperity and quality of life. The competition edge of and individual firm vastly depends on technology. One of the means of acquiring technology is through its transfer. Technology transfer is a process that permits the flow of technology from a source to a receiver. The source is the owner or holder of the knowledge and if can be individual, a company, or a country, the receiver is the beneficiary of the transferred technology.

Technology transfer has being a great issue to most companies and countries. Technology transfer is usually a basis for technical innovation and often is it after-effects in a form of innovation diffusion (Andrzej, 2005). Technology transfer could be defined as inflow of technical knowledge to the market where it is sold and bought (Andrzej, 2005). In Andrzej argument, technology transfer flow from one place to another where it could be bought or sold (product).

Lisa et al (1994) looked at technology transfer as adoption of technology by defining it as the perspective adopters' positive or negative feeling about the company's adopting the new technology from a foreign company. In her argument, technology could be transferred base on the people attitude of the transferee. Other scholars looked at technology transfers process in their forms, for example, according to Andrzej (2005), technology transfer exists in the following main form;

- (a) Sales/ purchase of result of the R&D work.
- (b) Turnover of licenses, patents, utility models know-how.
- (c) Sales/purchase of production techniques means of automation etc.
- (d) Technological advisory/ consulting
- (e) Technical staff training
- (f) Exchange of technological information. He went further to simply explain technology transfer into:
 - I. Embodied technology transfer (i.e the flow of knowledge embodied in new products, materials, tool, machines and similar equipment), and
 - II. Disembodied technology transfer (i.e other forms of flow of technical knowledge).

Technology transfer covers various activities, including the internal transfer of technology from the research and development or engineering department to the manufacturing department of a firm based in a country. It also includes the same transfer of technology from a laboratory or operations of MNC'S in one country to its laboratory or operations in another country. Finally, it includes the transfer of technology from a research consortium supported by many firms to one its members (Szakonyi, 1999:32)

PARTIES IN THE TRANSFER PROCESS

Technology transfer has taken multi- dimensional approach, each with its own elements. From the horizontal perspective, the three basic elements in technology transfer are the home country, the host country and the transaction. The vertical dimension of technology transfer refers to the issues specific to the nation state, or to the industries or firms within the home and host countries. Perhaps, for the sake of this paper the discussion will centred on horizontal technology transfer which is categorized as follows:

- (i) Home country,
- (ii) Host country, and
- (iii)The transaction

HOME COUNTRY'S REACTIONS TO TECHNOLOGY TRANSFER

Home countries express apprehensions about the export of their technology. They have reasons to oppose the export of technology. They argue that the establishment of production facilities by MNC's in subsidiaries abroad decreases their export potential. Additionally, they claim, because some of the MNC'S imports stem from their subsidiaries the volume of import of the home country trends to increase. Given the decrease in exports and increase in import, the balance of trade tends to be adverse to the home country. Besides, technology transfer tends to effect adversely competitive advantages of the home country. Labour unions in the home country too oppose technology on the ground that the jobs generated from the new technology will benefit the host country citizens.

HOST COUNTRY'S REACTIONS TO TECHNOLOGY TRANSFERS

More serious are the reactions of the host country to technology transfer. The subject of technology transfers is highly sensitive, often evoking strong reservations against it from the host country citizen. The criticisms against technology transfer are based on economic and social factors.

- i. Economic Implication:- Economic implication include payment of fee, royalty, dividends, interest and salaries to foreign technicians and tax concessions resulting in loss to the national exchequer. All these are payable to the transferring country and might prove very expensive to the host country. In addition to the payment just stated, the technology supplier often succeeds in extracting payments through various other techniques like over-pricing and buying intermediates at high prices. There are malpractices too, for example, tie-up purchases, and restriction on exports, and charging excessive prices.
- ii. Social Implication:- The social and cultural implications of technology transfer are more serious than the economic significance. Along with the transfer of technology, there is the transmission of culture from the exporting countries. In the opinion of Aswathappa(2006) the upper and middle class Indians are a case in points. Majority of these neo-rich people are totally westernized and Americanised in the attitudes, behaviours, food habits and dress accustomedness. This is because; they import technology from the United State and European countries. The Indians who work in firms using such imported technologies get influenced and accustomed to the skills, concepts, policies, practices, thoughts and beliefs.

TRANSACTION

This elements focuses on the nitty-gritty's of the transfer. The issue here related to the terms and conditions of technology transfer and the question of the suitability of the transferred technology are related to each other. Some of the restrictive conditions, for example, make the technology less suitable that it would otherwise be. This clearly applies to such restrictions as prohibitions on the adaptation of the imported technology, preventing the use of imported technology as a basis for local R&D development, and clauses stipulating that the result of local technological research and development based on the imported technology must be transferred to the owner or supplier of the technology (Robock&Simmonds, 1989). Such restrictive clauses clearly reduce the suitability of the technology and it should be the effort of all concerned to remove such conditional provisions.

