FOREIGN DIRECT INVESTMENT AND TECHNOLOGY TRANSFER IN DEVELOPING COUNTRIES: THEORETICAL DISCOURSE

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ABSTRACT

The study of Foreign Direct Investment (FDI) and transfer of technology have been a great interest area for academics, policy makers and industries in both developed and developing countries. There is an increased level of link between foreign direct investment and technology transfer made by multinational corporations in developing countries and it is widely believed that FDI help to transfer technology to the benefit of the domestic industries and host country. The general objective of the study is to examine whether FDI have impacted positively to technology transfer in developing countries, and the major source of data for this study is the secondary source. But the examination shows that FDI by multinationals brings capital into the economy, new technologies, new methods of doing business, new skills and increases the set of employment opportunities available to local workers. In addition, FDI helps the host country to build and / or expand various networks such as procurement and marketing networks and above all increases the host country's foreign exchange earnings and balance of payments through export expansion. However, this study shows that this benefit does not automatically accrue to the host country but rather technology is transferred to host industries with strong absorptive capability through technological spill overs rather than via direct effect. Based on the examination, the following suggestions were made; that the host country should strengthen the fundamentals of economy by pursuing policies to enhance the supply of modern infrastructure and appropriately trained workers, by achieving greater macro-economic and political stability.

Key words: Foreign, Direct, Investment, Technology and Transfer

INTRODUCTION

Foreign Direct Investment (FDI) flows to developing countries have risen to an unprecedented level in the 1990's. The growth of foreign direct investment during the past years has been phenomenal. Aitken and Harrison (1999) noted that in 1997 FDI represented about 40% of all public and private Capital flows to developing countries.Worldwide FDI as at 2019 before the covid-19 pandemic stood at $1.8trillion (UNCTAD, 2021). This stunning growth in FDI and its acceleration in the 1990's reflects the globalization of the world's economy. As you might expect, most FDI comesfrom developed countries. Surprisingly, must FDI also goes to developed countries. There is widely held view that there is increased level of link between foreign direct investment and technology transfer made by multinational corporation engagement in the developing countries. It is widely held that Multinational activity by more

efficient foreign multinationals promotes technology transfer to the benefit of domestic companies.

Technology transfer is clearly maximized by such direct linkages with domestic suppliers which occur when incoming multinationals work closely with domestic suppliers to raise the standard of inputs. Technology transfer may also bring with it some positive indirect 'demonstration effects' as less efficient local producers seeks to imitate the superior processes and organizational advantages of foreign multinationals.

OBJECTIVES OF THE STUDY

1. To examining whether foreign direct investment by multinationals companies in a host country serve as a powerful force for increasing the skills of the labour pool and increases the set of employment opportunities available to local workers.
2. To examining whether foreign direct investment increases the host country's foreign exchange earnings and favourable balance of payment through export expansion.
3. To examining whether foreign direct investment by multinationals companies inject capital into the economy and increases the potential for linkages to the domestic economy activity through purchase of local inputs and the production of inputs for use by local producers.

LITERATURE AND THEORITICAL REVIEW

According to investopedia(2023) FDI is an ownership stake in a foreign company or project made by an investor, company, or government from another country. Generally, the term is used to describe a business decision to acquire a substantial stake in foreign business or to buy it outright to expand business. According to OECD(2023) FDI is consider as a category of cross border investment in which an investor resident in one economy establishes a lasting interest in and a significant degree of influence over an enterprise resident in another economy ownership of 10 percent or more of the voting power in an enterprise in one economy by an investor in another economy is evidence of such a relationship.

Justin (2009) opined that Foreign Direct Investment (FDI) occurs when a company invests in real assets in a foreign country to produce or to market a product. According to United State Department of commerce, foreign investment is considered as FDI whenever an organization takes an interest of 10 percent or more in a foreign company.Aswathappa (2006) stated that foreign direct investment can be classified as any ownership of long term assets as well as certain short term assets in one country by individuals or organization of another nation. Griffin and Pastay (2005) sees foreign direct investment as the acquisition of foreign assets for the purpose of controlling them.

The United State Government Bureau for statistics sees foreign direct investment as "ownership or control of 10percent or more of an enterprise voting securities or the equivalent interest in an unincorporated business." To Rugman and Hodgetts (2003) Foreign direct investment is an equity funds invested in other nations. They further stressed that FDI is undertaken by MNEs who exercise control of their foreign affiliates. Like exports and imports, FDI is a driver of international business and many companies use FDI to establish footholds in the world market place by setting up operations in foreign markets or by acquiring business there. The net amounts of money involved with FDI are substantial with more than $1.8trillion of foreign direct investment made in 2021, in that year, the United States was the top FDI destination worldwide, followed by China, Canada, Brazil, and India. In terms of FDI outflows, the

U.S was also the leader, followed by Germany, Japan, China, and the United Kingdom. FDI inflows as a percentage of gross domestic product(GDP) is a good indicator of a nations appeal as a long term investment destination. The Chinese economy is currently smaller than the U.S economy in nominal terms but FDI as a percentage of GDP was 1.7% for China as of 2020, compared with 1.0% for the U.S for smaller, dynamic economies, FDI as a percentage of GDP is often significantly higher e,g, 110% for the Cayman Islands, 109% for Hungary, and 34% for Hong Kong(World Bank,2020).

