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IMPACT OF TECHNOLOGY AND KNOWLEDGE TRANSFER ON NIGERIAN ECONOMIC DEVELOPMENT

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ABSTRACT

The study investigates the impact of technology and knowledge transfer on Nigerian economic development. The study adopted an ex-post facto research design. Hence secondary data was deployed for the purpose from CBN Statistical Bulletin 2017, covering a period of 2008-2017. A Partial Least Square and multivariate regression model was adopted for data analyses with the help of SPPS and SmartPLS to establish the impact of independent variable on the dependent. The study establishes that, technology and knowledge variables have significant impact: foreign trade and foreign direct investment; while movement of people and licensing agreement have no significant impact on economic development; The implication of this finding is that movement of people and licensing agreement indices were not effectively utilized during the investigated epoch. We therefore recommend that policy makers should devise policies that would create an enabling environment to attract foreign trade and foreign direct investment in such a manner that will increase their indices. And for the movement of people and licensing agreement in such manner to be mutually beneficial and symbiotic relationship to both technology and knowledge transfer transferee and transferor for economic development in the long run.

KEYWORDS: Technology Transfer, Knowledge Transfer, Foreign Direct Investment, Movement of People, Foreign Trade and Licensing Agreement.

1. INTRODUCTION

Technology and knowledge transfer in technological progress has been largely studied in line with economic development literature. Technology and knowledge transfer is of paramount importance for the continuous development of competitive advantage (Cantwell, 1991). Coe and Helpman (1995) ascertained that national productivity increases with the accumulation of both domestic and foreign knowledge. Several scholars have proved that transmission of ideas and technologies are channels for

technology and knowledge transfer through international trade; importation of high-technological products (Coe & Helpman 1995; Coe, Helpman, & Hoffmaister 1997; Kwark & Shyn 2006); foreign technology payment (Le & Bodman, 2011); direct adoption of foreign technology (Soete & Patel 1985); and acquisition of human capital (Park 2004; Le 2008; Le and Bodman 2011). Technology and knowledge transfer is a mechanism technically installed to encourage the sharing of expertise and ideas in solving human problems across border (Fong & Lo, 2005, Ayşe, 2015). To a greater extent, countries are utilizing interdisciplinary organizational structures to share knowledge, idea and expertise between one country and the other using various channels such as Foreign Direct Investment, Movement of People, Licensing Arrangement and Foreign Trade (Krogh, 2002).

Heidelberg (2016) stressed that most Western countries experienced technological development that progress in tandem with economic activities. For example countries in Asia, starting from Japan, Taiwan, China, and Korea have demonstrated how catch-up strategy in technology-based economic development can happen. Japan's success in technology-based economic development relied on massive foreign technology imports that are actively put to usage, in form of adaptation, imitation, invention and improvement from that of the western.

New knowledge from western advanced nations was in high demand at the time of the famous Emperor Meiji who declared at the time of Japanese restoration in 1868 (Tom, 2011). There were two views that characterized technology and knowledge transfer of Japanese economy as of this time (Scarbrough, Swan & Preston, 1999): technology is a dependent variable of the economy; and second; technology possesses its own inner mechanisms that make it relatively independent of non-technological elements. For instance, in the middle of the nineteenth century, Japan was forced to open its doors to foreign trade and to establish diplomatic relations with the Western powers, which had already achieved their own industrial revolutions. Compelled to accept unequal treaties, Japan was on the brink of being colonized (Tom, 2011). The Tokugawa regime, however, lacked the leadership necessary to surmount the crisis and preserve national independence like the state of Nigerian economy today. So it was up to the new Meiji government to build a strong modern state, through enhancement of the country's wealth and military power and through a series of political and social reforms. A popular slogan as of the time was Datsu-A Nyu-O – which means "Withdrawal from Asia and Entry into Europe" (Sharma & Gani 2004; Tom, 2011).