Cost of technology is a very serious issue for developing countries. Much of the cost of imported technology is concealed because import of technology often takes place as part of a package as in embodied form that is, embodied in machinery and equipment. Though actual figures are difficult to come by, the estimates Made by UNCTAD suggest that the annual payments by developing countries alone towards imports of technology amount to \$10 billion (Aswathappa, 2006). Such high costs of technology defeat the very spirit of modern science and technology which are expected to be "the common property of mankind", and subject to proper protection and payments to the inventor and are freely available. But, unfortunately 90 percent of the modern technology transferred to

developing countries is controlled by MNC'S who are essentially interested in getting highest returns from their inventions.

WHAT TECHNOLOGY DO DEVELOPING COUNTRIES NEED?

Another most important issue relating to technology transfer is its appropriability. It is argued that it is the industrialized countries that develop technology and the know-how thus developed will be mainly useful to them. This means that the rich countries become monopolists in developing, using, and managing technology. This also means that the technologies tend to be designed for the production of high quality sophisticated goods on a large scale, using as much as possible capital and higher level professional skills in place of sheer labours, and replacing natural resources by synthetics. There is also no technology to produce such goods by methods suitable to resource endowment of developing countries, which is, fully utilising their labour and natural resources. The transfer of industrial country technology modified and adopted to the different needs and conditions of the developing countries can do more harm than good. Specifically when a capital short economy uses a capital-intensive technology in certain sectors of the economic, this inevitably means a dualistic structure in which access to scarce capital is unequally income distributed and which is likely to result in unequal income distribution and high Unemployment (Robock&Simmonds,1989). Technology or know-how produced by developed nations is for their own benefits and requirements to exploit economies of scale in serving large markets and to economize on scarce labour. The benefits to be derived by developing nations will depend entirely upon the suitability or appropriability" preferably labour-intensive and small scale technology.

HOW IS DEVELOPING NATIONS PAYING FOR THE SUPPLY OF TECHNOLOGY?

One of the agony technology transfers to developing nations is the implications for paying high fee, royalty, dividends, interest, and salaries to foreign technicians and tax concessions resulting in loss to the national exchequer (sovereignty). All these are payable to the transferring country and might prove very expensive to the host country. In addition to payments just stated, the technology supplier often succeeds in extracting payments through various other techniques like over pricing and buying intermediates at high prices. There are malpractices too, for example, tie-up purchases and restriction on exports and charging excessive prices. Some countries offer their raw material for services render- a case of counter-trading.

METHOD OF TECHNOLOGY TRANSFER

a. Foreign Direct Investment (Fdi)

FDI have been a channel for technology transfer approved by many authors because of its direct impact on economic development and low cost of transfer. But the choice of choosing what method to channel technology depends on the countries market size, market growth, the threat of Imitation, and the intellectual property right (IPR). For developing countries to acquire technology through foreign direct investment there should be abundance of skilled and semi-skilled worker and also a strong IPR protection to attract investors, these will increased the level of absorption. The multinational corporation (MNC) is media for the transfer of technology. Expatriations are used for transfer of technology by MNC. According to Harris (2002) the more MNC uses expatriation for temporary assignments (Assignment less than a year), the greater the

expatriates ability to transfer knowledge while the more the MNC uses expatriate for long-term assignments, the greater the willingness to transfer knowledge ,

Haris (2002) argued that, expatriates with long-term assignment remain critical for skill transfer, management control and management developments while expatriate with temporary assignment are used mainly for skill transfer.

b. Joint Venture

Joint Venture typically involves less risk than strategies alliances, acquisitions or financing subsidiaries, they tend to be more common, as skills, attributes and resources are sought through mutual business objectives (Czinkota et al, 1994). With joint ventures companies can pursue common business-related purposes, use harmonising technology or research techniques, increase capital and bargaining power, extend the risk of scale; and surmount entry barriers gaining market share and therefore power (Boyett and Boyett, 2001).

The expansion of joint venture in any economy leads to Multinational Corporation; therefore encourage technology transfer. Mowery et al (1996) argued that joint venture is superior means to enhance a firm's positioning through capability learning and knowledge transfer.

c. Licensing agreement

A license is a contract which authorizes the use or exploitation of the subject matter of the licence, for a specified purpose and period of time with all other right maintained by the owner of the technology (Thomas, 1998). He also argued that companies wishing to expand into the international arena are finding that licensing or transferring their technology provides a low risk and highly profitable alternative to direct export, establishing a foreign branch, subsidiary or joint venture. These arguments by Thomas can only benefit the transferor and not the transferee at the long run. The reason for technology transfer is to benefit both parties and at the long-run, the transferee should be independent of the technology gained. The motivation for licensing of technology and product could be for the penetration of the international market. Companies are willing to licence their technology to countries where they do not have penetration through export or direct investment and also selling of their product. Countries willing to embark on technology transfer through licensing must be sure of the credibility of the licensors and their willingness to transfer technology.