FDI theories according to Justin (2009) include the cost of transportation theory, strategic rivalry theory, product life cycle theory and the location- specific advantages (Dunning theory) on one hand and according to Griffin and Pastay (2005) include ownership advantages, theory, internalization theory on the other hand. In the word of Musabah(2018) the theory posits that as business firm migrates from its present state in order to obtain higher return on investment (ROI). The firm will therefore, decide to transfer its knowledge (Technology) in exchange of higher prices by investing in subsidiaries, instead of selling it in an open market to the license's, import agents and distributors. By this implication, firms will condense the chain of supplies by investing direct under a common ownership. The theory put forward that when this is achieved, firms will definitely avoid foreign government imports regulations and control all marketing activities, despites the fact that there is additional cost to be borne.

Justin (2009) opined that when transportation costs are high, it becomes unprofitable to ship some products over long distance. This is particularly true of products that have a low value-to- weight ratio and can be produced in almost any location (e.g cement, soft drink etc) for such products, relative to either FDI or licensing, the attractiveness of exporting decreases.

This theory explains the rationale of FDI based on the idea that FDI flows are a reflection of strategic rivalry between firms in the global market place. This argument was put forward by KnickerBocker; who looked at the relationship between FDI and rivalry inoligopolistic industries. What one firms does can have immediate impact on major competitors, forcing a response in kind (Charles, 2005). Mittal steel acquired Arcelor in a mega deal in 2006, Tata steel responded by acquiring Corus for $8billion in the same year. Studies that look at FDI shows that firms based in oligopolistic industries tended to imitate each other's FDI.

This theory was developed by Raymond Vermon in the mid-1960's. As a product cycle develops, the cost advantage will change accordingly and a comparative advantage in innovative capacity may be offset by a cost disadvantages. To explain the behavior of us exports of manufacturers, Vernon developed a four stage model assuming that the exports effects of product innovation are determined by the technical diffusion and lower cost abroad. This life cycle model includes the following four cycles.

1st Cycle: United State achieves export monopoly in a new market.

2nd Cycle: Foreign Production of this product begins.

3rd Cycle: Foreign production of this product becomes competitive in export markets.

4th Cycle: United States becomes an importer of this no longer new product.

Vernon postulated that US producers will first product a new product in united states regardless of the cost of production inputs in other countries because of close proximity to customers and suppliers. In this first stage US producers have a monopoly in export market and they proceed to build up sales with no concern for

foreign competition. During the second stage, producers in other industrial countries start to manufacture the product whose design and production is new standardized. Consequently, the overall growth rate of US exports declines. During the third stage, foreign producers display US exports in the remaining export markets. Finally, foreign producers achieve sufficient competitive strengths arising from economies of scale and lower cost to export to the US market.

The Dunning's theory known as eclectic paradigm is based on location- specific advantages that can help explain the nature and direction of FDI. By location-specific advantages, Dunning means the advantages that arises from using resource endowments or assets that are tied to a particular asset(such as the firm's technological, marketing or management know-how). It requires the firm to establish production facilities where those foreign assets or resources endowments are located. An examples of Dunning's argument is natural resources, such as oil and other minerals which are specific to certain locations. Dunning suggest that a firm must undertake FDI to exploit such foreign resources.

Griffin and Pastay(2005) sees ownership advantages theory as a more powerful explanation for FDI focus on the role of the firm. Initially researchers explored how firm ownership of competitive advantages affects FDI. The ownership advantage theory suggests that a firm owing a valuable asset that creates a competitive advantage domestically can use that advantage to penetrate foreign markets through FDI. The assets could be, for example, a superior technology, a well-known brand name, or economies of scale.

Griffin and Pastay (2005) opined that internalization theory relies heavily on the concepts of transaction costs. Transaction costs are the costs of entering into a transaction, that is connected to negotiating, monitoring and enforcing a contract. A firm must decide whether it is better to own and operate its own factory overseas or to contract with a foreign firm to do this through a franchise, licensing, or supply agreement. Internalization theory suggests that FDI is more likely to occur, that is international production will be internalized within the firm when the costs of negotiating, monitoring and enforcing contracts with a second firm are high.

