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# FOREIGN DIRECT INVESTMENT AND INFRASTRUCTURE GROWTH: EVIDENCE FROM NIGERIA

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***Abstract***

*The study investigated the relationship between foreign direct investment and infrastructure growth in Nigeria within the period of 2000-2019. Its specific objective was to ascertain the relationship between foreign direct investment inflow and Internet connectivity aspect of information & communication Technology Infrastructure in Nigeria. Explanatory, historical and correlational design was adopted for the study while secondary data was utilized for the study. Data was sourced from Statistical bulletin of Central Bank of Nigeria and National Bureau of Statistics annual reports (various years), and African Development Bank group website. The data collected was from the period 2000 – 2019. Regression was used for data analysis and testing of the hypothesis. The result of the study shows that FDI inflow has a significant and positive relationship with infrastructure growth when measured on the Internet usage aspect of ICT infrastructure. The study therefore recommends that amongst others there is the need to advocate for increase in FDI inflow through putting in place the right policies and creating the enabling environment that will ensure more foreign investors are part of the infrastructure development activities of Nigeria. Government should ensure that there is political stability as well as improved security situations. Where there is political instability and insecurity, FDI is hampered as such actualizing economic growth objectives might be undermined since FDI inflow is critical source of government funding for economic growth and development pursuits.*

**Keywords:** Foreign Direct Investment; Infrastructure Growth; Internet Infrastructure; ICT infrastructure growth, Nigeria

## INTRODUCTION

The Nigerian economic landscape provides a good outlook for infrastructure development. Nigeria is endowed with abundance of oil resources, good land vegetation, and huge population with the potential for large manpower availability as well relative political stability (Schunnaman & Porter, 2017), as such could enjoy the benefits of good infrastructure growth and development. The importance of infrastructure development for any nation cannot be overemphasized. One of the attributes of developed or developing nations is the availability of infrastructure that impact on the lives of its citizens. Infrastructures such as good roads, housing, telecommunications, healthcare, schools, good and stable electricity supplies amongst others helps to improve the wellbeing of the citizens as well as create jobs, derive the economic growth as well as attractive for foreign investments and foreign partners.

As critical as this is, yet the Nigeria infrastructure growth has not been encouraging. It rather has been dwindling in the past years and continued to dwindle even in recent years. An overview of the performance of key infrastructures such as power, road network, ICT and the rest, depicts a situation of poor performance across the sectors of the Nigerian economy as against other nations within it continent. While it is commonly known that reliable and cost-effective power is critical

to any country's economic development, Nigera's power infrastructure is not doing well when compared to other African countries (Balogun, 2016). According to PWC reports, Nigeria's power sector remains one of the country's most pressing infrastructural issues, with extremely restricted electrical access throughout the country. In 2016, Nigeria generated approximately 3,879MW of power in a country with a population of roughly 177 million people, while South Africa generated approximately 45,645MW in a country with a population of 54 million people. Even in the midst of privatization of the power sector, this situation has not improved; the growth of power infrastructure is not commensurate to expectations towards privatizations. Transportation infrastructure is not doing better too. In Nigeria, for example, road transport is the most common mode of transportation, accounting for 80% of all goods traffic, but only 20% of the country's road network is paved. There are also substantial gaps in both rural and urban ecosystems across Nigeria, ranging from fundamental infrastructure such as waste management, healthcare, and housing, water to facilitating infrastructure such as Information and communication technology, hospitality, and commercial and industrial real estate (PWC, 2016). It is argued that though Nigeria failed to develop infrastructure in the times of oil boom yet Nigeria has not learnt its lessons as to change that attitude and tilt towards investment in infrastructure development even in recent times (Balogun, 2016).

As observed by PWC (2016), Nigeria would be unable to maintain her present levels of population and economic development unless her infrastructure is improved. 'Nigeria's basic physical infrastructure deficiency seriously undermines the country's chances for economic growth and human development,' writes Schunnaman & Porter. And that access to basic infrastructure such as power, roads, clean water, and improved sanitation facilities in Nigeria has not kept pace with the country's fast population expansion" (Schunnaman & Porter, 2017, p1) PWC (2014) said in a separate research that Nigeria offers an opportunity-filled future for infrastructure development, with infrastructure spending expected to rise from $23 billion in 2013 to $77 billion in 2025, but that this opportunity has yet to be realized. This is despite the fact that investing in infrastructure would spur economic growth, create employment, and provide essential services to the country's population (PWC, 2016).

According to the World Economic Forum, every dollar invested on capital projects (in utilities, energy, transportation, waste management, flood, defense, and telecommunications) yields a 5 percent to 25% economic return. Sponsors or investors interested in creating infrastructure projects in Nigeria will be able to take advantage of these chances. In other words, Nigeria now has more options for foreign direct investment. Furthermore, possibilities abound in Nigeria's core and social infrastructure sectors, including energy, transportation, and urban development / real estate, as well as healthcare, water, agriculture, waste management, and information communication technology (ICT) (PWC, 2016).In other to reverse the trend of poor growth of infrastructure in Nigeria, given the opportunities that abound, attracting foreign direct investment has been advocated as a key solution to infrastructure growth deficiency in Nigeria (Danmola et al., 2017). Foreign investments have been identified as the viable sources of funding for economic growth and development activities for nations especially in developing economies that have the needed

environment and attraction for it. Despite rising investment flows, particularly to emerging nations, Sub-Saharan Africa (SSA) countries continue to lag behind other areas in attracting foreign direct investment. Because FDI is a key source of growth for developing nations, the unequal distribution of FDI is a matter for worry. Not only may FDI increase investment resources and capital creation, but it can also act as a catalyst for technical advancement, with positive spillover effects accounting for much of the gain. Transfers of manufacturing technology, skills, inventive ability, and organizational and management practices are examples of positive spillovers (Osinubi & Amaghwedovede, 2009).