BENEFITS AND CHALLENGES OF TECHNOLOGY TRANSFER

The challenges of technology transfer have over the years been a great concern to research as well as scholars. Samil (1985), Model a pattern of technology transfer into six dimensions: geography, culture, economy, business, people and government.

One of the benefits of technology transfer is globalisation of industries. Technology transfer brings the world together as one large market place. When technology are property transfer around the world from developed nation to less developed nation, economic vibrancy will be seen and nation will draw closer to one another making the world look like a large global market place.

Internationalisation of domestic market place is also a benefit to technology transfer. Product produced by domestic market could compete with large international industry if

proper technology is transfer to the domestic market. This will increase production and also economic growth.

BARRIERS TO TECHNOLOGY TRANSFER

Some of barriers of technology transfer to developing countries are also great. These include; lost of intellectual property, exploitation of indigenous employees, employees attitudes, lack of infrastructure, government policy/legal protection, geographical location, environment etc.

Aswathappa (2006) identified some problems encountered in transfer of technology:

- (a) Lack of systematic planning for technology transfer in developing countries or misunderstanding of its underlying philosophy.
- (b) Lack of bilateral scientific /technology advantages in the process of technology transfer (mutual benefits).
- (c) Lack systematic and integrated engineering and socio- economic approach to the technology transfer process
- (d) Lack of attention to environment consideration and assessment of technology impact.
- (e) Failure to recognise the local potential (cultural and economic) for adoption of technology (that is failure to determine the availability of social and economic infrastructures).
- (f) Misunderstanding of the concept of technology appropriateness hitherto confined to only small and non-capital-intensive technologies.

CONCLUSION AND RECOMMENDATIONS

The issue of technology transfer have a great interest area for academics, policy maker, and industries in both developed and developing countries of the world. Technology transfer has an area of controversy over the years. It has been a generally accepted historical fact since the 1960s that the technology market is under the sway of the multinational corporations of the industrialized countries, and it is widely recognized that these corporations are the major channel through which technology is transferred to developing countries.

Waki (1982) opined that technology transfer through direct investment contributes to the enhancing of the technological levels of the developing countries and facilitates their catching up with the industrialized nation.

In a Similar vein, Kejima (1975) opined that the transferred technology will eventually spill over the benefit of local industries generally and will necessary take root, rather than a direct effect transfer.

Takafumi (1985) is of the view that multinational enterprises are keeping developing countries under their control technologically through their exclusive possession of up-to-date technologies. In a similar vein, sekishita (1980) believes that multinational enterprises, when pressured to transfer some of their technologies to local subcontractors, turn over only those connected with labour- intensive processes. As a result, he point out, a full set of relevant technologies will never diffuse to developing countries. Sporadic

transfer of discrete technologies, therefore, will perhaps contribute to a limping industrialization of these countries, will not foster real growth of their national economies. Appraisals of technology transfer by multinational enterprises thus vary to a great degree. Ozawa (1979) discussing the potential comparative merits, from the stand point of technology transfer to a developing country of fully-owned subsidiaries of foreign concern with joint venture alternative, state that the latter provides more opportunities for transfer than the former. Akiyama (1981) believes that joint venture have more significant impact as a channel for technology transfer, as opposed to mere licensing agreements or technology transfer subsidiaries.

Thus, from the foregoing, we can reach a conclusion that technology transfer made by multinational corporations to developing nations is not guaranteed, automatic and free. Since when pressured to transfer this technology, they will only turn over those related to labour-intensive industries and retaining possession of state of the art technology and thus preventing technological spill over to local industries in developing countries.

RECOMMENDATIONS

- (1) The intellectual property rights (Trip Agreement) as one of the major barriers for technology transfer should be properly review to ease technology diffusion and transfer to developing countries as well as local industries.
- (2) Developing countries should collaborate with each other for technology transfer because these countries are in the same situation and will be willing to negotiates for appropriate technology transfer
- (3) Developing countries should not only negotiate for transfer of technology but also transfer of research and development (R&D) because relocation of R&D centres to developing nations will help spill-over technology to local industries and also empower the local R&D for more innovation.
- (4) Intellectual property (IP) policy should be strengthen to attract foreign investment because developed countries will be willing to set up manufacturing and R&D facilities in country with strong intellectual property right (IPR)
- (5) Developing countries should strengthen their industrial absorptive capability in order to diffuse technology to local industries since most research have shown that transfer of technology to developing nations was mostly in labour-intensive industries with low technology thus "learning by watching" is the most appropriate way to capture more technological spill over.
- (6) Developing countries should strengthen the universities-industries relation as potential strategy in developing R&D.

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