Obviously, Nigeria still remains one of the countries with the lowest level of technology deployment in all aspects of human productivity and even leisurely activities. It is quite disgusting with the limited level in deployment of productive technology or capital equipment in production activities such as agriculture, fisheries, processing of basic products (e.g. food items and clothing), construction and associated materials and manufacturing of basic transportation equipment such as motorcycle. These

problems constitute what Heidelberg (2016) generalized as Africa's technology gap problem tree. The imagery of a tree is quite convenient when one thinks about roots, stems and branches and their unbreakable interrelatedness (Odagiri & Gotō, 1996; Chandler, 1990). It resultant effect can be seen through unemployment, retrogressive economic activities and poverty bedeviling Nigerian society can be attributed very much closely intertwined with the low usage of productive technologies in the country (Anietie & Manasseh, 2014). In other words, pervasive poverty, low productivity associated low wages, lack of jobs, and negative terms of trade are all linked to Nigerian technology gap problem tree. It is logical and deductive to affirm that Nigerian economy cannot experience inclusive economic development unless the technology gap must be closed. The most annoying question is how can Nigerian technology gap can be resolved?

Fast and sustained economic development is a fundamental requisite for poverty eradication and tackling of the problem of duality in economic development. This is validated by Japanese economic development history, and recently that of China where near to half a billion people have been lifted out of poverty, while many rural locations have been opened up for modern industrial and infrastructure development (Sharma & Gani 2004). Economic development on a macro scale is approximated by several indicators e.g. GDP, GDP per capita, productivity or labor productivity, export of products for a given economy.

This work provides answer to the question by concentrating on how Nigeria can succeed in initiating technology-based economic development through technology and knowledge transfer, absorptive capacity building with specific reference to Japanese economy. This work is grounded on a view of technology and knowledge transfer as a continuous process in which upgrading of skills and abilities at various levels are necessary. Therefore, technology and knowledge transfer requires efforts aimed at absorptive capacity building on the part of governance in Nigeria at all levels (Heidelberg, 2016). Otherwise, any attempts at technology and knowledge transfer will remain exercises in futility. The view of technology and knowledge transfer as a continuous process is clearly supported by Rosenberg (1982), thus it should be rightly conceived of, not as a one-time event, but as a continuous process.

1.2 Objectives of the Study

The objectives of this study were divided into general and specific objectives: thus, while the main objective is to examine the impact of technology and knowledge transfer on Nigerian economic development, the specific objectives were:

1. To examine the effect of foreign direct investment on economic development of Nigeria
2. To investigate the relationship between the movement of people across border on economic development of Nigeria.
3. To establish whether foreign trade improves economic development of Nigeria

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4. To determine the extent to which licensing improves economic development of Nigeria.

1.3 Research Hypotheses

The research hypotheses were set in null form

$H_{0:1}$ there is no significant effect of foreign direct investment on economic development of Nigeria

$H_{0:2}$ there is no significant relationship between the movements of people across border on economic development of Nigeria.

$H_{0:3}$ there is no significant impact of foreign trade on economic development of Nigeria

$H_{0:4}$ there is no significant effect of licensing on economic development of Nigeria.

2.1 Literature Review

Technology Transfer (TT)

Technology means different things to people and to different organizations. A scientist may refer to technology as the end product of research, inventions and know-how that may be developable into a commercial product, while to an engineer, technology may be a tool or process that can be employed to build better products (Megantz, 2002). Technology is also defined as a set of tools both hardware (physical) and software (algorithms or procedures) that thus help in acting and thinking better (Stuhlman, 2007; Hendrix & Richard, 2017). Generally, technology is the integration of any tool or technique, any product or process, any physical equipment or method of doing or making, by which the human being potential is broadened (Saxonhouse, 1974; Tom, 2011; Acemoglu, 2009). In this description, technology is considered to be hardware or a physical product (Buratti & Penco, 2001). On the other hand technology can be described as technical knowledge or "know-how" that is put into use for improving personal skills, and country's ability to provide products and services or to accomplish a specific goal (Rogers, Takegami & Yin, 2001). As technical knowledge differs extensively in the extent of physical embodiment, a specific technology can be a machine, a process, software code, a handbook, blueprints, documents, operating procedures, an electrical or mechanical constituent or assembly, a patent, a technique, or even a person (Palviaa, Palvia & Whitworth, 2002). Technology is an essential factor in the industrialization process (Salahaldeen, 1995), particularly for developing countries while considering our current scenario.