FDI is seen as the most efficient source of investment for economic growth in developing nations like Nigeria, as it stimulates more investment in the recipient country. The success or failure of previous and current governments in attracting sufficient investment for growth, as well as the success or failure of FDI to achieve the desired level of economic growth in terms of infrastructure growth, is dependent on the country's current political and economic circumstances. As a result, foreign investors must master the circumstances that characterize the Nigerian government in attracting foreign investment with little or no significance. According to studies, there is a close link between emerging nations' economic progress and their ability to attract foreign direct investment (Danmola et al, 2017).

Foreign investment, according to many academics, is one of the essential variables that triggers economic progress in terms of infrastructural expansion in Nigeria (FI). Because foreign investment encourages and drives globalization, multinational and transnational corporations and firms (TNCs) are emerging in many countries, including Nigeria (Nwankwo, 2007; Onyeali & Okafor, 2014). A subset of international investments is foreign direct investment. Foreign Investments (FI) is a type of investment that can be made in real assets (physical assets such as properties, companies, and so on) or financial assets (funds investments in stocks, shares, and bonds) across national borders with the goal of realizing the goals of the individual, government, or firm investors (Onyeali & Okafor, 2014). Furthermore, FI may be divided into two types: portfolio investment and direct investment (Nwankwo, 2007). Furthermore, FDI is distinguished from other kinds of foreign investment by the fact that it entails not only foreign investment ownership but also foreign control. In other words, FDI happens only when a foreign individual or organization becomes enough interested in a business to assume control of it (Onyeali & Okafor, 2014). A direct investment can be defined as an incorporated or unincorporated enterprise in which a single foreign investor controls 10% or more of the ordinary shares of voting powers of an incorporated enterprise or the equivalent of an unincorporated enterprise; or controls less than 10% /or none of the enterprise, but has an effective voice in its management. As a result, having a strong voice in management implies that a foreign investor has the ability to influence or participate in the administration of a company. It does not imply that he or she must be in complete command. The impact of foreign direct investment (FDI) cannot be overstated, according to several studies. It is a key part of the country's economic growth plan. This is most likely because, as Onyeali &

Okafor (2014) pointed out, FDI is seen as an aggregation of assets, both human and material management, and as a result, Sub-Saharan Africa as a region (including Nigeria) now has to rely heavily on FDI for a variety of reasons, as several scholars have pointed out (Sjoholm, 1999; Aremu, 2000; Obwona, 2004).

One of the benefits of FDI, according to Feldstein (2000), is the availability of diversification possibilities in other climates through the worldwide movement of money, which reduces the risk faced by capital owners in their home nations. Others argue that overseas investment, in addition to promoting competitiveness in the domestic input market, allows for global knowledge transfer and human capacity development (Onyeali & Okafor, 2014). Not to add that, despite the contributions to corporate tax revenues in the host country where a multinational corporation operates from FDI earnings, the highly capital intensive technologies developed might increase unemployment in labor surplus host nations. Given this context, it's critical to explore the impact of FDI on infrastructure expansion in Nigeria objectively.

**Conceptual Framework**

Two variables were evaluated for this study. They are the predictor variable (foreign direct investment) and the outcome variable (infrastructure growth). The interaction was depicted in figure 1.1 by the researcher of exogenous variables (Foreign direct investment (FDI) and dependent variables infrastructure Growth (IFG).

