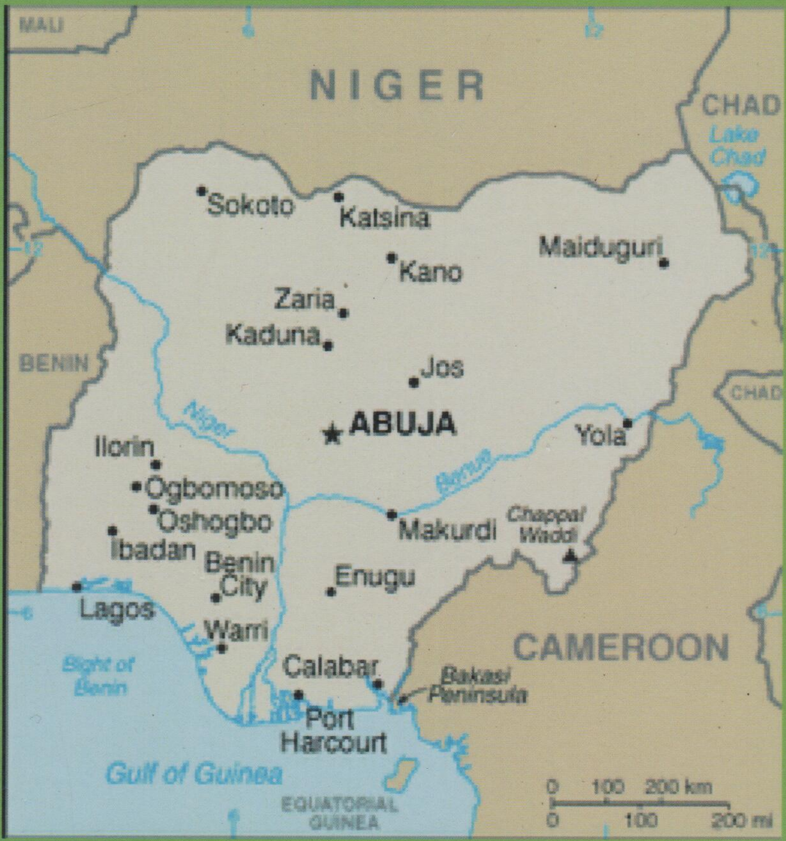
THE CHANGING NIGERIAN SOCIETY



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Chapter 5

TECHNOLOGY TRANSFER AND NATIONAL DEVELOPMENT IN NIGERIA: CRITICAL ISSUES AND PROSPECT

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Abstract

Foreign direct investments (FDI) and multinational corporations (MNCs) have often been implicated as powerful agents of development via technology transfer in developing countries. However, their activities leave much to be desired in Nigeria. This is because in spite of the numerous activities of these two seemingly powerful agents of technology transfer and development in Nigeria, the country still occupies a pitiable position in the international development ranking/standards. The paper argues that technology transfer is capable of facilitating the control of key sectors of the economy, evolving effective national economic system, enhancing human capital development, generating new employment opportunities, stimulating productivity and growth among local firms, and enhancing environmental sustainability. It further argues that although technology transfer holds several prospects for Nigeria's development, but it is constrained by several critical issues. We have identified and analysed these issues: lack of responsible or good government, low industrialisation, chequered national security, poor value system, lack of achievable national visions, erratic power and energy, lack of viable educational system, and poor research and development (R&D) culture.

Keywords: *technology transfer, development, multinational corporations, foreign direct investment.*

Introduction

The world has been reduced to a global village to the point that national boundaries are gradually becoming less relevant. To this extent, people, money, ideas, values, ideals, and technology, flow smoothly and swiftly across national boundaries, thereby ensuring increasing interdependence and integration of the countries of the world. Globalization enables participating counties to benefit from the doctrine of comparative advantage by encouraging them to concentrate in production of those things they are best endowed and to source what they do not have from others through international trade or through foreign direct investment (FDI) (Okereke and Ekpe, 2002). One of the greatest advantages of globalization is that technology is easily transferred, and even produced, regardless of national frontier, through multinational corporations (MNCs), and this has helped to increase economic growth in countries that participate in it.