Technology transfer in its most general sense is any process that aims at transferring technological know-how from a donor firm or country to a recipient (Khalil, 2000; Buratti & Penco, 2001). Technology transfer is a complex process which requires clear definitions from the outset, to ensure that both the seller and purchaser of technology clearly understand its implications, and try to maximize the benefits for both parties (Salahaldeen, 1995). Technology transfer is a tradeoff process that enables a recipient firm to access or imitate complete technological capabilities of the donor (Kotabe, Srinivasan & Aulakh, 2002). In other words, technology transfer is the movement of technology via some communication channels from one individual or organization or a country to

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another (Rogers, Takegami & Yin, 2001). Technology transfer therefore takes information on even greater importance for productivity growth in developing countries, which as a group undertake little domestic R&D and therefore have few domestic sources of new technology (Henry, Kneller & Milner, 2009). Over the years, there has been an increasing interest in the process of technology transfer from the industrialized to the developing countries (Salahaldeen, 1995).

Knowledge Transfer (KT)

The term knowledge has been defined by several people in their own understanding. Commonly knowledge is expressed as what you know, and it is believed that knowledge is power (Odagiri & Gotō, 1996; Damooei & Tavakoli, 2006). But researchers and academics have qualified knowledge in various forms and ways given different understanding to the meaning of knowledge. According to Ganesh (2000), knowledge is an organized combination of ideas, rule, procedure and information. A tiny line exists between knowledge and information, but they are different according to their organization. Koniger and Janowitz (1995) argued that information is disorganized, while knowledge is organized. Knowledge is more meaningful and richer than information. Knowledge could be gained when information is acted upon. Davenport and Prusak defined knowledge as a fluid of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.

Knowledge transfer is a key tool of technology transfer, technology cannot be transfer if there are no knowledge of what to be transferred. Therefore, knowledge transfer and technology transfer must work together at the same rate of development (Hendrix, & Richard, n.d). Dougherty (1999) argued that knowledge transfer is about connection not collection, while knowledge transfer to RCUK (2006) means a two-way transfer of ideas, research results, expertise or skills between one party and another that enables the creation of new knowledge and its use by the learner. Collection of knowledge will only be considered when talking about adoption of knowledge. This process does not allow the continuous flow of knowledge from transferor to transferee. For technology transfer to be implemented there must be continual flow of knowledge transfer between involved parties (Argote, Ingram, Levine & Moreland, 2000). In this current competitive environment, knowledge is recognized as a fundamental asset for organization (Teece, 1998). Therefore, knowledge transfer is very important when considering economic strength of a country or company.

Foreign Direct Investment (FDI)

Zhang (2001) refers to FDI as long-term participation by a country in another country and that it usually involves participation in management, joint-venture and licensing arrangement. There are two types of FDI as stated by Damooei & Tavakoli (2006), that is, inward foreign direct investment and outward foreign direct investment, resulting in a net FDI inflow (positive or negative). For an

investment to be regarded as FDI, the parent firm needs to have at least 10% of the ordinary shares of its foreign affiliates but investing firm may also qualify for FDI if it owns voting power in a business enterprise operating in a foreign country (Sharma & Gani 2004). Damooei and Tavakoli (2006) argue that FDI is critical as it provides a major source of capital which brings with it up-to-date technology contributing to economic development. It would be difficult to generate this capital through domestic savings, and even if it will be possible, it would still be difficult to import the necessary technology from abroad, since the transfer of technology to firms with no previous experience of using it is difficult, risky, and expensive (Sharma & Gan, 2004).

For developing countries to acquire technology through foreign direct investment there should be abundance of skilled and semi-skilled workers and also a strong intellectual property right (IPR) protection to attract investors, these will increase the level of tacit knowledge (know-how) absorption (Khalil, 2000; Hezron & Pauline, 2016).

Movement of People (MoP)

Human capital is a fundamental determinant of a country's absorptive capacity and of its capability to benefit from technology transfer. As such, it is a key component in the workings of the transfer channels of trade, FDI and licensing (UNCTAD, 2007). The loss of technological capabilities through the "brain drain" phenomenon has been long overtime acknowledged. The outward movement of skilled persons, such as consultants, technicians or high-skilled professionals, may have negative impact and even decrease a country's overall skill endowment (Seres, Haites & Murphy, 2009). A perpetual migration of educated professionals will almost certainly result in a loss of country's stock of human capital and decrease its capacity to receive technology transfers. The negative effect may be smaller if the migrants were not employed, or offset to some extent if new business or investment linkages with a knowledge component emerge between migrants and their home economies or if there are opportunities for temporary or permanent return (UN, 2014).

For such potential positive effects of international migration ("brain gain" or "brain circulation") to materialize firms in the home countries need to provide reasonable employment opportunities and conditions (RCUK, 2006). These are more likely to emerge as the economy develops and, particularly when scientists and engineers are concerned, its technological sophistication increases (Sumanta, & Gan, 2004).