Aswathappa (2006) postulated that an international business seeks to establish a dominant market presence in an industry through FDI. The benefit of such a presence is clear; the firm is in a better position to dictate the cost of its inputs and/or price of its output. Despite all these theories listed above, internationalization theory is the most appropriate theory chosen for this study

FDI AND DEVELOPING COUNTRIES

Foreign Direct Investment is the outcome of the mutual interest of multinational firms and host countries. In developing countries, the FDI is increasing seen as a useful source of funds. It has many benefits over other forms of foreign investments that makes it attractive for developing country which always has resource limitations and looks upon foreign investments to bridge the demand-supply gap. It is an important source of non-debt inflows which along with financial resources brings in new technology and management expertise. It can become an important vehicle for economic growth by bringing new skills in workers, integrating economy internationally by linking external resource markets, and providing new markets for domestically produced products. It also plays an important role in the creation of new employment and economic revitalization. The developing countries' small stock of invested FDI is heavily concentrated in just a few countries

including China plus Latin American countries like Mexico and Brazil. Unlike during the period of import- substituting industrialization, countries no longer choose their investors, but rather investors choose their countries to invest based on country specific factors.

THE NATURE OF TECHNOLOGY TRANSFER

A major reason for the inequality between developed and developing or under developed nations is simply the gap in technology. Technology largely determines a nation wealth. Nations, people, and organization increasingly depend on technology for prosperity and quality of life. The competitive edge of an individual firm vastly depends on technology for prosperity and quality of life. One of the means of acquiring technology is through its transfer. The multinational corporations through FDI is the only legitimates channel through which technology can be transferred.

In the words of Aswathappa (2006) technology transfer is the process that permits the flows of technology from a source to a receiver. The source is the owner or holder of the knowledge and it can be individual, a company, or a country. The receiver is the beneficiary of the transferred technology. In the opinion of YU (1999) technology transfer is the systematic transfer of knowledge for the manufacturing of a products or provision of service. Yu view technology transfer as the simple movement of knowledge of products and services from one company to another.

Technology transfer covers various activities, including the internal transfer of technology from the R&D 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 a 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 of its members (Szokanyi, 1999).

In the Opinion of Andrzej (1999) technology transfer exists in the following main forms;

(i) Sales/purchase of result of the R&D work.
(ii) Turnover of licenses, patents, utility models know-how.
(iii) Sales/purchase of production technology, means of automation
(iv) Technology advisory/consulting
(v) Technical staff training
(vi) Exchange of technological information.

Andrzej went further to simplify technology transfer into:

(i) Embodied technology transfer (i.e the flow of knowledge embodied in the new products, materials tools, machines and similar equipment) and
(ii) Disembodied technology transfers (i.e other forms of flow of technical knowledge).

METHODS OF TECHNOLOGY TRANSFER

1. **Foreign Direct Investment**: FDI have been a channel for technology transfer approved by many authors because of its direct impact on economy 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 limitation, and the intellectual property right (IPR). For countries to acquire technology through foreign direct investment there should be abundance of skilled and semi-skilled workers and also a strong (IPR) protection to attract

investors, these will increase the level of tacit knowledge (know-how) absorption. The multinational corporation (MNC) through foreign direct investment (FDI) is medium for the transfer of technology. Expatriates are used for the transfer of technology and knowledge by the MNC.

Exporting: Exporting can be either direct or indirect. Indirect exporting the company sells to a customer in another country. In contract, indirect exporting usually means that the company sells to a buyer (Importer or distributor) in the home country who in turn exports the product. The interest is becoming increasingly important as a foreign market entry method.

Subsidiary: In business, a subsidiary is a company controlled by another company or corporation, normally its parent company. The most common way that this control is achieved is through the ownership of shares in the subsidiary by the parent. A subsidiary may itself have subsidiaries, and these, in turn, may have subsidiaries of their own. A parent and all its subsidiaries together are called a group. When ownership is not shared, a subsidiary is termed wholly owned. Subsidiary could be greenfield investments or acquisition.

Licensing: Justin (2009) sees licensing as a means of establishing a foothold in foreign markets without large capital outlays. Patents rights, trade marks rights, and the right to use technological designs are example. Licensing is normally being practiced by the manufacturing firms.

Franchising: In franchising, the franchisor provides a standard package of products, systems and management services and the franchisee provides market knowledge, capital and personal involvement in management. it is a specialized form of licensing practiced by the service sector firms. Franchising permits the franchisee to sell products or services under a highly published brands name and a well-proven set of procedures with a carefully developed and controlled marketing strategy.