According to UNCTAD (2005), promoting and facilitating technology transfer through FDI has assumed a prominent place in the strategies of economic revival and growth being advocated by policy makers at the national, regional and international levels because it is considered to be the key to bridging the technology and resource gap of underdeveloped countries and avoiding further build up of debt.

Nigeria, like most other less developed countries (LDCs), is characterized by a low level of technologic capability. By technological capacity of a nation we mean that a nation possesses the ability to use her tools, machines, material techniques and available natural resources to produce gods and services for her people (Akpakpan, 1986). This generally shows in the country's ability to draw on local resources to meet the technological demands of modern production and in the subsequent reduction of dependence on the rest of the world for technological requirement. In an effort to induce local technological capacity, successive governments have sought the proprietors of different modern technologies to transfer their technologies to our local economy (Atan and Akpan, 2005).

The activities of multinational corporations (MNCS) encourage transfer of technology in their recipient countries. As a colonial heritage, Nigeria has had long outstanding relationship with a lot of MNCs. Currently, the number of MNCs in Nigeria has increased due largely to integration of Nigeria into globalization and capitalism, international trade, and rich mineral resources in the Nigerian soil, especially in the Niger Delta region. The implication of this is that there is increased technology transfer into Nigeria enhanced by the MNCs. In addition to this, the government of Nigeria at all levels has embarked on conscious efforts to attract technology transfer from the more technological positioned societies into our country.

In spite of the above realities, Nigeria is still largely associated with underdevelopment. This paper therefore is an attempt to examine the contributions of technology transfer to national development, as well as the issues, challenges and prospects. We shall in the final analysis make recommendations on how technology transfer can effectively ensure national development.

Conceptual Clarification

Technology Transfer

Technology can be defined as the knowledge needed to design, create or implement a production process. However, in a wider context "technology involves not merely the systematic application of a scientific or other organized knowledge to practical task, but also the social economic atmosphere within which such application has to take place. Furthermore, technology refers not only to ways of producing goods, but also (to) ways of fulfilling needs and deriving satisfaction. The technology of consumption, for example, has a profound impact on the structure of the economy, influencing the goods and services to be produced. Even the attitudes and values of people are, in a sense, a part of technology since they affect the capabilities of a nation (Soludo, 1990). Technology is often identified with the hardware of production or knowledge about machines and processes. We can take technology to mean the application of scientific and technical knowledge to the production and utilization of goods and services.

According to the International Encyclopaedia of Business Management (1996), ever since man appeared on the earth, he has had to work to obtain food, clothing and shelter. He has also had to work to satisfy his desire for leisure and comfort. Through the ages, man invented thousands of tools, machines, materials, and techniques to make his work easier. He also discovered waterpower, electricity, and other sources of power that increased the rate at which he could work. Technology therefore involves man's use of tools, machines, materials, techniques, and sources of power to make his work easier and more productive. It simply refers to all ways man uses his inventions and discoveries to satisfy his needs and services.

Technologies are meant to be total systems that include know-how, procedures, goods and services, as well as organizational and operational measures. Technology, according to Okereke and Ekpe (2002), is an embodiment of culture as well as the level of development of any society. Its transfer will logically amount to the transfer of a people's culture into another environment without minding whether the new environment is suitable for such alien culture. Thus, technology transfer in the sense traditionally perceived is an aspect of cultural imperialism.

Technology transfer means a lot of things. It is a process for conceiving of a new application for an existing; a process for converting research into development (R&D); licensing intellectual property to a manufacturer for production in a product, or reducing an idea to practice in; and even the process of recording concepts of technology know-how in a professional paper or patent application.

Muchlinski (1997) describes technology transfer as the process by which commercial technology is disseminated. Hoppe (2005) simply describes technology transfer as the arrival or the transfer of a certain technology to a country, where it has not been used before.

A more detailed explanation on technology transfer has been offered by Dantas (2006) as the processes by which technological knowledge moves within or between organizations. International technology transfer refers to the way in which this occurs between countries. He further explains that the technological knowledge that is transferred can assume various forms. It can be embodied in goods (including physical goods, plant and animal organisms), services and people, and organizational arrangement, or codified in blueprints, designs, technical documents, and the content of innumerable types of training. It can equally be communicated through flows of tacit knowledge that has not been fully codified, and remains embodied in the skills of people.