Developed countries could also consider providing financial support to facilitate training of researchers, technologists and entrepreneurs, in particular from less developed countries to improve technology adoption for enhancement of public service, skills acquisition and sustainable energy (UNIDO, 2008). However, a number of studies have shown that direct training of human capital at

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home base is much more beneficial to developing countries, and less costly, than sending human resources to be trained abroad (Grogger & Hanson, 2013; Hezron & Pauline, 2016). This is because developing countries like Nigeria spend a lot of money sponsoring their citizens to study in the UK and US, but they are not able to transfer this knowledge gained back to their country because of lack of employment opportunities within the four walls of the economy. They end up working in the country where they gained such knowledge. Also, if students from developing countries are sent abroad for graduate programs, it is important to devise policies to build bridges between the local human capital pool and those expatriates who choose to locate themselves abroad (Agrawal, Kapur & McHalee, 2008).

Foreign Trade (FT)

International trade influences the global allocation of resources and shapes the development of national sectors and industries. It therefore plays an important role in determining global knowledge and technology transfers. This notion is based on two assumptions (Dana & Snejina, 2004): …the first is as goods are traded, the technology embodied in them is transferred too. In particular, the imports of capital goods are often associated with development. The second notion is that, it serves as an important determinant in technology and knowledge transfer has low cost of access (Dana & Snejina, 2004; UNCTAD, 2014). For example, Japanese's technological paradigm has evolved from accumulating and assimilating of foreign technologies from advanced industrialized country with indigenous technology by enhancing their capabilities to be able to generate American-style of innovation as the country approaches the technological frontier (Papageorgiou, 2002).

Solidifying the above argument according to Grossman and Helpman (1991); Verspagen (2005); Khalil (2000) technological progress is a result of two main forms of learning, namely innovation and imitation. The former consists of the domestic creation of new products or processes. While the latter entails importing and implementing existing technologies, usually from leading countries abroad through the channels of international trade (Keller, 2001). During its development process, Japan relied heavily on licensing and the reverse engineering of imported goods while, Nigeria relied on importation of consumer goods (Kakazu 1990; Hezron & Pauline, 2016). It is argued that enterprises in developing countries generally start the innovation and learning process by importing new technology and then investing in building their capabilities to master the tacit elements.

Licensing Agreement (LA)

A License is a contract which authorizes the use or exploitation of the subject matter of the licensee for a specified purpose and period of time with all other right maintained by the owner of the technology (Thomas, 1998). He also argued that companies wishing to expand into the international arena are finding that licensing or transferring their technology provides a low risk and highly

profitable alternative to direct export, establishing a foreign branch, subsidiary or joint venture. These arguments by Thomas can only benefit the transferor and not the transferee at the long run. The reason for technology transfer is to benefit both parties and at the long run, the transferee should be independent of the technology gained (Hendrix, & Richard, n.d). The motivation for licensing of technology and product could be for the penetration of the international market (Palviaa, Palvia & Whitworth, 2002). Companies are willing to license their technology to countries where they do not have penetration through export or direct investment and also selling of their product. Countries willing to acquire technology and knowledge transfer through licensing arrangement must be sure of the credibility of the licensee and their willingness to transfer the technology and knowledge to licensor.

The challenge of technology and knowledge transfer in developing countries is funding. Although, developing countries recognize the important of technology and knowledge transfer to their local industries but lack of research funding and bad policy have been a major problem to them (Khalil, 2000). The developed countries hide some of their knowledge from other developed countries and developing countries; this has been a barrier of technology and knowledge transfer to companies and countries (Lin, 2003).

