DOI: http://dx.doi.org/10.4314/gjss.v11i1.3

GLOBAL JOURNAL OF SOCIAL SCIENCES VOL 11, NO. 1, 2012: 21-31
 ISSN 1596-6216
www.globaljournalseries.com; Email: info@globaljournalseries.com

GLOBALIZATION, TECHNOLOGY TRANSFER AND THE KNOWLEDGE GAP: CASE STUDY OF THE GLOBAL PHAMARCEUTICAL INDUSTRY IN NIGERIA

S. I. EBOHON

(Received 10 June, 2011: Revision accepted 16, February 2012)

ABSTRACT

This paper, discusses the impact of oligopolistic research on transfer of global pharmaceutical manufacturing technology to the less developed countries of the South (Nigeria) in post globalism. On the basis of empirical evidence from the advanced industrialized world, it is argued that the growth of oligopolistic research has given rise to patent monopoly and an international property rights industry dominated by the multinational corporations. Guided by the challenges and logic of central command functions, the centralization of research and development as well as production of base chemicals, have become the strategy for global product standard maintenance, based on centralized product blueprint. Centralization encourages intra-firm trade and profit maximization through over-invoicing and transfer pricing. For ruling out adaptive research on patented drugs, the industry has blocked transfer of technology to the less developed host state. The paper concludes that the contradiction between the philosophy of public good and the philosophy of property rights production technology transfer in the context of the rolled-back state, threatens the world with grave crises of poor medication and economic underdevelopment. It is therefore suggested that greater state involvement and stake in drug production and technology transfer is imperative. This can only be achieved by closing the knowledge gap.

KEYWORDS: Transfer chain; Transfer circle; Anchorage; Adaptation; Property rights regime

INTRODUCTION

It is hardly possible to overrate the value …of placing human beings in contact with persons dissimilar to themselves, and with modes of thought and action unlike those with which they are familiar … Such communication has always been and is peculiarly in the present age, one of the primary sources of progress (Mill 1846 cited in Meier 2001:5; Goldin & Reinert 2007:199).

It took the holy trinity (World Bank, International Monetary Fund (IMF) and the World Trade Organization (WTO) almost five decades to deliver a trans-border relations driven by the invisible hands of the market within the context of rolled-back state. These developments unleashed the globalization process that matured with the end of the cold war: following the collapse of communism and the dissolution of the Soviet Union in 1989; the acceptance of market principle in central and Eastern Europe as well the fall of Apartheid regime in South Africa. The expanded volume of international trade and investment, occasioned by the re-organization of economic production, a dismantling of barriers to international trade and the development of the technology of instant communication implicated in the new political economy of global reach. Such convergence of geographical integration of production with an emergent new geography of power is now known as globalization (Feigenbaun 2001:13; Sassen 1992:1089).

As Wyszomirski (2000) intimates

> …Economically, globalization is seen-variously as a process by which business expands into markets around the world; as the increasing integration of world markets and the parceling out of different

S. I. Ebohon, Department of Political Science and Public Administration, University of Benin, Benin City, Nigeria.

> stages of production to areas with the most obvious competitive advantage; or the increasing inter-dependence of business and financial systems. Technologically, the internationalization of communications, media, and information delivery and distribution system, both supports and drives the emerging global economy. Multinational and transnational communication and media corporations use wireless, fiber optic, and web-based technologies to manage and market their products globally…

However, globalization is neither only economic nor new. Williamson, (2000) classifies the period 1820 – 1914 as the first phase of the age of globalization, a growth process that was arrested by the first and second world wars. In 1911, about 15percent of the US population was foreign born. This figure by January, 2003 had fallen to about 10 percent. Emigration from Europe was amazing. With 14 percent of the Irish population by 1880's and about 10 percent of Italian population emigrating by the second half of the 20th century (Fischer, 2003), it has been reported that in more concrete terms, globalization means that the resident of one country are more likely now than 50 years ago: to consume the products of another country; to invest in another country; to earn income from other countries; to talk on phone to people in other countries; to visit other countries; to be affected by development in other countries and to know and imbibe the culture of other countries (Williamson, 2000). In short, globalization as outcrops of technological and political changes does have non-economic consequence. As Gidden (2002:10) intimates: "I would have no hesitation …in saying that globalization, as we are experiencing it is in many respects not only new, but also revolutionary…Globalization is political, technological and cultural, as well as economic".

