European Journal of Business and Innovation Research, 14(5),29-56, 2026
Print ISSN: 2053-4019(Print)
Online ISSN: 2053-4027(Online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

Chinese Foreign Direct Investment, Technology Transfer and Industrial Development in Nigerian Manufacturing Sector

Grace Olajumoke Aina, Tamani La'ah Thomas, Anita Limar Maganda, Edward Yatai Ketah
Department of Business Administration, Nile University of Nigeria Abuja

doi:https://doi.org/10.37745/ejbir.2013/vol14n52956 Published August 19 ,2026

Citation: Aina G.O., Thomas T.L., Maganda A.L., Ketah E.Y. (2026) Chinese Foreign Direct Investment, Technology Transfer and Industrial Development in Nigerian Manufacturing Sector, *European Journal of Business and Innovation Research*, 14(5),29-56

Abstract: *China has emerged as one of Nigeria's most significant foreign direct investment partners, with Chinese capital flows increasingly shaping the trajectory of Nigeria's industrial landscape. Yet despite the growing volume of Chinese investment, fundamental questions persist regarding the extent to which this investment has translated into meaningful technology transfer and industrial development outcomes within the manufacturing sector. This study examined the relationship between Chinese foreign direct investment, technology transfer, and industrial development in Nigeria's manufacturing sector, focusing specifically on industrial output, manufacturing productivity, and employment generation. An ex-post facto research design was adopted, with secondary data sourced from UNCTAD World Investment Reports, the China Africa Research Initiative database, the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics publications, and the World Bank Development Indicators, covering the period 2021 to 2025. Ordinary Least Squares regression analysis was employed as the primary analytical technique, supported by the Augmented Dickey-Fuller unit root test and the Johansen cointegration test. The study was anchored on the OLI Eclectic Paradigm, Internalization Theory, Endogenous Growth Theory, Structural Change Theory, and Dependency Theory. Findings revealed that Chinese foreign direct investment does not exert a statistically significant effect on industrial output, that technology transfer facilitated by Chinese FDI has not significantly influenced manufacturing productivity, and that Chinese FDI-induced technology transfer has not produced a significant impact on employment generation. The study concludes that the developmental potential of Chinese FDI remains significantly unrealized due to the concentration of investment in the oil and gas sector, weak absorptive capacity, and inadequate infrastructure. The study recommends policy reorientation toward manufacturing-focused FDI, investment in human capital development, and restructuring of bilateral investment agreements to include binding technology transfer provisions.*

Keywords: chinese foreign direct investment, technology transfer, industrial development, manufacturing sector, Nigeria, employment generation, industrial output, manufacturing productivity

European Journal of Business and Innovation Research, 14(5),29-56, 2026
Print ISSN: 2053-4019(Print)
Online ISSN: 2053-4027(Online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

INTRODUCTION

The manufacturing sector plays a significant role in economic development. Industrialization acts as a catalyst that accelerates the pace of structural transformation and diversification of economic activity, enabling a country to fully utilize its factor endowment and to depend less on foreign supply of finished goods or raw materials for its economic growth, development and sustainability. Industrialization, which is a deliberate and sustained application and combination of an appropriate technology, infrastructure, managerial expertise and other important resources, has attracted considerable interest in development economies in recent times (Okafor, 2005). Within this context, foreign direct investment has emerged as one of the most significant drivers of industrial growth, particularly in developing economies where domestic capital formation remains constrained.

Foreign Direct Investment (FDI) flows to developing countries have risen to an unprecedented level in the 1990s. The growth of foreign direct investment during the past years has been phenomenal. Aitken and Harrison (1999) noted that in 1997, FDI represented about 40% of all public and private capital flows to developing countries. Worldwide FDI as at 2019 before the COVID-19 pandemic stood at $1.8 trillion (UNCTAD, 2021). This stunning growth in FDI and its acceleration in the 1990s reflects the globalization of the world's economy. As might be expected, most FDI comes from developed countries. Surprisingly, most FDI also goes to developed countries. There is a widely held view that there is an increased level of linkage between foreign direct investment and technology transfer facilitated by multinational corporation engagement in developing countries. It is widely held that multinational activity by more efficient foreign multinationals promotes technology transfer to the benefit of domestic companies. Scholars such as Dunning (1980), through the eclectic OLI paradigm, have long argued that the ownership, location, and internalization advantages that drive FDI decisions are inseparable from the technology and knowledge assets that multinationals carry into host economies, making technology transfer a central theoretical lens through which FDI impacts must be assessed.

Manufacturing industries serve as the backbone of economic development and industrialization in developing nations, contributing significantly to gross domestic product (GDP), employment generation, and technological advancement (Szirmai & Verspagen, 2015). The manufacturing sector's role in structural transformation has been widely documented, with countries like South Korea, Taiwan, and Singapore leveraging manufacturing excellence to achieve rapid economic growth and development (Rodrik, 2016). In the context of sub-Saharan Africa, manufacturing industries represent a critical pathway for economic diversification, particularly for countries heavily dependent on primary commodity exports (UNIDO, 2019). It is within this broader developmental imperative that the question of Chinese foreign direct investment and its industrial implications for Nigeria becomes particularly significant.