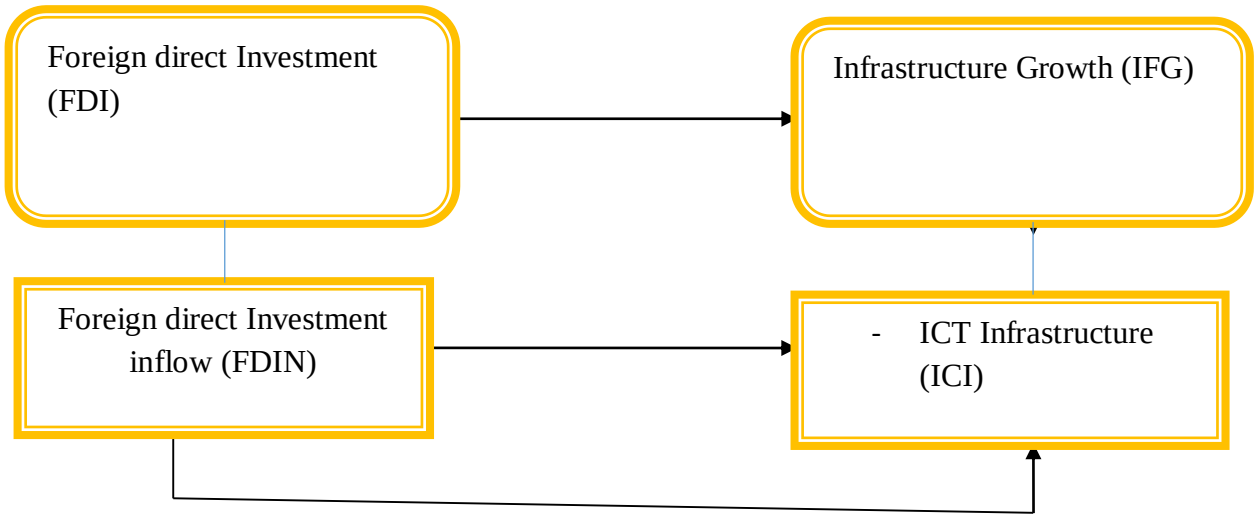


**Figure 1.1: Conceptual framework of foreign direct investment and Infrastructure Growth**

**Study Aim and Objective**

The main aim of this study is to determine the impact of foreign direct investment on infrastructure growth in Nigeria between the years 2000 and 2017. Its precise goals are as follows to:

- Evaluate the relationship between foreign direct investment inflow and Information and communication technology growth in Nigeria

**Research Question**

- To what extent does foreign direct investment inflow relate with Information and communication technology growth in Nigeria?

**Research Hypothesis**

- **$HO_1$:** There is no significant relationship between foreign direct investment inflow and Information and Communication Technology growth in Nigeria.

## REVIEW OF RELATED LITERATURE

### Concept of infrastructure

Basic services without which primary, secondary, and tertiary production activities cannot function in their broadest sense are referred to as infrastructure facilities. All public services are infrastructure facilities, from law and order to education and public health to transportation, communication, and water supply (Mabogunje, 1974, and Kahn, 1979). To put it another way, infrastructure facilities are part of the package of essential needs that a community would like to acquire for a better quality of life. According to Kahn (1979), rural infrastructure can be divided into three categories: physical infrastructure (roads, water, rural electrification, storage, telecommunications, and processing facilities), social infrastructure (health and educational facilities, community centers, fire and security services), and social infrastructure (storage, telecommunications, and processing facilities). Credit and financial institutions, agricultural research facilities, and social infrastructure are all examples of institutional infrastructure (Brown & Chikagbulam, 2015). The focus of this research is on one of the country's physical infrastructures. Technology of information and communication (ICT)

An overview of the state of Nigeria's infrastructure

Nigeria's poor infrastructure growth performance has been a source of concern that has dominated various recent discussions. As a result, there have been calls for the government to take whatever steps are necessary to address the infrastructure deficit, which is having a negative impact on the country's economic growth. According to a recent assessment by Nigeria's Infrastructure Concession Regulatory Commission, Mr. Chidi Izuwah, interim Director General of the Infrastructure Concession Regulatory Commission (ICRC), estimates that the overall cost of providing adequate infrastructure in Nigeria over the next six years will be around $100 billion. According to him, the oil and gas sector would require roughly $60 billion, the power sector will demand about $20 billion, the road sector will require $14 billion, and rail tracks will require between $8 and $17 billion (Aderinokun et al., 2017, September 28). Furthermore, when compared to its rivals, Nigeria does poorly in terms of domestic savings, investments, and government spending. As a result, Nigeria's massive infrastructural gap has hampered economic growth and competitiveness over time. Nigeria's infrastructure is currently worth roughly 35% of GDP, compared to 70% for larger economies." Unfortunately, between 2009 and 2013, Nigeria invested only $664 per capita per year in infrastructure, or 3% of GDP, compared to an average of $3,060 or 5% of GDP in industrialized countries. Furthermore, just about 56% of Nigerians have access to power, compared to 80% in affluent countries. This level of access equates to 24 hours per week

on average (Aderinokun, et al, 2017). With this precarious situation portrayed there is an urgent need for foreign intervention and hence the need for FDI so as to bring the infrastructure gap. In the midst of this sad news, there is some good news as well for Nigerian infrastructure landscape. The recent report of World Economic Forum provides some cause for cheer for Nigeria. a look at the Global competitive index report shows that Nigerian was ranked 115 out of 140 countries assessed on the index. According to the Proshare (2018), the new ranking means that Nigeria has improved in four out of twelve ranking pillars and has as well improved upon its previous years ranking and performance in terms of infrastructure growth. Nigeria dropped three places from its 2017/2018 ranking of 112 out of 135 countries, according to the report. Infrastructure, Health, Business Dynamism, and Innovation Capability are among the areas where it has improved. The GCI assigns a score to each country based on how well they perform in the following areas: Institutions; ICT Adoption; Macroeconomic Environment; Skill; Product Market; Labor Market; Financial System; Market Size; Business Dynamism and Innovation Capacity However, the report stated that while Nigeria has improved in the lower pillars in order to improve its scores, it is still ranked low overall. As a result, it requires improvement in a number of areas, including institutions, ICT adoption, the macroeconomic environment, skill, product market, labor market, and financial system (Proshare, 2018).