This paradigm has acquired multiple faces in the new world order. To some people in the debate, it has reshaped the domestic and foreign policies of states thereby creating a rational global order (Friedman, 1999:117-119), for global resource mobilization and optimization of returns on global investment opportunities. To some on the other side of the debate, globalization is another face of the imperial project that keeps the fringe players and the poor people of the developing world in a state of perpetual poverty (Odion –Akhaine, 2001; Oriaikhi: 2001; Momoh & Seteolu, 2001). To some others, globalization does not only enable profit maximizing producers to escape government control and even market discipline, it also escalates the phenomenon of runaway jobs at the expense of workers in the developed countries without necessarily transferring the needed skills to the workers of the third world. A third face in the debate argues that, globalization lacks an imperial identity

Prakash and Hart intimates:

> In an international economy, cross-national trade and investment flows are regulated by the state, or supra-national institutions established by states. In contrast, production in a global economy is organized in cross-border network or value chains largely out of the control of states. Since a significant proportion of cross-border trade takes place within firms, cross-border network supersede resource allocation by markets as well (quoted in Feigenbaum, 2001:15).

Those who have romanticized the relationship between development and globalization anchor the relationship on the automatic transfer of production technology which goes with foreign direct investment. Therefore, the more foreign companies, MNCs and TNCs invest in a country, the more production technology is likely to be transferred to that host economy. Recent studies by (Ebohon, 1985, 2005; Adikibi, 1978) on technology transfer in the pharmaceutical and tyre retreading industries in Nigeria did not support this position. The thrust of this article is to examine the extent to which globalization pressure has forced the international pharmaceutical industry operating in Nigeria to transfer technology.

In addressing the issue of transfer of technology in the industry, specific indexes would be examined. (1) How is the structure of manufacturing technology in the industry constructed in the Nigerian economy? (2) What is the local value added? (3) How many local patents are held in the industry? (4) What is the value of R&D carried out at the local industry level? (5) What is the general character of technical agreements between the headquarters and exploiters of patents? The paper is discussed around five major themes. Section I discusses background issues, while section II discusses conceptual issues in technology transfer and the knowledge gap. Section III explores the profile of the pharmaceutical manufacturing industry while section IV

discusses the invisible hands of technology in the invisible hands of an invisible market. Section V renders the conclusion.

CONCEPTUAL ISSUES AND THE KNOWLEDG GAP

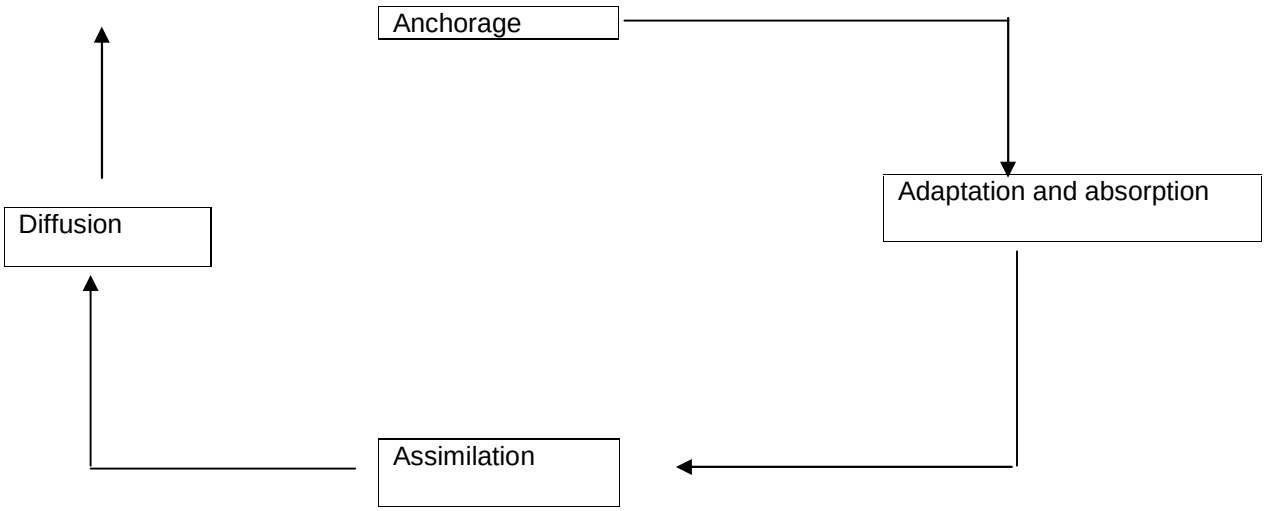
Technology, is a precision based application and deployment of scientific knowledge for the determination of specific production outcome of goods, services, or knowledge. The use of the concept in virtually every day discourse has reduced it to a common place phenomenon to the extent that its structure, content and profile in policy and development discourse are often confused and not informed enough to guide policy direction. It is in this context, that the developing countries are to pride national growth and achievements on the basis of their ability to purchase and import hard wares even when they lack the maintenance capability. In this sense, the know-how and know-why of the product is not immediately captured. In the same vain, its bundle as a disaggregatable package, comprised of levels of multilayered products is never captured. A knowledge gap that makes its indigenization impossible sets in to perpetuate an international regime of technological dependency of the poor developing countries on the developed countries. It is in this context, that a challenge of basic conceptualization is imperative: first on the technology transfer chain, and (2) the content or bundle profile in the form of technology mix.