3.1 Research Methodology

This study is a literature review on technology and knowledge transfer to economic development in Nigeria with reference during Japanese economic development. The study adopted an ex-post facto research design. Ex-post facto design is a category of research design which the investigation starts after the facts has occurred without inference from the researcher (Babbie, 2002). Secondary data was extracted for the purpose of this study from CBN Statistical Bulletin 2017, from a period of 2008-2017. Data was analyzed by the means correlation and Partial Least Squares where independent variables {Foreign Direct Investment (FDI), Movement of People (MoP), Foreign Trade (FT), Licensing Agreement (LA)} and the dependent variable {economic development (ED)}. Partial Least Squares (PLS) based Structural Equation Modeling (SEM) with the use of SPSS and SmartPLS to establish the casual relationship between the independent and dependent variables. The bootstrapping at maximum iteration of 500 cases and factor weighting scheme was set for prediction. The main reason for using this method is that PLS-SEM answers a set of interrelated research questions in a single, systematic, and comprehensive analysis (Gefen & Straub, 2000). On the other hand, a central advantage of PLS-based research is particularly relevant to sample size. PLS approach is often invoked its ability to work well with small sample sizes (Falk & Miller 1992). An often-cited rule of thumb, developed by Barclay, Higgins and Thompson (1995) and postulated by Chin (1998b), is based on the idea that the sample size depends on the number of predictors that are involved in the multiple regressions in the inside and outside approximation. The validation for accepting or rejecting the

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findings will be regarded significant if the ($p<0.05$) path estimate; while t-tests< 1.69 value of factor loading for a given construct will be considered insignificant.

3.2 Model Specification

The concept of economic development on a macro scale is approximated by several indicators e.g. real gross domestic product RGDP, Real per-capital income RPCI, productivity or labor productivity, export of products for a given economy. Innovative activity of nations is a complex, multidimensional construct. This study was guided by RGDP & RPCI. The following linear regression models have been formulated to guide the researcher in the investigation:

(Eco Dev.) = f (TKT)

(Log RGDP, Log PCI) = f (FDI, MoP, FT, LA)

$RGDP = \alpha + \beta_1 LogFDI_t + \beta_2 MoP_t + \beta_3 FT_t + \beta_4 LA_t + \mu_t$…….. (1)

$PCI = \alpha + \beta_1 LogFDI_t + \beta_2 MoP_t + \beta_3 FT_t + \beta_4 LA_t + \mu_t$……. (2)

Where:

TKT	=	Transfer of Knowledge and Technology
RGDP	=	Real gross domestic product
PCI	=	Real per capita Income
FDI	=	Foreign Direct Investment
MoP	=	Movement of People
FT	=	Foreign Trade
LA	=	Licensing Agreement
α	=	Model constant
β_{1-4}	=	Coefficients of the variable used in the models.
μ	=	The error term in the model
$_t$	=	Time

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3.3 Discussion of Findings

Table 3.1 Test of Hypotheses

	Original Sampl...	Sample Mean (...	Standard Devia...	T Statistics (|O...	P Values
EcoDevelop -> ...	0.994	0.994	0.002	448.561	0.000
EcoDevelop -> ...	0.994	0.995	0.002	436.364	0.000
FDI -> EcoDeve...	-0.180	-0.155	0.089	2.034	0.043
ForeignTrade -...	0.965	0.970	0.086	11.244	0.000
LA -> EcoDevel...	0.005	0.036	0.067	0.072	0.942
MoP -> EcoDe...	0.044	0.027	0.088	0.502	0.616

Source: SmartPLS Output

The data presented in appendix I was used to evaluate the significance of the construct impact. First, the impact of foreign trade construct was found to have positive and significant relationship. FT had the highest coefficient (t =11.244 linking RPCI and RGDP with t=436.364, and t=448.561 p < .000), while Marketing Capacity (CMKT) had the lowest coefficient (.774, t = 18.517, p < .01 respectively). The correlation between FT to RPCI and FDI to RGDP were both moderate at 0.74% while the diffusion from the model summary (r = 0.993 and 985 sig. respectively at the 0.001 level (one-tailed) and adjusted r square were also 0.98% and 99% showing highly correlated figures between FT and RPCI. Multi collinearity diagnoses were significant at the range of 0.02% to 0.56% and% and descriptive statistics further shows a positive correlation between FT and RPCI. This study was in no doubt agree with Rod and Neil (2006); Dana and Snejina (2004); Etzkowitz and Leydesdorff (2001);

The secondly hypothesis is FDI with it dimensions also has a positive and significant impact on RPCI and RGDP. An analysis of the impact of FDI and Eco (Dev.) (t=2.034 RGDP with t=436.364, and t=448.561, p < .000 respectively). Also the correlational result of RPCI had positive correlation on FDI (0.989, 0.742 and 656) respectively. Etzkowitz and De Mello, 2003) stated that multinational cooperation through FDI channel their resources across boarder inform of Joint Venture and License which subsequently will boost the technology, economic activities and GDP of the received country.