**Information and Communication Technology Infrastructure**

The advent of the ICT now doubt brings about many benefits to society and nations adopting it at all levels. Nigeria is not left out. Since is keying into the digital and ICT world, it has experienced many benefits including the knock on effect on the economy. Take the case of the broad band internet connectivity. According to recent government reports, high-speed broadband networks that would offer every Nigerian with fast, dependable, and affordable internet access are a vital necessity for Nigeria to become one of the world's leading economies by 2020. Broadband has been defined as a disruptive technology that levels the playing field and allows enterprises to access regional, national, and international markets regardless of location. The enormous success of digital mobile services provides an excellent foundation for developing a national broadband strategy. The Federal Government is thought to be committed to overcoming highlighted problems in Nigeria's desire for increased broadband penetration, and will work with state governments, the private sector, and other stakeholders to accomplish this aim. The government also recognizes that some incentives may be needed to encourage service providers to expand into areas where they are judged less commercially feasible. The federal government believes that ubiquitous broadband services are in the nation's best interests, and that no effort should be spared to reach all of the country's currently unserved or underserved areas. To improve access to infrastructure, the private sector has committed to open up existing infrastructure, including as transmission networks and fiber ducts, to allow for faster cross-country service delivery. This must be done with transparent cost-based pricing, which can be established immediately and will be applied to all future network deployments. Due to a lack of wired last mile access infrastructure, mobile broadband is the predominant mode of nationwide distribution. Wherever possible, efforts shall be made to encourage the deployment of fiber to the home or premises. Other critical and urgent requirements will include: declaring ICT/telecoms infrastructure as critical national infrastructure that requires special protection; obtaining ROW fee waivers from state governments interested in creating digital havens of highly connected communities; launching awareness-raising campaigns to

achieve widespread acceptance of broadband's transformative impact on society; and conducting digital literacy programs at all levels.

Similarly, the financial advantages of investing in broadband are substantial and far-reaching. Broadband penetration is universally acknowledged to have a favorable impact on GDP growth. According to a 2009 World Bank study, a 10% increase in broadband penetration results in a 1.38 percent rise in GDP growth for low- and middle-income nations. The FMCT performed a test pilot for a'micro-work' initiative in the first half of 2013, giving 3500 otherwise unemployed youngsters access to freelance crowd sourcing over the internet. The pilot generated over $121,163 USD in income in just two months, thanks to just over 2000 active registrants serving 42 clients around the world. The exercise was a tremendous success, demonstrating that internet availability promotes job creation and economic growth by increasing productivity and speeding up innovation. In 2010, the Nollywood film business in Nigeria was ranked third in terms of global income. In the three years from 2010 to 2012, it generated close to N126.4 billion (about $D800 million). Hollywood in the United States and Bollywood in India are the two film industries that are ahead of Nigeria's. In 2010, the global film and entertainment sector brought in N14.5 trillion (US$D90.6 billion). In 2012, this was expected to rise to N16.2 trillion (US$D102.7 billion).

Online media services such as YouTube, NetFlix, iTunes, and other media streaming or video-on-demand digital entertainment services have grown in popularity around the world, yet without broadband, online entertainment as we know it today would not exist. Music, movies, videos, TV series, and radio material downloads account for the majority of consumer bandwidth consumption. The need for downloading video content, such as a movie or TV show, in a short amount of time necessitates a large amount of bandwidth. To assure speedy delivery of less than twenty-five seconds to the end user, a single movie download (usually 400MB) over the internet will likely require at least 20Mbps in data transmission rates. In such conditions, narrowband dial-up users are no better off than individuals who do not have access to the internet in terms of their ability to utilize (or not use) the internet for high-quality, high-definition entertainment. The global phenomenon of the movie industry has increased demand for video traffic among mobile TV, desktop TV, cable TV, and HDTV viewers. As more people across the world turn to the internet for pleasure, demand on internet access infrastructure grows around the world, necessitating a massive global move toward high-capacity broadband networks. According to a premium times news from June 18th, 2018, the Nigerian Communications Commission (NCC) reported that the country's Internet users increased to 103 million in 2018, up from 40 million in 2012.

Furthermore, Oxford Business Group publications (2018) offered a concise picture of Nigeria's ICT and internet growth prospects and contributions to the economy. Nigeria's ICT sector has risen to become a major non-oil development engine, according to the report, thanks to strong mobile uptake and rapid expansion of mobile internet services. However, the National Bureau of Statistics reported that the telecoms and information services sector's contribution to GDP fell from N6.1 trillion ($19.7 billion) in 2016 to N5.9 trillion ($19.1 billion) in 2017, or 8.7% of GDP. According

to local think tank and NGO BudgIT Nigeria, the ICT sector contributed N8.6 trillion ($27.8 billion) to the economy in 2017, owing to the increased adoption of smart phones and mobile internet. However, with 51.4 percent of the population residing in rural regions and poor ICT infrastructure outside of large cities, there is still opportunity for improvement, according to BudgIT. The ICT industry's contribution to GDP reached an eight-year high of 9.2 percent in the first quarter of 2018, with N1.5 trillion ($4.8 billion), according to the commission. The ICT sector grew by 13.1 percent year on year in the next quarter, accounting for 8.2 percent of GDP (Oxford Business Group, 2018).