Technology: Transfer Chain and Transfer Circle.

This chain assumes a processual configuration in the development of technological capability. It is not just the episodic movement of hardware's and machines as located in FDI and moved to host state for production of goods and services. The chain is a bundle; dissagregatable into its internally related and consistent phases to complete the transfer circle.

Built into this transfer chain is stage; (1) Anchorage of the technology for production in the host economy; (2) Adaptation to local environment; (3) Absorption or assimilation of the core processes within the host economy ; and (4) Diffusion and replication of the skills and core processes for related technology challenges and growth. While stage (1), anchorage implies that a new production system has been introduced; stage (2), Adaptation implies that the new system has been implanted through a reverse engineering process for environment production system consistency. Stage (3), Assimilation implies the organic absorption of the technology spectrum which derives from reverse engineering. At this level, national capability is in transition to proprietary realm of technological growth. The fourth and final stage of the bundle is diffusion. At this level, related technological discoveries in related industries emerge from the knowledge revolution spurred by processes outlined above to indigenize imported technology. This transfer circle soon acquire a system character: input – output relations, in the form of new challenges and new discoveries in the building of new scientific, industrial and technological estate. (See the transfer circle in fig 1).

Fig. 1: Technology transfer circle:



This circle is not hooked to national constitution; it derives from a deliberate technology policy that seeks to deploy stage-specific, knowledge prototype; not aggregate technology policy. Such processes include, unbundling of technical agreements between foreign and local affiliates, excision of responsibility reticulation, a virile R & D policy, and a rolling forward of the state in globalization process as in Asia and Latin America. The Nigerian technology dream is blocked at the level of stage 1, anchorage; living the country in a state of perpetual dependence and poverty.