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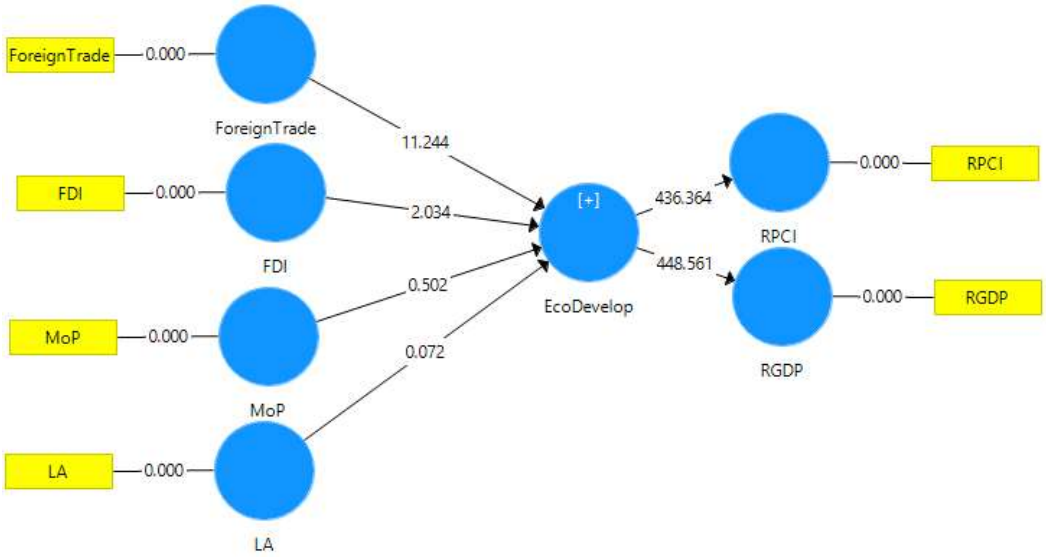
Fig.1: Structural Equation Model



Source: SmartPLS Output

The third hypothesis was to access the impact of MoP on Eco Dev where the dimensions of economic development RPCI and RGDP. The coefficient were (t = 0.502, p < .12) was found to be found to have insignificant relationship and negative correlation with economic development. Also the correlation between MoP to RGDP was -0.166% where MoP to RPCI was -0.204 moderate at 0.44% while the diffusion from the model summary (r = 0.45 and 45 sig. respectively at the 0.32 level (one-tailed). Multi collinearity diagnoses were significant at the range of 0.42% to 0.26% and% and descriptive statistics further shows a negative correlation between MoP and RPCI and RGDP.

The fourth hypothesis was to access the impact of LA has insignificant impact on dimensions of economic development (RPCI and RGDP). The coefficient was (t = 0.072, p < .26). And then, the correlation LA on RGDP and RPCI was moderate at the level of .054, while both coefficients of correlations LA to RGDP and RPCI were below the benchmark. The Collinearity Diagnostics proved that when input is made from constant values of LA, the dependent variables of RGDP and RPCI turn to increase further. But in this regard, the values of LA were very low within the study time.

4.1 Summary and Conclusion

On the basis of this study, we have seen that, issues of technology and knowledge transfer have been area of great interest to academics, policy makers, and industrial managers to both advanced and developing countries of the world. Technology and Knowledge Transfer has been an area of debate over the years with the overview of open trade and trade agreement among nations of the world. The result of the study shows that, apart from the second hypothesis, all the other three hypotheses have

positive correlation between independent and dependent variables (RGDP and RPCI); while the third hypothesis had moderate negative correlation.

The following conclusion and recommendations were made.

1. The study revealed foreign direct investment to have positive and significant effect on economic development of Nigeria. Previous studies such as (Rajah, 2004; Sadoi 2005; Lee & Houde, 2000; (Hayashi & Prescott, 2008) pointed out that, Chinese economic development has been accelerated since the middle of the 1990s, largely due to an increase in FDI from developed countries and technology transfer through the FDI. Chen (2000) pointed out that joint ventures and licensing agreement between Chinese and Japanese firms and MNC are the dominant form of technology transfer in China and Japanese. The study contend that, FDI do not just provides Nigeria with much needed capital for domestic investment but also creates employment opportunities and helps transfer of managerial skills and technology, all of which contribute to economic development. We encourage Nigerian government to offer various tax benefits to promote FDI in Nigeria. This tax benefit should be export-oriented to produce and export products produce in Nigeria to other part of the world. Putting forth an arrangement, for example that, a 100% export-oriented company to enjoy total of 15 years tax benefit. This will serve as a pull factor for MNC in developed nations to consider Nigeria as best place of investment rather than others nations.