According to reports, investment in next-generation mobile broadband networks has aided rapid internet penetration, with the NCC reporting that the total number of mobile internet subscribers in Nigeria nearly tripled between January 2013 and January 2016, reaching 92.2 million, before rising to 100.2 million in January 2018 and 104.6 million in August 2018. Furthermore, in Nigeria, mobile internet users account for the bulk of internet users. There were 66,144 CDMA subscribers, 12,602 fixed-internet subscribers, and 359,501 VoIP subscribers in August 2018. Multilinks and Visafone provide CDMA services, while ipNX, MTN Fixed, 21st Century Technology, and Globacom Fixed provide fixed services. VoIP services are available through Smile Communications and Ntel (Oxford Business Group, 2018). Despite the high adoption of subscribers, the report stated, there is still plenty of room for expansion, particularly outside of the country's big cities. As a result of this circumstance, it is critical for businesses and the government to invest in Internet infrastructure development in order to spur growth and provide job opportunities. As a result, infrastructure businesses have a big role to play in this. The NCC announced plans to license at least one business in each of Nigeria's six geopolitical zones in late 2013, and it is argued that entities entrusted with deploying new fiber-optic infrastructure became part of the government's telecoms policy. According to the NCC's "Open Access Next Generation Fibre Optics Broadband Network" study released in November 2013, these firms are tasked with providing fiber connectivity to network operators in order to meet NNBP broadband penetration goals. While progress has been made on the issue, more has to be done. The progress of infrastructure companies was moderate until December 2017, when the NCC announced it had licensed two additional firms: Zinox Technologies, which will deploy broadband infrastructure in the country's south-east region, and Brinks Integrated Solutions, which will operate in the north-east region, according to a related NCC report from 2017. However, local media claimed in March 2018 that Nigerians had yet to profit from broadband expansion after more than two years since infrastructure company licensure was rolled out, with penetration stalling at 22% as of late October 2018. (Oxford Business Group, 2018).

**Foreign Direct Investment, infrastructure growth and Economic Growth**

Foreign Direct Investment (FDI), which has been defined as a source of injecting greenfield investment, capital technology transfer, technical skills, entrepreneurship, and investment funds, among other things, into developing countries, is primarily directed from developed countries to developing countries. This is predicated on the assumption that FDI externalities benefit home or

developing countries greatly by increasing productivity, employment, exports, and international integration (Danmola et al, 2017).

However, prior research such as Chakrabortly and Basil, (2002); Love and Chandra, (2004) argued that the theory of trade and foreign direct investment work as growth catalysts, and that this is achieved through the government's trade and FDI liberalization policies. This is in accordance with Tian et al. (2014), who claimed that a higher FDI ratio would likely result in faster economic growth. It is important to highlight, however, that FDI does not always help a host country's economy thrive, and that this is aided by the development of infrastructure that can generate jobs and money for the government. This is because FDI can have a negative impact on the economy when multinational corporations' activities result in a significant reverse of flows in the form of profit remittances, dividends, and significant concessions from the host country (Akinlo, 2004). Okonkwo et al. (2015) claim that FDI has often harmed rather than helped countries progress. For example, a lack of tax income, considerable profit repatriation, capital flight, and detrimental impact on local enterprises, and tax incentive regimes aimed at aiding the economic growth of a country's rural or underdeveloped sector.

**Theoretical Framework**

Social exchange theory and social theory of development are the theories adopted for this study.

**The theory of social exchange**

The theory of social exchange theory is a social psychology and sociological viewpoint that describes social development and stability as a process of negotiated trades between parties. According to social exchange theory, human connections are established via the application of a subjective cost-benefit analysis and the evaluation of alternatives (Homans, 1961). Homans, on the other hand, characterizes the system in which social exchange occurs in three propositions: success, stimulation, and deprivation–satiation. The success proposition states that when a person is rewarded for their actions, they are more likely to repeat the action; the stimulus proposition states that the more frequently a particular stimulus has resulted in a reward in the past, the more likely it is that a person will respond to it; and the deprivation–satiation proposition states that the more frequently a person has received a particular reward, the less valuable any further unit of that reward is. Furthermore, Blau (1964) defined social exchange as the interchange of action between at least two people, whether material or intangible, rewarding or expensive. As a result, when this circumstance arises in an organizational environment, there will be an exchange. In exchange for their commitment to fully invest directly into the economy and thus increase capital importation and inflow into the nation, the government should provide public goods and services as well as incentives that will create the right environment for investors. However, this interaction must be put in a larger context, going beyond simple exchanges of investments and capital inflows to the construction of infrastructures that will have a long-term influence on the economy.

According to Kendra (2018, February 11), social exchange theory can be traced back to Thibaut and Kelley (1959), Homans (1961), Kelley and Thibaut (1978), and Rusbult (1979). (1983).

George Homans, a sociologist, published a book titled "Social Behavior as Exchange" (Homans, 1961). He defined social exchange as “the interchange of action, whether material or intangible, rewarding or expensive, between at least two people”. After Homans founded the theory, other theorists continued to write about it, particularly Peter M. Blau and Richard M. Emerson, who in addition to Homans are generally thought of as the major developers of the exchange perspective within sociology (Emmerson, 1976). Homans' work emphasized the individual behavior of actors in interaction with one another. Although there are various modes of exchange, Homans centered his studies on dyadic exchange (Homans 1961).