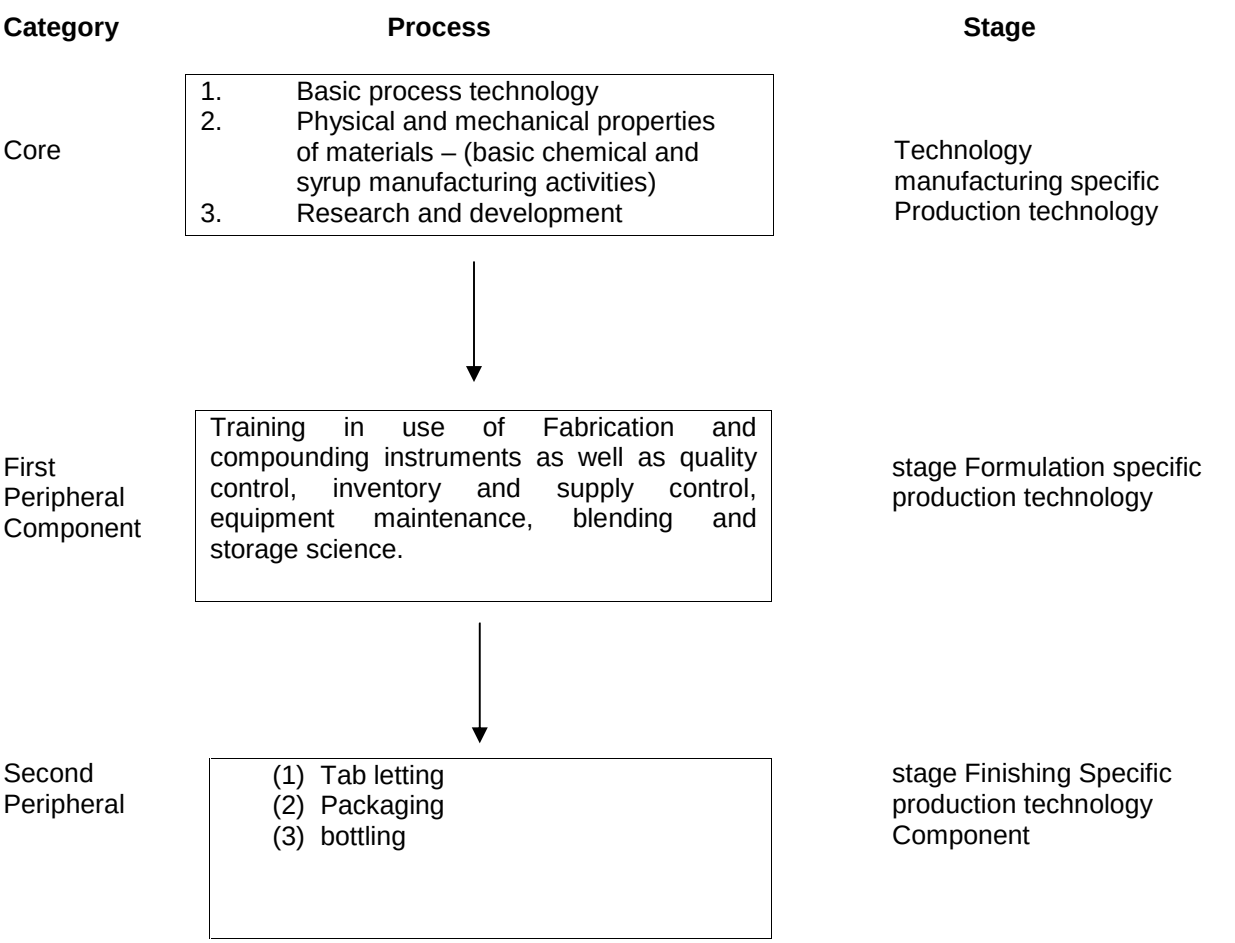
The Production Technology Mix

Production technology in the industry exist in a bundled package / mix and like transfer process, it is disaggregated and exported to serve intra-firm profitability motive. This package contains two components; core and peripheral. The core component (technologies) of the package includes the body of knowledge that is inherent in, or specific to a project, product or process. It includes basic process design or certain types of engineering designs. The peripheral components correspond to the body of knowledge that is needed for the application of core technologies in producing goods and service activities. (Junta del Acuerdo de categena, 1976). This component also exists in two forms.

As illustrated in fig. II, three levels of production technology characterize the production of all drugs. The manufacturing specific production technology represents the type of technology applied in the production of base chemicals. This is the only manufacturing technology in the global pharmaceutical industry. The next is the formulation specific technology. At this stage, chemicals produced at the manufacturing stage are blended or compounded to produce the needed drugs based on central command, formulae, proto-types and standards. Quality control is also crucial at this level in order not to deviate from global standard, as defined by the head office. Finally, the finishing specific technology applies to the tabletting, packaging and bottling of drugs; fabricated and compounded at the formulation stage.

Thus, figure II illuminates at a glance, the stage attained by production technology in a host state. The core components embodied in manufacturing specific technology is often located at headquarters or in a state where cost minimization and investment security are guaranteed. This is often the production and control nerve centre of the global pharmaceutical corporations.

Fig: II: PHASE OF PRODUCTION TECHNOLOGY IN THE GLOBAL PHARMACEUTICAL INDUSTRY



Source: Designed by the author

The Knowledge Gap

As the most powerful influence on history, Weber paid homage to ideas, as the motor of change. Globalization is all about the flow and intermingling of ideas, information and knowledge among the countries of the world. Development in this light is conceived as the out crop of the application of better and smarter ways of dealing with key challenges (Goldin & Reinert, 2007:193). Romer (1993: 543) has written, "Nations are poor because their citizens do not have access to the ideas that are used in industrial nations to generate economic value". Such values as technology, industrialization, military power, efficiency and productivity enhancement are knowledge intensive. Therefore, the knowledge gap between the developed and developing countries of the world may explain differential distribution of poverty and development on a world scale.

This growing consciousness of the value of knowledge has unleashed the growth of knowledge-based economies as outcrops of the knowledge revolution. The OECD defines knowledge-based economies as "economies which are directly based on the production, distribution and use of knowledge and information" (quoted by Dahlman & Andersson, 2000: 31). By this definition however, all economies are knowledge-based. What is however different with the knowledge revolution is "…our rapidly growing economies are becoming increasingly dependent on the effective creation, acquisition, distribution and use of

knowledge which is to a large extent, enabled by the rapid advances of the science base and the ICT revolution (Thurrow, 1999).

The World Bank (1999: 1) has noted that "knowledge is the light, weightless and intangible; it can easily travel the world, enlightening the lives of billions of people everywhere. Yet, billions of people live in the darkness of poverty – unnecessarily". For developing countries to address the problem of knowledge gaps, the World Development report made three recommendations.

(1) Acquiring knowledge by tapping and adapting knowledge from elsewhere in the world through trade, foreign investment, licensing and local R & D;
(2) Absorbing knowledge through supporting secondary and tertiary education;
(3) Communicating knowledge through new information and communications technology (Goldin & Reinert 2007: 201).