2. In the second objective, movement of people across border had negative relationship on economic development of Nigeria. This finding's logic is that, according to (Dana & Snejina, 2004), an enduring migration of educated professionals will almost certainly result in loss of country's stock of human capital and decrease its capacity to receive technology transfer. The negative effect may be as a result of citizens from this part of the world (Africa) when sent for studies abroad may be un-wiliness to return. Those who acquire knowledge here had no access to employment and are willing to migrate elsewhere. This is in line with Sumanta, Mattoo & Self, (2004); Grogger & Hanson, (2013), that developing counties' experts will profit from working abroad and further develop their knowledge, skills and network. Therefore, developed countries should regard such movement as a mechanism to export knowledge and transfer technology to developing countries, but desist from habit of providing safe havens for such skilled labor who acquire this knowledge oversea. Nigeria should provide infrastructures and soft technological related processes in production, management, entrepreneurship and marketing to serve as pull factors for skilled labor that might have acquire this knowledge elsewhere to comeback and practice it here.

3. The third objective sought to establish whether foreign trade improves economic development of Nigeria. The correlation between foreign trade to RGDP and RPCI was highly significant and positively correlated. It is not far from the study of Kim and Nelson (2000); Dana and Snejina, (2004)

who stated that, Japan's success in technology-based economic development relied on massive foreign technology imports through foreign trade by actively put it to usage, improvement and finally innovation, thus making the crossing over from a net technology importer to an exporter. Morishima (1982) aptly explained and summarized the Japanese successful experience as predominantly based on Western technologies and Japanese ethos. The logic is that, Nigeria must have the ability to import technology developed elsewhere from advanced economy and to effectively deploy imported technology for economic activities.

4. The last objective was to determine the extent to which licensing arrangement improves economic development of Nigeria. The result proved that, licensing arrangement had a moderate positive relationship with RGDP and RPCI which are the indices of economic development in our current study. These findings correlate with argument by (Ganech, 2000; Grogger, & Hanson, 2013) that, licensing arrangements must be mutually beneficially to both countries; but if not, perhaps the whole essences of the process were politicized. In the same vain, Thomas (1998); Dana and Snejina (2004) argue base on their findings that, companies expanding into international arena in form of licensing or transferring technology can provide low risk and highly profitable alternative to direct export, establishing a foreign branch, subsidiary or joint venture. These arguments by Thomas and others can only be seen beneficially to transferor and not the transferee at the long run as stated aerial on. Technology transfer should have a symbiotic relationship to both parties at the long run. Nigeria should encourage licensing as well as local research and development (R&D). This transfer of knowledge and technology will complement the effort of R&D on economic solution to Nigeria.

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Appendix

Data from CBN Statistical Bulletin

Years	Licensing Arrangement $Millions	Foreign Trade $ Millions	Foreign Direct Investment $Millions	RGDP # Billions	Movement of People Units
2002	1,898.43	1,494.24	172,161,500	11,332.25	343,811
2003	1,927.56	1,783.85	167,321,400	13,301.56	373,918
2004	1,963.74	2,871.53	260,755,100	17,321.30	371,983
2005	2,317.87	3,614.03	14,635,080	22,269.98	372,329
2006	2,476.96	5,303.85	319,622,800	28,662.47	325,621
2007	2,915.14	5,889.95	867,529,700	32,995.38	336,646
2008	3,096.63	6,776.71	1,051,590,000	39,157.88	344509
2009	3,066.07	7,897.09	1,525,140,000	44,285.56	297,092
2010	3,878.75	8,992.65	911,716,700	54,612.26	287,071
2011	3,137.67	10,325.57	816,764,600	62,980.40	266,867
2012	5,169.02	11,843.53	1,530,129,000	71,713.94	303,926
2013	3,437.11	13,702.84	1,227,438,000	80,092.56	306,742
2014	3,390.11	15,704.13	1,601,233,000	89,043.62	336,525
2015	1,809.05	18,028.90	1,465,378,000	94,144.96	391,160
2016	4,002.50	20,675.86	1,300,906,000	101,489.49	427,585