Ikiara (2003) further explains that technology transfer can occur directly to local firms involved in joint venture with the MNC or indirectly, as a spillover benefit to unaffiliated local firms. He identified four interrelated channels through which spillovers occur; vertical linkages between affiliates and their suppliers and customers in the host country, horizontal linkages between the affiliates and domestic firms in the same industry, labour turnover from the affiliates to domestic firms, and internationalization of Research & Development (R&D).

To put in a clearer way, technology transfer is a structural process of learning whereby machines, technical knowledge, materials, techniques, skills, processes and other capabilities, are brought to bear in places where they have not been existing; or provided to people who hitherto do not have them. The key components of a transfer can be identified as knowledge derived from real world experience together with human expertise capable of transforming that knowledge into action. Successful technology transfer requires inputs such as coordination technology developers and users; a facilitative environment that is supportive of entrepreneurship; and networks and collaborations that provide referral links for information, finance and other pertinent resources. Successful transfer of appropriate technologies, particularly those that contribute to sustainable development, is essential to facilitating national and community development and enhancing sustainability, especially in developing countries.

Okereke and Ekpe (2002) has argued that genuine transfer of technology must be concerned with the transfer or acquisition of technological knowledge that is adapted and applied to meet the needs of society. The knowledge acquired is then used to create technology that is appropriate and takes account of the culture or environment.

FDI and MNCs: Agents of Technology Transfer

Foreign Direct Investment (FDI) and multinational corporations (MNCs) have been playing active role in ensuring that technologies are transferred from one place to another or across national boundaries. Mwilima (2003) describes FDI as investment made to acquire a lasting management interest "(usually at least 10% of voting stock) and acquiring at least 10% of equity share in an enterprise operating in a country other than the home country of the investor. FDI has further been explained as the long-term investment reflecting a lasting interest and control, by a foreign direct investor (or parent enterprise), of an enterprise entity resident in an economy other than that of the foreign investor (IMF, 1999).

Equally, Mallampally and Sauvant (1999) describe FDI as investment by multinational corporations in foreign countries in order to control assets and manage production activities in those countries. Through FDI, the MNCs transfer technologies to countries in which they are operating.

FDI contributes to economic growth via technology transfer through multinational firms transferring technology either directly (internally) to their foreign owned enterprises or indirectly (externally) to domestically owned and controlled firms in the host country (Blomstrom and Sjoholm, 1999). FDI spurs long-run growth through such variables as R&D and human capital. Technology transfer to their affiliates and technological spillovers to unaffiliated firms in the host economy, foreign companies can speed up the development of new intermediate product varieties, raise product quality, facilitate international collaboration on R&D, and introduce new forms of human capital (Romer, 1996).

Other empirical studies conclude that FDI contributes to total factor productivity and income growth in host economies, over and above what domestic investment would trigger. The studies found, further, that policies that promote indigenous technological capability, such as education, technical training, and R&D, increase the aggregate rate of technology transfer from FDI and that export promoting trade regimes are also important prerequisites for positive FDI impact which would reduce the technology gap existing between developed wealthy and undeveloped poor nations (Ayanwale 2007; Balasubramanyam et al. 1996; Keller 1996).

THE CONCEPT OF NATIONAL DEVELOPMENT

According to a United Nations' 2000 report, the controversy surrounding the concept of development remains unresolved, although its meaning in terms of improvement in the material and social aspects of life appears unexceptionable. Be that as it may, development entails increases in real per capita incomes of a country over a long period of time coupled with equitable distribution of same in order to achieve improvement in the standard of living of the population (Meier, 1989). This view is collaborated by Todaro (1992) who asserts that "development involves the acceleration of economic growth and changes in structures, attitudes and institutions with a view to achieving the reduction of inequality and poverty.

Thus, development is modernization with a human approach as emphasis is on distributive justice as basic needs are satisfied through the income generated and the fruits of development shared equitably among the different segments of society. This humanitarian approach has compelled Harrison (1993) to regard development as "a continuous and positively evaluated process of social and economic change that involves the totality of human experience".