PROFILE OF PHARMACEUTICAL TECHNOLOGY IN THE AGE OF GLOBALIZATION

The draft report of a study of the Nigerian pharmaceutical industry (NISER, 1978: 32), aptly captures the character of production technology in the sub-sector:

> …The local pharmaceutical manufacturing industry presently consists of small scale finishing operations. Most of the companies which claim to be manufacturing drugs locally still import completed finished products to be packaged by and distributed through their factories. The industry is dominated by foreign companies which have no immediate or contingencies for backward integration into local manufacture of basic drugs...

The report further stated:

> …A Nigerian pharmaceutical industry will for some years to come, depend on imported bulk drugs for formulations and dosage fabrication ventures. The absence of a chemical industry will continue to aid this dependence on imported raw materials. We have therefore, to discourage mere formulation activities on the part of multinationals by laying down new policies which will give full recognition and encouragement to foreign partners who are willing to promote basic drug manufacture …

Not much was known about the global pharmaceutical industry until the findings of Senator Kefauver's (1966) committee were made public. Its main features are concentration, high profitability, high outlay on research, transfer pricing and extensive marketing. The volume of research taking place in the industry has transformed it into what is now dubbed an area of danger (see Ebohon, 1985).

Two immediate effects of high research intensity and cost with effect on global distribution of production technology in the global industry have been that (1) Only very large firms can undertake extensive research and (2) Research is undertaken not necessarily for the purpose of probing into the unknown but seen as a worthwhile venture if costs can be recouped from sales. In essence, R & D is directed at products with good market potentials (Ebohon, 1985: 169). This approach has encouraged centralized oligopolistic research in the global industry: around the Northern pole.

The 1950s and early 1960s have been described as the golden age of discovery in the pharmaceutical industry. By 1972, the U.S. drug industry was investing as much as $725m on research per annum, while the cost of discovering and marketing a new drug in the U.K. stood at 5m (Silverman and Lee, 1974: 32). By the end of the 1970s, many new drugs were introduced into the market by the global pharmaceutical manufacturers, leading many people to claim that the industry was once again on the threshold of a new "golden age of research productivity" (Gerrefi, 1985: 263). The world's 15 largest drug firms in 1980 were all research-intensive operations. Only one firm out of the 15 spent less than $100m on R & D. during the year. Hoechst spent $660m while Bayer spent $630m. Ciba-Ciegy also committed 12.0 percent of sales to R & D, while Sandoz committed 12.7 percent of sales to R & D (Gerrefi, 1985: 265).

The research intensity of the global pharmaceutical industry is not replicated in the Nigerian affiliates beyond minor quality control activities. And since quality control activities limit the affiliate plants to the blueprints from the head office, it can be argued that it discourages

innovation at the affiliate plant level. While quality control is necessary in order to maintain product standard, the restriction limits the prospect for local technological development in the age of globalization. Rationalizing R & D centralization, a Nigerian Quality control manager in one of the global plants said:

> The cost of maintaining some equipment in Nigeria is prohibitive …. Chances of major discovering are remote because of lack of facilities. References to assist in research design may not be available unlike developed countries where the computer can give you all the references you need. What can take you six months to get in Nigeria, could take only 10 minutes in the U.K. and the U.S.A.

Thus, investment in pharmaceutical and allied research in Nigeria is weak. In 2003 for instance, overall manufacturing R & D as percentage of manufacturing investment stood at 14.6 while pharmaceutical R & D as percentage of industry investment stood at 8.4. Manufacturing sector R & D as percentage of total industry investment stood at 0.066 while pharmaceutical R & D stood at 0.011 percent of total manufacturing industry investment in 2005. Total industry investment on R & D in 2006 stood at 1.01 percent in 2006, while the pharmaceutical R & D accounted for 0.25 percent of total industry investment. Compared to pharmaceutical contribution of 7.5 percent of industry output in 2003; 8 percent in 2005; 35.58 percent in 2006; and 26.2 percent in 2007, this R & D performance is poor (MAN). These disbursements for research are often geared towards centralized oligopolistic research. Similarly, the sector is import dependent in raw material sourcing, which stood at an average of 54 percent in favor of imports from 2002 – 2007 (MAN, 2002 – 2007).