John Thibaut and Harold Kelley are recognized for focusing their studies within the theory on the psychological concepts, the dyad and small group (Emmerson, 1976). Lévi-Strauss is recognized for contributing to the emergence of this theoretical perspective from his work on anthropology focused on systems of generalized exchange, such as kinship systems and gift exchange (Cook & Rice, 2006). Social exchange has been used in a variety of circumstances where transaction, connection formation, and maintenance are essential, including taxes and tax incentives. Surprisingly, this hypothesis has its detractors. It has been criticized for assuming that individuals always make logical judgments, and critics argue that this theoretical model fails to convey the influence that emotions have in our personal lives and relationships with others. This theory also undermines the strength of social structures and forces, which unintentionally alter people's perceptions of the world and their experiences in it, as well as play a significant part in influencing our interactions with others (Crossman, 2016). Regardless of its criticism, it is significant and beneficial for describing the interaction between the government and foreign investors since, in the correct atmosphere, foreign direct investment inflows will be increased and greater dedication to it will be shown.

**Developmental social theories**

This theory's proponents, like Schumacher and others, highlight the importance of human capital in development. In the early 1950s and 1960s, economic crises threatened both industrialized and developing countries, prompting the development of social theory. Schumacher attacked the current idea that "larger is better" and replaced it with "little is beautiful" in order to identify the dilemma and provide a solution (1973, p150). His point was that vastness is not influenced, all-embracing, and has lust to power; smallness, on the other hand, is free, efficient, creative, enjoyable, and enduring. The most important area in which he sought to implement smallness was technology, mostly because the modern world has been shaped by it (Varma, 2003). Schumacher suggested that the less developed countries should not imitate Western technological development based on the trickle-down approach; instead, the less developed countries should embrace an alternative a route of growth that is less expensive and hence more accessible to common people, yet more productive than indigenous technology Economic progress might be noticed with the presence of these, more productive aspects of the economy organized by the availability of technology breakthroughs and pursuit. It is suggested that what distinguishes Schumacher’s work

remarkable is the philosophical themes woven around the low-cost, small-scale technology as an alternative to high-cost, large-scale technology (2003; Varma).

The key to economic growth, which can subsequently lead to development, was the presence of education, health, fertility, and other higher standards of life, among other things, according to the social theories. Second, the focus has shifted away from the overall rate of economic growth and toward issues such as poverty, inequality, urbanization, and other social ills. When concerns such as social evils and inequality, as well as the poverty rate, are at a minimum, development can be considered to have occurred. And what, according to the proponents of this idea, will bring forth these development indicators is the availability of income that is wisely used for the same aim. Foreign direct investment income is the mechanism through which these funds for economic growth and development are realized in Nigeria and in the majority of other countries across the world.

**Review of Empirical literature**

Giwa, et al. (2020) empirically evaluated the impact of foreign direct investment (FDI) inflows into Nigeria on real gross domestic product (RGDP) growth and how these FDI inflows can help developing nations achieve Goal-17.3 of mobilizing more financial resources from a variety of sources. The study uses Nigerian annual time series data from 1981 to 2017. The study's analytical instrument was the robust GMM estimation technique, which avoided the problems of endogeneity and autocorrelation that Ordinary Least Square has. According to the findings of the analysis, labor quality has a positive and considerable impact on RGDP in Nigeria, whereas capital intensity has a significant negative impact.

Alabi (2019) looked into the impact of foreign direct investment on Nigeria's economic growth. The analysis used secondary data from the Statistical Bulletin of the Central Bank of Nigeria and the World Development Indicator from 1986 to 2017. The estimating techniques employed were descriptive and regression analysis. According to the study, foreign direct investment has a positive and significant impact on Nigeria's economic growth, but domestic investment has a positive but not significant impact.

Okumoko et al. (2018) used annual data from the CBN statistical bulletin from 1981 to 2016 to evaluate the impact of FDI on Nigerian economic growth. As an analysis tool, the authors used the Error Correction Model (ECM) and the Pairwise Granger Causality Test. The findings demonstrate that FDI has a positive but negligible impact on GDP, while GFCF was positive and significant. However, the exchange rate (ExR) had an insignificant negative association with GDP.

The influence of insurgency on foreign direct investment in Nigeria was investigated by Onyeabuchi (2018). The study found that the rising incidence of insurgency in Nigeria has hampered foreign direct investment in the country, using a content analysis and literature review method. Furthermore, insurgency is a roadblock to the country's real socioeconomic growth and prevents investors from pursuing business opportunities. Insurgency is a threat to Nigeria's

economic development and growth, according to the report, and it is caused by years of leadership corruption and misrule, economic marginalization, high unemployment, poverty, and environmental degradation. It was suggested that the government should back up its words with deeds in dealing with security threats by adequately equipping security officials to deal with insurgency and other threats. According to the findings of these research, security is required for the nation to realize the benefits of FDI.