Development is a change process characterized by increased productivity, equalization in the distribution of the social product, and the emergence of indigenous institutions whose relations with the outside world are characterized by equality rather than by dependency or subordination. As argued by a group of development thinkers, economic development is a process by which people through their own individual and/or joint efforts boost production for direct consumption and have a surplus to sell for cash. This requires that the people themselves analyze the problems, identify the causes, set their priorities and acquire new knowledge. It also requires them to organize themselves in order to coordinate and mobilize the effective application of all the factors of production at their disposal. This means that they must plan, implement, and manage their own economic activities (Burkey, 1993).

Mabogunje (1978) sees development as a process of transforming the whole social system in order to enhance capacity for each member of the society to realize his inherent potentials and to cope effectively with the challenges of life. From the foregone definitions, we can conceptualize and operationalize "national development" as a process whereby a nation or society achieve improved standard of living, increased productivity or economic growth, increased technical or technological knowledge, improved institution and attitudes as well as rationally coordinated policies. In fact, national development is a process of improvement in the various aspects of life of a society. National development is multi-dimensional; encompassing economic, socio-cultural, political, religions, philosophical, psychologically or mentally, and academic or educational aspects of development. All these aspects of development are meant to develop man. In other words, human beings are the epicentre of development.

However, development needs to be sustained. This led Ake (1990) to argue that since people sustain development, it must be an integral part of their lives. This presupposes that sustainable development only occurs when the processes and the innovation are relevant to the aspirations of a people and are also assimilated and improved upon by them according to their desires.

Technology Transfer and National Development: The Nexus

The economic history of developed nations has show that technology is a determining factor in the process of development and also an important variable influencing the pattern of trade and financial flows among countries. Perhaps the simplest way in which technology influences the development process of a country is by increasing the productivity of resources (Atan and Akpan, 2005). According to Uwatt (1990), technological development causes technical progress which increases the productivity of resources and, via the production function, the level of output. Technical progress therefore shifts the production functions such that either a given level of output is produced with less input or more output produced with a given level of input.

Among other factors, MNCs and FDI have been the forces that oil technology transfer. While MNCs aim to maximize profit through their businesses or activities in host communities, their prime element in the transfer of technology is the eradication of poverty and national development of their host communities. MNCs transfer the technologies of the West to developing countries. A simple argument is that Julius Berger Construction Company constructs and builds bridges and roads, and also trains Nigerians on how to man sophisticated machines and processes. It has transferred a certain amount of technological knowledge to certain Nigerians. In the same vein, expatriates in Exxon Mobil and Chevron oil companies have transferred certain technologies to Nigerians, resulting in national development.

FDI constitutes a major source of capital for economic change and development in developing countries. Some of these developing countries put emphasis on FDI as a carrier of new scientific knowledge and related technological innovations. Investment policies and laws of a growing number of African countries contain provisions aimed at encouraging foreign investors to contribute to the strengthening of national scientific and technological base by targeting research and related technology development opportunities. Despite these efforts, research and development (R&D) content of FDI flows to Africa is very low. This is mainly because of weak domestic R&D capability and, in many cases, the absence of institutional mechanisms that provide explicit incentives to investors to target knowledge-based and intensive activities.

Historically, low rates of FDI inflows to the region are explained by hostile policies, unstable political environment characterized by civil wars and armed conflicts, lack of effective regional integration efforts, poor and deteriorating infrastructure, burdensome regulations or lack of institutional capacity to implement FDI policies, and lack of institutional clarity to promote investment in Africa (Onyeka, 2004).

Technology Transfer and National Development in Nigeria: An Overview

Colonialism is a major feature of the economic history of Nigeria. Britain eventually gained control of Nigerian administration following the amalgamation of Northern and Southern protectorates in 1914. During the colonial period, the British administrators transferred some technologies to Nigeria through construction of roads and bridges, schools, hospitals, electricity, pipe-borne water, and industrialization. Human capital development was also birthed, as some Nigerians were sent abroad to acquire educational, political and technological knowledge with which to continue their national development after the colonialists would have left the scene.

The first development plan in Nigeria was formulated in 1945 as a result of the British government programme for the promotion of economic and social advancement of the colonies stemming from the 1940 Colonial Development and Welfare Act. The plan made provision for the capital expenditure of a total of £55million of which the British government was to provide £23million.