Three major explanations have been suggested for centralization of R & D (Braun, 1980: 168). The first is management control to minimize cost and enhance profit through intra – firm trade. Secondly, meaningful co-operative effort necessary for research is enhanced through internal economies of scale and the use of the scientist at head office which reduces cost of innovation while maximizing profits. Thus, the availability of test equipment and reputable scientific community in the developed world makes it most attractive for R & D activities. Finally, differential global resource distribution tends to stimulate the R & D concentration around the developed countries. It has been well documented elsewhere:

> …the average health care budget per person per year in the United States is approximately US$4,000.00, in Sub Saharan Africa, it is less than US$20 per person per year; in the poorest rural areas it is even lower. With the average cost of bringing a new drug to the market, currently running at about US$800m and the annual sales from the three leading therapeutic classes – cholesterol reducers, anti-ulcer ants, and anti depressants - exceeding US$70b. per year, the incentives for the major drug companies are overwhelmingly skewed in favor of the primary problems facing rich countries… (Goldin & Reineit, 2007).

One result of the concentration of R & D in the major world capitals is the nature and structure of patent monopoly by the global drug manufacturers. Of the 680 patents held in Nigeria in 1973, the chemical sector controlled 424 or 62.3 percent of the total. Of this number, the pharmaceutical industry held 181 or 26.6 percent. In our 1982 – 1985 field work (Ebohon, 1985), found that all the patents in the Nigerian pharmaceutical industry, were held by affiliate plants of the global corporations because of the virtual absence of indigenous R & D in the Sub – Sector. One affiliate plant in Nigeria held 15 percent of the patents in the sub-sector by 1985 (Ebohon, 1985). Vaitsos, also found that patents granted in LDCs are almost all of foreign origin due to the non-existence of meaningful R & D in the LDCs. Oligopolistic R & D. breads oligopolistic patent structure. Patent monopoly tends to limit indigenous innovation and hence technological development as Vaitsos intimates:

> …the technological infrastructure that might be created by imitating, absorbing and adapting foreign technology to domestic conditions is restricted by patents. After 14 or 20 year period during which adaptive research is excluded, the technology covered by patents is probably obsolete and the search for adaptation becomes commercially unattractive" (quoted in Braun, 1980).

While it can be assumed that patent protection can encourage inflow of FDI and associated ideas, 'the essential trade off in choosing the patent life is that a longer patent life raises the

rate at which discoveries occur, but reduces the social benefits of each discovery'. (Leach, 2004:175). Thus, patent as property right raises fundamental problem in transfer of global pharmaceutical technology.

If research centralization around the North limits the capacity of the South to absorb, evaluate and adapt ideas based on intellectual property rights and patent protection, the structure of production technology in the industry which is bundled to favour the North promotes the knowledge gap that has characterized contemporary global system. Figure II; illustrates at a glance the stage and level of production in a multilayered global production structure. The core component embodied in manufacturing specific production technology is often located at the headquarters. The implication is that, no manufacturing takes place in Nigeria. Formulation activities or technologies are applicable in the context of the Nigerian Sub-Sector. However, only six plants in the Sub-Sector attained this stage of production technology as at time of study. The bulk of the Nigerian pharmaceutical plants use the finishing and packaging specific production technology. This state has worsened with the deindustrialisation provoked by globalization in the sector.

Social Cost of Invisible Technology in the Invisible Hand of an Invisible Market

The attraction of a knowledge revolution in the wake of a shift from industry paradigm to the knowledge economies, points to increasing global sensitivity to the challenges of the knowledge gap. The social cost of invisible technology in the invisible hand of a blossoming global invisible market, has manifested in the crises of property right regime; patent monopoly, restrictions on the growth of innovation and adaptation in developing countries, restriction on transfer of technology and increasing defiance of market discipline in the era of globalization.

Thus, the knowledge gap in the global pharmaceutical industry has become the instrument for surplus appropriation from the periphery to the center of the global system of production, distribution and consumption. Such cost effect as high profitability and transfer – pricing: are transmitted through unknown technology, unseen hands and an invisible market. The pharmaceutical industry is one of the most profitable industries in the world, because global corporations tend to convert research intensity, property rights and patent monopoly to social cost and the third world. The return on capital in this American property rights industry between 1960 and 1973 stood at 18 percent while the average profitability as a percentage of capital employed in the whole manufacturing industry stood at 11 percent (Silverman & Lee, 1974:30–38). Lall (1980:173), reported that about 110 pharmaceutical groups in the U.K. recorded a return of 26 percent on capital as against 12.6 percent for the manufacturing industry between 1967 and 1969 while Nigerian affiliates recorded return on capital of 42.49 percent between 1977 and 1981 (Ebohon, 1985:177).

The foregoing reports on declared profitability, say nothing about real profitability in the property rights industry. Real profitability which includes declared profitability and other elements is measured by the following indexes:

(a) Declared profit of a subsidiary operation which tallies with financial investment and forms part of actual or potential repatriated dividends;
(b) Royalty payments for technical assistants, machineries and brands;
(c) Capitalization of machineries which are often obsolete; and
(d) The securing of a market for the intermediate and capital goods of the parent company by the subsidiary in the host country.