Strategic International Alliances (SIA): Is a business relationship established by two or more companies to cooperate out of mutual need and to share risk in achieving a common objective (Arino, 2003). Strategic International Alliances are sought as a way shore up weakness and increases competitive strengths. Strategic Alliances offers opportunities for rapid expansion into new markets, access to new technology, more efficient production and marketing costs.

Joint Venture: A joint venture is a strategic alliance between two or more parties to undertake economic activity together. The parties agree to create a new entity together by both contributing equity, and they then share in the revenues, expenses and control of the enterprises.The venture can be for one specific project only, or a continuing business relationship such as the Sony Ericsson joint venture.

Consortia: Consortia are developed to pool financial and managerial resources and lessen risks. Consortia are similar to joint venture and could be classified as such except for two unique characteristics.

(1) They typically involve a large number of participants.

(2) They frequently operate in a country or market in which none of the participants is currently active.

Turnkey Project: Projects work undertaken by foreign companies based on the principle “Build, operate and Transfer” are known as Turnkey projects. Example are construction projects given to foreign companies.

THE NATURE OF TECHNOLOGY BEING TRANSFERRED TO DEVELOPING COUNTRIES

According to Kojina (1971) industrialized countries export to developing countries manufactured goodsof capital intensiveindustries or these employingadvanced technology, while importing from them products of labour intensive industries, and through this a harmonious international division of labour can be established and on effective global distribution of resources realized.As it can to be more widely understood that the rooting of transferred technologies in developing countries is hampered not merely by imperfections in the technology marker but also by inadequate capacity to assimilate them, the question of the "appropriateness" of the technology to be introduced also came to the fore. In other words, it became clear that technologies not suited to the economic, social and/ or culture conditions of the developing countries concerned could not hope to take root in their soil. As it is now generally understood, the appropriateness of a technology should be determined through consideration of various factors such as the level of economic development, productive factors endowment, and even ecological, cultural and social factors. Obviously, then determination of what technology is "appropriate" to a given society is no easy matter.

HOW MUCH DEVELOPING COUNTRIES PAY FOR THE SUPPLY OF TECHNOLOGY?

Aswathappa (2006) postulated that the cost of technology transfer 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 embodies form, which 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 import of technology amounts to $10 billion. Such high cost of technology defeats the very spirit of modern science and technology which are expected to be "the common property of mankind", and are subjected to proper protection and payments to the investor and are freely available. But unfortunately, 90 percent of the modern technology transferred to developing countries is controlled by MNCs who are essentially interested in getting highest returns from their inventions. Another contentions issues related to technology transfer here are royalties and profits. The distinction between royalties and profits is often ill defined but the possibility of varying methods of securing the reforms is a valuable weapon in ensuring satisfactory profit repatriation. The alternative is payment in kind, or in form of raw materials (if, for example, the technology is being applied to developing natural resources), or by a share of the manufactures products, which can be sold by the international enterprise either in its domestic market or anywhere else it can secure payment in an acceptable currency.

BARRIERS TO TECHNOLOGY TRANSFER

Some of barriers of technology transfer to developing countries are also great. These include; loss 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 technology transfer;

(i) lack of systematic planning for technology transfer in developing countries or misunderstanding of its underlying philosophy.

(ii) Lack of bilateral scientific/technology advantages in the process of technology transfer (mutual benefits)

(iii) Lack of systematic and integrated engineering and socio-economic approach to the technology transfer process.
(iv) Lack of attention or environment consideration and assessment of technology impact.
(v) Failure to recognize the local potential (cultural and economic) for adoption of technology (that is failure to determine the availability of social and economic infrastructures).
(vi) Misunderstanding of the concept of technology appropriateness hitherto confined to only small and non-capital intensive technologies.

CONCLUSION

Having examined the impact of FDI on technology transfer in developing countries, the study shows that FDI is highly prized in developing countries for giving a boost to significant economic growth through technology transfer, employment generation, and in addition to the underlying cross border investment, it is a sources of foreign exchange earnings through export expansion and potential balance of payments.

Foreign firms through FDI contribute to the technological base of the host country directly and through technological spill overs to other firms in the industry. Based on the examination, the following suggestions were made:

1. Host countries industrial absorptive capacity should be strengthened which will serve as a key factor in influencing technology transfer via spill over.
2. Intellectual Property Right (IPR) should be strengthened in the developing countries to serve as an incentive to attract FDI and technological known-how.
3. Developing Countries should encourage green field investments and acquisition or mergers and turnkey project, and less emphasis should be placed on the form of technology transfer like joint venture, licensing franchising, import and portfolio investment. Technology brought in via green field ventures and acquisitions are easier to control.
4. Counter trading: The cost of payment for technology transfer by developing nations is too high that developing nations would pay at the expense of the economy, then counter trading is recommended. Under this arrangement, raw materials like crude oil, e.t.c could be exchanged for appropriate technology.

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