At independence in 1960, agriculture accounted for well over half of GDP, and was the main source of export earnings and public revenue. The oil sector, which emerged in the 1960s and was firmly established during the 1970s, is now of overwhelming importance to the point of overdependence, and thus provides 20% of GDP, 95% of foreign exchange earnings, and about 65% of budgetary revenues (Dutse, 2008).

The First National Development Plan (1962-8) stated that the basic objective of planning in Nigeria is not merely to accelerate the rate of economic growth and the rate at which the level of the population can be raised, but also to give her an increasing measure of control over her own destiny. The Second National Development Plan goes further to recognize explicitly the possibilities of using planning as a deliberate weapon of social change by correcting defects in existing social relations in various spheres of production, distribution and exchange.

Since Nigeria's independence in 1960, various governments have shown varying and increasing (though rather slow) appreciation and understanding of the critical role of science and technology on the national socio-economic development programmes and have accordingly at various times made efforts to construct structures and formulate policies to mobilize science and technology (S&T) for rapid national development. By 1980, the Ministry of Science and Technology was created and saddled with the responsibility to promote and coordinate scientific and technical innovation, and to promote technology transfer programme. The Ministry provided a guideline for the country designed to increase public awareness of science and technology, which should lead to the production of more goods and services and strengthen the technological base of the nation (Atan and Akpan, 2005).

No doubt, technology transfer has played enormous role in Nigeria's development and has ensured that Nigerians live a more comfortable life with greater dignity and self-respect. For instance, as further noted by Atan and Akpan, in the agricultural industry, mechanization has made enormous progress in ensuring that large acreage of land can be cultivated with minimum of human labour. Prior to mechanization, drought animals were virtually the sole source of tractive power, but the tractor and a wide variety of mechanical harvesting aids now play very important roles in farms, especially in the Northern and Western parts of the country.

In Ebonyi State, the government has harnessed technology transfer vis-à-vis agricultural development by sending her indigenes to Songhai to learn new and improved ways of cultivating rice and other agricultural products. Indeed, this policy has enhanced agricultural productivity in the state, and has ensured that the "Abakaliki rice" remains significant and synonymous to Ebonyi State within and without Nigeria.

Development in food technology was instrumental in finding solutions to the problems associated with the preservation of food from time of plenty to time of need. This has always existed and was further aggravated by the increased production arising from technological input. Big improvement in canning, refrigeration and drying processes, have helped in shifting food preservation from the home of local bakery to factories supplying very large areas. The development of food as important public health principles was involved. The control of tuberculosis by pasteurization of milk was of particular importance (Arinze and Ofoegbu, 1987).

With calculated efforts of the Nigerian government, industries, and academic community, several Nigerians have been sent abroad for technological training and research development. In some cases, expatriates have been contracted to transfer technological knowledge to Nigerians on the Nigerian sort. They are found mostly in our higher institutions of learning and industries, especially oil industries. The health institution is not left out, as they are foreign experts present to transfer health technologies. In fact, we cannot deny the fact that technology transfer has really enhanced national development.

The Role of Technology Transfer in Nigerian's National Development

The role of technology transfer on Nigeria's national development includes the followings:

(a) *Facilitating Technology Spillover:* According to a report by the Organisation for Economic Cooperation and Development (2002), it is evident that FDI spillovers may occur in Nigeria through a variety of activities, including labour and management training, demonstration, technological copying, direct licensing of technology, and vertical linkages in the production and distribution value chains. Empirical evidences show that the generated spillovers and therefore economic growth may be influenced by direct domestic competition, host country labour market standards, technological capability or absorptive capacity of local firms, limited technological gap between foreign and host country firms, and complementarity of foreign and host country technologies, the nature of FDI, the motives and attributes of the foreign investors (Ikiara, 2003); high education levels, wealth, fully developed financial markets, and trade openness (Balasubramanyam *et al.*, 1996).