Other indicators capture the proportion of the plant's total sales and purchases that eventually accrue to the group as profits through intra-corporate trade based on over-invoicing and under-invoicing in the bid to earn profit in tax havens. This is well captured by Lall (1973:11):

> The existence of intra-corporate transactions and tied purchases means that the foreign supplier can, within vary wide limits determine the price that it is going to charge; the problem posed for host country is simply that it has little direct control over a wide channel of foreign exchange flows by which profit can be remitted, taxes evaded, regulations by-passed, and currency speculations intensified. In fact, a company with branches in many countries and a tightly knit trading and management organization can decide how much money it transfers in and out of each country.

It has been found that over pricing ranges between 20 percent and 3000 percent in the global pharmaceutical industry. Translated into American dollars, over pricing amounted to about

$8bn. in Colombia (Braun, 1980). The dependence of the Nigerian formulation plants on imported base chemicals and finished drugs that are packaged locally create the room for transfer pricing and over pricing. All the agreements we studied revealed that, the Nigerian subsidiaries are obliged to buy raw materials and intermediaries from the parent companies in order to protect global structure and global standard of the group as spelt out in the blueprint. In this context, over-pricing and transfer pricing are social cost derivatives of patent abuse in the global property rights industry.

CONCLUSION AND RECOMMENDATION

The emergence of the property right industry, manifested in patent monopoly and abuse, raise fundamental ethical questions about the value of globalization paradigm in the context of public goods. The international center for trade and sustainable development (2003:1) noted

> …since the early 1990s, intellectual property (IP) policy has become one of the most economically and politically contentious issues in the international arena, whether in discussion on public health, food scarcity, education, trade, industrial policy, traditional knowledge, biodiversity, biotechnology, the internet, or the entertainment and media industry...

Thus, opinion remains strongly divided on the issue of property rights, technology transfer, the knowledge gap and the globalization of cross-border and sustainable development. The popular view is that, property rights and the attendant patent regime have dualized the world into the rich North and the poor South, through the manipulation of patent monopoly that stunts innovation, adaptation, and the absorptive capacity of the South. This position and structure is legitimized with reticulation of power and authority and vertical dependence of affiliate plants on the corporate licensing agreements. Such vertical integration, undermines horizontal and backward integration in the South, promotes the global environment for transfer-pricing and over-pricing and weakens the prospect for transfer of technology.

Clouded by the illusion of rolled-back state, the protagonist of globalization have exhibited an unusual intellectual weakness of not capturing how a shattered global market has lost market logic to a global property rights industry, driven by the logic of 'corporate personalism' and market indiscipline. Such indiscipline, which has been reinforced and replicated with intellectual property rights abuses; allows firms to maximize profits and introvert technology at the level of intra-corporate transactions and the construction of central command systems. Contemporary globalization paradigm therefore, constitutes the contemporary crises of global underdevelopment. In order words, if the rolled-back state provides the context for market indiscipline and emergence of 'corporate personalism', the urgent challenge is how to deconstruct and reconstruct globalization as a development paradigm.

In constructing a new globalization paradigm, the following suggestions are imperative.

(1) Urgent redefinition of intellectual property rights in the context of public good where the state is not just an umpire in public good construction, but a significant actor working through consultants;

(2) The unbundling of technical packages / technology bundles for access by accredited private corporations, registered to pursue the public good project for sustainable trans-border development; and

(3) State – private enterprise collaboration in the knowledge revolution project that seeks to strengthen the adaptive, innovative and absorptive capacity of poor states in the global property right industry on a trans-border scale.

REFERENCES

Adikibi, O. T., 1978. "The impact of U.S. Multinational Corporations in Africa: The Case of West Africa", in R.W. Winks, (Ed), Other Voices Other Views: an International Collection of Essays from Bicentennial (Connecticut: Greenwood Press)

Adikibi, O. T., 1985. "Technology Transfer to Less Developed Countries by Multinational Corporations: Does it Really Occur?" Paper Presented to the Conference of the International Geographical Unions – Commission on Industrial Change in Nijmegen, Holland, August 19 – 24.

Braun, D. P., 1980. The Politics of Industrialization in Colombia: The Case of the Transnational Pharmaceutical

Companies Unpublished Ph.D Thesis, submitted to Victoria University of Manchester.

Dahlman, C and Anderson, T., 2000. Korea and the Knowledge-Based Economy: Making the Transition (OECD And World Bank Institute).