Similarly, Ezefule (2018) claims that the current wave of insecurity in Nigeria is posing serious challenges and threats to the country's macroeconomic stability, as well as contributing to the loss of infrastructures, properties, and human as well as economic disruption, resulting in the exodus of foreign direct investment. Ezefule (2018) used trends in insecurity and FDI influx to evaluate the link between insecurity and foreign direct investment in Nigeria in his latest study. Over 7000 Nigerians are said to have died in political, religious, and ethnic disputes during post-election violence between 2000 and 2012, which has had a major impact on foreign direct investment and economic progress in the country. Domestic terrorism and social unrest, according to the study, not only cause uncertainty in the investment and financial climates, but also raise security costs, reduce output and productive capacity, reduce tourism, damage infrastructure, harm the nation's image, and drive out foreign direct investment, all of which have implications for economic growth and development in developing economies.

Akanegbu and Chizea (2017) used a model based on a modified neoclassical production function to evaluate the hypothesis of whether FDI has a positive and significant impact on output growth in the Nigerian economy. FDI is treated as an input in the production process. In order to determine the influence of FDI on economic growth in Nigeria, the study used E-Views to conduct a unit root test and a Granger-Causality test. The findings of the estimation analysis revealed that FDI and output growth in the Nigerian economy had a favorable association. According to the study, policies that support FDI should be advocated.

Between 2003 and 2012, Owalabi and Ayanakin (2015) evaluated the influence of insecurity on foreign direct investment in Nigeria. Vote on security and defense (VSD) secondary data was proxied for insecurity and FDI inflow for FDI. Ordinary least square regression was used to examine the data. Foreign Direct Investment (FDI) and insecurity have a negative association, according to the findings of the study. The report closes by advocating that strong policy measures be adopted to address Nigeria's state of insecurity in order to attract more foreign direct investment, which is critical for the country's economic development.

Okonwkwo et al. (2015) looked at the impact of FDI on Nigerian economic growth from 1990 to 2012. Ordinary least squares (OLS) estimation techniques were used to analyze secondary data in this study. The secondary data was mostly gathered from the CBN's statistical bulletin, annual report, and statement of accounts. The result indicates that Export is positive, implying that there is a positive association between economic growth and export; in conclusion, FDI has resulted in a rise in export in Nigeria.

Obwona (2011) investigated the factors that influence FDI in Uganda and their impact on growth, finding that macroeconomic and political stability, as well as policy consistency, were major

factors in determining FDI inflows, and that the impact of FDI was positive but small. In the field of technological transfer, he also stated that foreign direct investment had a good impact on economic growth.

The empirical relationship between foreign direct investment and Nigerian economic growth was explored by Solomon and Eka (2013). The research encompassed the years 1981 to 2009, and panel data from the Central Bank of Nigeria's Statistical Bulletin was used. The statistical approach used to determine the association between FDI and economic growth in Nigeria was ordinary least square. Their findings demonstrated that foreign direct investment had a favorable but minor impact on Nigeria's economic growth over the time period investigated.

The majority of studies in the reviewed literature indicate that when the correct environment is provided for FDI to thrive, foreign direct investment will expand and, as a result, affect the economy. However, given the importance of ICT in today's economies, none of the studies looked at infrastructure, particularly ICT infrastructure. Furthermore, since the outbreak of the COVID 19 pandemic, which has now become the new normal, ICT use has become critical to any economy's survival.

## METHODOLOGY

### Research Design

This study's research design is explanatory, historical, and correlational in scope. The goal of an explanatory research design is to describe the features of a population or a social phenomenon in a clear and concise manner (Saunders et al., 2007). This is usually effective when the study is conducted using a quantitative framework, as it is possible to establish the relationship or influence of one variable on the other. In the sense that historical data is used, such as foreign direct investment inflows and infrastructure growth metrics (Information & Technology Infrastructure) over a 20-year period. However, the goal of historical research design is to gather, verify, and synthesize information from the past in order to establish facts that either support or reject the hypothesis under consideration. In addition, the correlational method used comprises regression analysis, which aids in determining the link between two variables. It aids in determining whether one variable has an effect on the other. Unlike in experiments, the link is observed in a more realistic setting, making it appropriate for this research.

### The study's population and sample

The study's population spans 59 years (from 1960 to 2019), from the year Nigeria acquired independence to the year 2019, when the economy is rebounding from the recession it endured in 2015, though at a slower pace than projected. Although foreign investments existed before Nigeria's independence, looking at it as a nation and hence generating economic growth indicators to assess its economic status in the grand scheme of things as a nation began after it was freed from

colonial rule. As a result, the study was limited to the eighteen (20) year period (2000-2019) for which composite data records were accessible, as this provided a reasonable time frame for the research. Data on infrastructure growth from the same time span (2000-2019) was also used. The convenience sampling strategy was utilized in this study. It's a sample chosen only for the sake of convenience, as the name implies (Baridam, 2008). The variables in this sample were chosen solely on the basis of their accessibility and ease of measurement. As a result, statistics for both FDI inflow and infrastructure growth were purposefully picked for this analysis during an eighteen-year period. The information is based on FDI inflows and the Infrastructure Growth Index (ICI). The study's data came from the Central Bank of Nigeria's (CBN) statistical bulletin, the National Bureau of Statistics, and the website of the African Development Bank Group.