(b) *Encouraging Innovation:* Ikiara (2003) maintains that innovation is one of the direct benefits of FDI. It forces local firms to innovate to remain competitive by increasing competition in the host country market. Moreover, Nigerian firms could appropriate productivity benefits from R&D performed by foreign-owned firms regardless of where it is performed through imports of intermediate goods produced by the foreign firm and through other channels. The R&D performed by foreign firms could raise the rate of return to R&D and other innovation generating activities of Nigerian domestically owned firms (Bernstein and Mohnen, 1998).

(c) *Allowing Technology Adoption:* FDI may further lead to technology adoption by Nigerian firms through establishing linkages with domestic firms via subcontracting and other mechanisms. By implication, Nigerian firms may adopt technologies introduced by foreign firms through imitation, reverse engineering, or vertical linkages (Ikiara, 2003).

(d) *Developing Local Human Capital:* There exists some empirical evidence that affiliates of foreign firms tend to provide training and learning than do domestic enterprises. Foreign firms operating in Nigeria can enhance internal human capital through training and on-the-job learning. With physical movement of workers, the human capital (knowledge embodied in workers) could be transferred to other sectors of the host economy (OECD 2002; Ikiara 2003).

Critical Issues in Technology Transfer and Development in Nigeria

The main aim of technology transfer is to enhance sustainable development and improved living standard for the Nigerian populace. This reality is still far from Nigeria. We can only achieve sustainable development via technology transfer when the following critical issues are addressed:

a) *Good Governance*

The World Bank (1989) has rightly argued that the political and economic crises of African states are a critical of governance. Governance, according to Okpaku (1995), is the fundamental process by which the lives and dreams of people are jointly pursued by deliberate and systematic strategies and policies for the attainment of their maximum potential. It is the combination of responsible leadership and enlightened participation.

Good governance subsumes the qualities of probity, accountability and transparency. It becomes compelling for Nigeria to enthrone and sustain good governance if we must achieve sustainable development via technology development. But unfortunately, the entire levels of government in Nigeria have been permeated by corruption, lack of accountability and financial recklessness.

Corruption makes nonsense of all fiscal planning and budgeting. It wastefully depletes the nation's inadequate resources, promotes inequality and renders it almost impossible for citizens to address the objectives of equity and justice in our society. Consequently, corruption frustrates all attempts to achieve sustainable development at whatever level (Idowu, 1998). Corruption and bad governance must be overthrown in the Nigerian polity before we can be sure of sustainable development via technology transfer.

b) *Industrialization*

The rate of industrialization in Nigeria is lamentably low. Apart from some significant cities like Lagos, Onitsha, Enugu, Port Harcourt, Kano, Aba and Abuja, where we have some industries, other states of the federation cannot boast of any serious industries. Painfully enough, there are several natural resources in every state, but there is lack of will on the part of government to invest in them.

In some cases, the few industries we have are not functional; they have been allowed to die or close down. Examples include Kaduna Refinery, Oku Iboku Paper Industry in Akwa Ibom State, Ajaokuta Steel Industry etc. It is sad to note that our government which is supposed to ensure the sustenance of these industries is the institution that mostly contributes to their failure or closure by politicizing the appointment of managers and members of the Board, by not funding the industries adequately, and by intervening excessively in industrial issues. Also, Nigerian government kills industries through personalizing privatization process. A clear case in point is the sale of NITEL Plc to Transcorps by the Obasanjo's government while there were more capable and experienced bidders.

Lack of industries has robbed us of adequate technology transfer. The more industries we have, the more technologies will be transferred to us from the technologically advanced countries.

c) *National Security*

Security is a critical issue in the development of Nigeria via technology transfer. The chequered security we have in the country has affected development in no small way. For instance, in the Niger Delta region where there are serious security threats in the forms of militancy, kidnapping, hostage taking, youth violence and restiveness, a lot of industries have closed down. This has not only affected the economy in the form of revenue generation, but has perpetuated unemployment, poverty, and more security threats.