Ebohon, S. I., 1985. "Nigerian Policy Towards Foreign Companies: Case Study of the Multinational Pharmaceutical Formulation Plants 1972 – 1985" Unpublished PhD Thesis Presented to Victoria University of Manchester.

Ebohon, S. I., 2005. "Indigenization and the Rise of a Techno-Comprador: A Case Study of the Multinational Pharmaceutical Formulation Plants in Nigeria" BIU Journal of Social and Management Science 3, (1): June: 338 – 352.

Feigenbaun, H. B., 2001. "Globalization and Cultural Diplomacy" Center for Arts and Culture: Issue Paper.

Fischer, S. A., 2003. "Globalization and Its Challenges" Revised Version of Ely Lecture Presented at the American Economic Association, Meeting in Washington DC. Jan. 3.

Friedman, T. L., 1999. The Lexus and the Olive Tree (Farrar Strauss Girrou).

Gereffi, G., 1985. "The Global Pharmaceutical Industry and Its Impact in Latin America", in R. Newfarmer, (Ed) Profits, Progress and Poverty: Case Studies of International Industries in Latin America (Note Dame: University of Notre Dame Press).

Giddens, A., 2000. Runaway World: How Globalization is Reshaping Our Lives (London: Profile Books)

Goldin, I and Reinert, K., 2007. Globalization for Development: Trade, Finance, Aid, Migration and Policy (The World Bank, Palgrave Macmillian).

International Center for Trade and Sustainable Development., 2003. "Intellectual Property Rights: Implications For Development"; Geneva.

Kefauver, E., 1966. In a Few Hands: Monopoly Power in America (Harmondsworth: Penguin)

Lall, S., 1980. The Multinational Corporation (London: Macmillan)

Lall, S., 1973. "Transfer Pricing by Multinational Manufacturing Firms", Bulletin of Oxford University Institute of Economics and Statistics 35, August: 11.

Leach, J., 2004. A Course in Public Economics (Cambridge: Cambridge University Press).

Manufacturers Association of Nigeria, 2003-2006. MAN: Economic Review (January – March).

Manufacturers Association of Nigeria, 2006–2007. MAN: Economic Review, (January – December).

Meier, G. M., 2001. "Introduction: Ideas for Development" in G.M. Meier and J. E.Stiglitz (Eds) Frontiers of Development Economics: the Future in Perceptive. (Oxford University Press).

Momoh, A and Seteolu, D., 2001. "Economic Globalization and the African Economies: Development, Dependency or Marginalization?" S. Odion –Akhaine. (Ed) Globalization: United Nations and the Fringe Players. (CENCOD, Panaf Press): 17 – 23.

Nigerian Institute of Social and Economic Research (NISER)., 1978. "The Sectoral Study of the Nigerian Pharmaceutical Industry" 1978.

Odion-Akhaine, S., 2001. "Marginalizing the Fringe Players", in S. Odion-Akhaine (Ed) Globalization United Nations and the Fringe Players (CENCOD: Panaf Press) PP. 1 – 7.

Oriaikhi, F., 2001. "Globalization as Imperialism: The Nigerian Experience" S. Odion-Akhaine, (Ed) Globalization: United

Nations and the Fringe Players. (CENCOD, Panaf Press): 24 – 42.

Romer, P., 1993. "Idea Gap and Object Gaps in Economic Development". Journal of Monetary Economics 32, (3): 543.

Romer, P., 1992. "Two Strategies for Economic Development: Using Ideas and Producing Ideas", Proceedings of the World Bank Annual Conference on Development Economics 1992, 63 – 91.

Sassen, S., 1992. "The State and Globalization" in M. Hawkesworth and. Kogan (Eds) Encyclopedia of Government and Politics (London: Routledge)

Silverman, M and Lee, P. R., 1974. Pills, Profit and Politics (Berkeley: University of California Press)

Technology Policy and Development: 1976. A Summary Report on Studies Undertaken by the Board of the Categena Agreement for the Andean Pact Integration Process by Junta del Acuerdo de Categena. International Development Research Center, Ottawa.

Thurrow, L. C., 1999. Building Wealth: New Rules for Individuals, Companies, Nations in a Knowledge-Based Economy (New York: Harper Collins)

Williamson, J., 2002. "Winners and Losers: Over Two Centuries of Globalization", NBER Working Paper, 9161.

World Bank., 1999. World Development Report (1998 / 1999): Knowledge for Development (New York: Oxford University Press).

Wyszomrski, M., 2000. "Negotiating the Global Maze Artfully", Going Global: Proceedings of the 2000 Barnett Arts and Public Policy Symposium Ohio Arts Council and Ohio State University, Columbia, OH.