**Method of Data Analysis**

The data was evaluated using Regression Analysis, which was guided by a regression model, to determine the link between the variables discovered as well as if they had any impact over one another. This assisted in the testing of theories.

**Measurement of Variables and operational framework**

Based on the conceptual framework on the study, we develop a model as a framework for testing here.

Dependent variable is the Infrastructure Growth (IFG), whilst the independent variable is the FDI Foreign direct investment (FDI). Furthermore, the Information & communication technology Infrastructure (ICI), is proxied for Infrastructure growth. Similarly, the dimension of FDI is FDI inflow (FDIN)

Using the Ordinary Least Square multiple regression formula which states:

$Y_i = b_0 + b_1x_{1j} + b_2x_{2j} + \ldots\ldots\ldots + b_kx_{kj} + e_j$, where $y_i$ is the dependent variable from the population of the interest, $b_0, b_1 \ldots\ldots b_k$ are the population partial regression coefficients and $X_{1j}\ X_{2j}\ \ldots\ldots X_{kj}$ are observed values of the independent variables $X_1, X_2 \ldots\ldots X_k$, respectively.

In view of the above, the following models are developed for this study:

IFG = f(FDI) ---------- (1)

ICI = f (FDIN) --------- (2)

In the linear form, Equation (2) converts to:

ICI $= b_0 + b_1$(FDIN) + e --------- (3)

The variables were subjected to complimentary statistical tests using the Statistical Package for Social Sciences (SPSS) software, and the findings will be utilized for analysis and hypotheses confirmation.

**Results And Analysis**

**Testing of Hypotheses**

**$HO_1$:** There is no significant relationship between foreign direct investment inflow and Information & Communication Technology Infrastructure in Nigeria.

**Table 4.1: Regression result for hypothesis one**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .475[a] | .225 | .177 | 3242644 2.45436 | .225 | 4.658 | 1 | 16 | .046 | .362 |

a. Predictors: (Constant), FDI Source: SPSS version 21.0 output of data)

b. Dependent Variable: INFRS

The calculated F value of 4.658 was significant at the 0.046 level, which is lower than the 0.05 chosen level of probability, so the null hypothesis was rejected and the alternate hypothesis was accepted, indicating that there is a significant relationship between foreign direct investment inflow and Information and Communication Technology Infrastructure in Nigeria.

**Findings summary and discussion**

The hull hypothesis was rejected, and the alternate hypothesis was accepted, indicating that foreign direct investment inflow has a strong and positive association with infrastructure growth as assessed by Internet connectivity (information and communication technology). Furthermore, the R value of 0.475 (46%), R squared value of 0.225 (22.5%) of FDI inflow and INFRS in Nigeria shows that 46% of the total variation in infrastructure growth in Nigeria in terms of Internet connectivity aspect of information and communication technology infrastructure was due to the effect of foreign direct investment inflow in Nigeria during the study period. On an adjusted basis, the ICI represented 0.177 (18%) of the total foreign direct investment intake into Nigeria during the period. The Durbin Watson (DW) coefficient is 0.362, which is less than two. This, on the other hand, indicates that there is a positive serial association between foreign direct investment inflow and Nigeria's information and communication technology infrastructure.

To summarize, the significant and positive relationship discovered to exist between foreign direct investment and infrastructure growth in terms of the internet connectivity aspect of ICT implies that FDI orchestrated by infrastructure provision and industry creation will result in the creation of jobs, an increase in citizens' income levels, and thus economic growth, which will lead to more developmental activities in place for the future. As discussed, the findings of this study are consistent with those of other studies such as Okonkwo et al. (2015) and Akanagbu and Chizea (2017). According to Okonwkwo et al. (2015), export assumes a positive sign, indicating that there is a positive association between economic growth as measured by infrastructure growth and capital formation and export, implying that FDI has resulted in increased export in Nigeria. According to Akanegbu and Chizea (2017), the Nigerian economy has a positive link between FDI and production growth.

## CONCLUSION AND RECOMMENDATION

The impact of FDI on infrastructure growth is significant one and thus indicates that FDI inflow is crucial aspect of government sources of achieving economic growth objectives that is seen in terms of infrastructure development and transformation of lives and places of the indigenes. In other words FDI has a positive and significant relationship with Internet connectivity aspect of information and communication technology aspect of infrastructure growth. This also implies that FDI revenue when adequately utilized in terms of provision of infrastructure, creation of employment through the construction of industries, thereby creation of goods and services, exportation would be achieved, income level of the citizens will likely increase and overall economic growth could be achieved which could in turn lead to increase in development of the nation.

Based on the finding and conclusion the following recommendations are suggested:

1. There is the need to advocate for increase in FDI inflow through putting in place the right policies and creating the enabling environment that will ensure more foreign investors are part of the economic growth activities of Nigeria.
2. Government should ensure that there is political stability as well as improved security situations. Where there is political instability and insecurity, FDI is hampered as such actualizing economic growth objectives might be undermined since FDI inflow is critical source of government funding for economic growth and development pursuits.
3. Furthermore, the positive effect of FDI on Infrastructure growth could be witnessed also faster when corruption, evasion and tax avoidance are checkmated and offenders consequently punished and thus increase in government revenue base and judicious use of same for economic growth and development could be achieved

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