The policy of militarizing the region which the federal government embarked on since the past two years cannot solve the security problems of the Niger Delta region. Rather, government and other key actors (oil companies and other multinationals) should tackle unemployment, poverty, exploitation and marginalization in the region. This is the only sure way of stemming the tide of insecurity for industrialization to flourish in the region. Of course, the more these industries are allowed to exist peacefully, the more they will be able to ensure technology transfer that can develop our nation. Truly, enhanced security is prerequisite to sustainable national development.

d) *Value System*

Development is much talked about and desired in Nigeria, but the attitude of some of our leaders and some Nigerians do deny our desire for development. The reluctant attitude some of our leader adopt concerning policies or projects of technology transfer shows that they do not have any value for technological development. In some cases, funds that are budgeted for technology transfer and other processes of national development are siphoned into personal purses or mismanaged. In others, the funds that are supposed to be used to process the movement of certain individuals or groups to other countries to learn new technologies are "fixed" by the director, commissioner, or organizers and this may frustrate the whole process.

Poor value system is also shown by the way some already installed technologies are vandalized by hoodlums and militants. Examples include oil pipes, electricity gadgets etc.

Also, poor value system has made Nigerians to lose sense of the quality of technology transfer that is given to us. Nigeria and other developing countries have become a dumping ground for all outdated and sub-standard goods or products. A little wonder Ikoku (1981) lamented: "The West retains the know-how, know-where, know-when, know-what, and know-whom; and by the grace of the West, the rest of us retain the no-how, no-where, no-when, no-what and no-whom. Patents and industrial secrets are the powerful tools the West uses to sustain such a monopoly; the perverse effects are immeasurable".

e) *National Vision*

Clear visions can be instrumental to successful achievement of specific objectives, provided they are accompanied by corresponding actions. Nigeria's "Vision 2010" aims at the country becoming one of the 20 developed economies, especially in terms of technology and economic growth. But this reality is far-fetched, because Nigeria occupies currently the 41st position in the World's development ranking. The implication of this unfortunate position is that Nigeria would have to overtake about 21 countries or more in order to be among the 2o developed economies.

Although "Vision 2020" is a good one, critical development issues such as lack of industrialization, insecurity,. bad governance, poor value system, erratic power supply, lack of viable educational system, and inadequate funding of research and development (R&D), among other things, are sure indicators that Vision 2020 is a utopia or unrealizable. Of a truth, strategies towards technological acquisition for national development by 2020 have not been effectively utilized.

f) *Power and Energy*

The Yar'Adua's 7-point agenda prioritized power and energy as vital in achieving technological acquisition and national development. The government announced that it will generate 6000 megawatts of power before the end of 2009. However, it failed woefully even to the point of not generating half of the expected energy.

Nigeria lacks in power and energy. As a result, productivity and industrialization suffer. A lot of industries are closing down because of inadequate power and energy, thereby increasing the incidence of unemployment and crime. Also, erratic power supply has scared prospective industries from coming to settle in Nigeria.

Power and energy are critical to national development via technology transfer because their constant supply will guarantee the establishment of more industries from MNCs and even indigenous firms, which will enhance technology transfer into Nigeria.

g) *Viable Educational System*

No doubt, viable educational system is a sure route to sustainable development via technology transfer. Educational system plays this role by transferring vital information, ideas, ideals, skills and technologies to students, who come out to participate in building or developing the nation.

Our educational institution has been hampered by incessant strikes, inadequate funding and poor infrastructure, among other things. These have, however, affected the standard of education or learning, especially in our higher institutions, and have ensured that some of our graduates remain "certified illiterates" and unprofitable in the labour market.

Viable educational system promises to produce people who can be better informed and ready to capture whatever technologies they are exposed to. Where there is no viable educational system, like in Nigeria, there is every tendency that technological knowledge will be lacking and this will affect national development.

h) Purposeful Research and Development (R&D)

Purposeful R&D promotes indigenous technological capability and increases the aggregate rate of technology transfer from FDI. MNCs in Nigeria have not really prioritized R&D because it has the capacity to bridge the technological gap between the developed nations and the recipient developing countries.

On its parts, the Nigerian government has failed to fund R&D activities; to provide legal and economic incentives for knowledge-based investments; and to provide flexibility for local institutions to forge R&D partnerships with foreign companies.

R&D culture is very critical to technology transfer which can lead to sustainable development. Unfortunately, Nigeria has a low R&D culture and also gives R&D little or no funding. This really affects technology transfer in the country.

Challenges Against Technology Transfer in Nigeria

The challenges facing technology transfer in Nigeria are evident in the critical issues discussed above. They include:

1. Lack of responsible or good governance
2. Low industrialization
3. National Insecurity
4. Poor value system, including high taste for imported finished goods.
5. Lack of achievable vision and strategies towards technological acquisition.
6. Erratic power and energy has resulted in closure of some industries and unwillingness of some foreign companies to situate or establish in Nigeria
7. Lack of viable educational system to support or enhance technology transfer
8. Low or lack of R&D culture

Prospects of Technology Transfer in Nigeria's Development

Prospects of technology transfer in Nigeria's development include the followings:

1. Technology transfer will facilitate control of key sectors of our economy, such as the oil sector. For now, Nigeria lacks the technological capacity to explore and exploit her natural or mineral resources. The Whites are in charge of our oil sector and whatever quantity of barrels they report for in a day is always acceptable by the Nigerian government. But successful technology transfer will guarantee that Nigerians become masters of their destiny in terms of management of resources.

2. Effective national economic system will be evolved for the well being of the Nigerian citizens. Since technology transfer is a vital tool for national development, tendencies are that it will create a vibrant economy that Nigerians will be happy with and then achieve their dreams. In fact, technology transfer will stimulate economic growth.
3. Technology transfer will enhance human capital development. New technologies always demands specific trainings or education. So in the process of trying to transfer new technologies, people are sent to acquire the skills for their sustenance or maintenance
4. Technology transfer will generate new employment opportunities and promote industrialization. More industries and jobs are created when more technologies are transferred.
5. It will contribute to environmental sustainability in Nigeria and make her less dependent on the West.
6. It can stimulate productivity and growth among local firms through subtracting and other mechanisms, and adopting foreign technologies to remain in advantageous position to compete with foreign firms.

Strategies/Recommendations for Enhancing National Development via Technology Transfer

Technology transfer shows prospects of enhancing national development in Nigeria. However, there is low technology transfer in the country, thereby leading to underdevelopment.

Below are therefore strategies/recommendations on how to enhance national development via technology transfer:

a) Good governance should be promoted at all levels. It will strengthen our national vision of achieving sustainable development in 2020, and at the same time manage with honesty and accountability the available resources to ensure development via technology transfer.

b) Government should prioritize industrialization in order to create new jobs, alleviate poverty and enhance technology transfer. In addition to this, public-private partnership should be encouraged for functional industrialization to be achieved in this 21st century.

c) Adequate security should be enhanced in the country, especially in such areas as Niger Delta states that have high potentials of industrialization, in order for MNCs to continue to exist and thus transfer the technologies of their countries to Nigeria. Issues of insecurity such as militancy, kidnapping, hostage taking, and youth restiveness should be tackled with utmost sincerity.

d) Nigerians should place value on the quality of goods that are imported to them. Government should make policies that shun making the country a dumping ground for "second hand" or outdated goods.

e) All attempts or efforts should be geared towards generating steady and capable power and energy, as these will attract more industries from the developed countries and thus ensure technology transfer.

f) Nigeria's national visions should be equally backed up with corresponding action and sincere intentions. Visions without strategies are meaningless.

g) Educational systems should be adequately funded and strengthened so as to impact meaningfully on national development via technology transfer. In addition, R&D activities should be well funded.

h) Policies that attract FDI should be pursued and promoted with all vigour, because FDI is the surest way of transferring technology especially through MNCs.
i) Provision of infrastructure like hospitals, water etc. should be prioritized.

Conclusion

Technology transfer, undoubtedly, is an effective tool for national development. However, the Nigerian government has never had a sustained focus on the development and application of technology for transforming its national economy in order to ensure improved living conditions for its citizens.

Technology is clearly the engine of growth, business and industries are the drivers, government is the catalyst, and academia is the fuel. An integrated strategy for ensuring and promoting development in Nigeria via technology transfer must link these stakeholders together. National development via technology transfer can only be achieved with concerted efforts to revitalize education, develop personnel, create integrated industries, fund R&D activities, enhance national security, provide infrastructure, pursue purposeful and realizable national visions, place value on the quality of imported goods or transferred technologies, and promote good governance/responsible leadership. In this, we all have a hand.

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