Nigeria's economic relations with China have evolved from limited diplomatic relations and engagement in the post-independence era to Nigeria becoming one of the largest destinations for Chinese FDI in Africa. At independence in 1960, Nigeria recognized the Republic of China (Taiwan) as "China." In the 1960s, a number of Hong Kong Chinese firms invested in Nigeria, helping shape the textile manufacturing sector in Kano and elsewhere in the north of the country. China's interest in Nigeria stems from the fact that the two countries have economic complementarities (Gboyega *et al.,* 2011). While a major development challenge in Nigeria is infrastructural deficiency, China on the other hand has developed one of the world's largest and most competitive construction industries, with particular expertise in civil works critical for infrastructure development, coupled with its ability to provide the necessary financial assistance to countries in need, including Nigeria. Also, China's industrialization drive has led to a fast growing manufacturing economy which requires oil and mineral inputs that are outstripping the country's own domestic resources. There is therefore a need to source them from abroad, including Nigeria, which is abundant in natural resources.

China's increasing presence in Nigeria, and elsewhere in Africa, has spurred much speculation about the nature of the emerging partnership model. The recent economic interests and investments in Africa have put bilateral relations with Africa under scrutiny. The impacts of Chinese economic activities are being felt in many parts of Africa across several areas, including foreign direct investment, funding for infrastructural development, increasing the prices of African commodity products, and the introduction of low-price electronic and telecom hardware products (Ayodele & Sotola, 2014).

Trade and foreign direct investment are channels through which economic growth can be achieved. Thus, the ever increasing bilateral trade and Chinese FDI inflows should be beneficial to Nigeria. However, there seems to be controversy on the likely long-run effect of China-Africa trade relations on economic growth in African countries. Kaplinky (2007) is of the view that trade with China is hindering industrialization in Africa, as the exports from African countries are basically primary products that lack job creation effects or the ability to trigger activities in other key sectors of the economy. Lin (2012), on the other hand, argued that China-Africa trade would have a long-run positive effect on African economic growth, contending that growth starts from high performance of the primary sector and that resources generated from such performance are harnessed for industrialization and human capital development, which will sustain growth in the future. This unresolved scholarly tension underscores the need for empirical investigation that moves beyond trade flows to examine the specific mechanisms, particularly technology transfer, through which Chinese FDI may or may not translate into meaningful industrial outcomes.

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

of foreign multinationals. Beyond the provision of financial resources, Chinese investments have the potential to facilitate technology transfer through training, technical partnerships, knowledge sharing, and the adoption of modern production techniques. Such transfers can enhance the productive capacity of local firms, improve workforce skills, increase industrial efficiency, and create employment opportunities. Consequently, technology transfer serves as an important channel through which Chinese foreign direct investment may contribute to industrial development in Nigeria's manufacturing sector.

Nigeria, as Africa's largest economy and most populous nation, presents a unique case study for understanding manufacturing sector dynamics in developing economies. With a population exceeding 220 million people and abundant natural resources, Nigeria possesses significant potential for manufacturing sector development (African Development Bank, 2021). However, the country's manufacturing sector has consistently underperformed relative to its potential, contributing only approximately 9.2% to GDP as of 2023, compared to the global average of 16% for developing countries (World Bank, 2023). The persistent challenges facing Nigeria's manufacturing sector have heightened the need for policies and strategies capable of stimulating industrial growth and enhancing productivity. Among such strategies, foreign direct investment has been identified as a critical instrument for promoting industrial development, particularly through the transfer of technology, managerial expertise, and technical skills. Chinese foreign direct investment has increasingly become an important source of capital inflows into Nigeria, especially within sectors considered vital for economic transformation and industrial expansion.
Despite the growing presence of Chinese firms and investments in Nigeria, existing studies have largely focused on trade volumes, bilateral diplomatic relations, and macroeconomic FDI trends, with limited empirical attention given to the specific pathways through which Chinese investment translates into technology transfer and industrial development outcomes at the sectoral level (Ayodele & Sotola, 2014; UNCTAD, 2021). It is therefore important to examine the relationship between Chinese foreign direct investment, technology transfer, and industrial development in order to understand their contribution to the growth and performance of Nigeria's manufacturing sector. Questions remain regarding the extent to which these investments have translated into meaningful technology transfer and tangible industrial development outcomes.

Against this background, this study seeks to examine the relationship between Chinese foreign direct investment, technology transfer, and industrial development in Nigeria's manufacturing sector. The broad objective of this study is to examine the impact of Chinese foreign direct investment and technology transfer on the industrial development of Nigeria's manufacturing sector. The specific objectives are to: (i) assess the effect of Chinese foreign direct investment on the industrial output of Nigeria's manufacturing sector; (ii) evaluate the influence of technology transfer facilitated by Chinese FDI on the productivity of manufacturing firms in Nigeria; and (iii) determine the impact of Chinese FDI-induced technology transfer on employment generation within Nigeria's manufacturing sector

This study is significant on several levels. Theoretically, it contributes to the growing body of knowledge on South-South investment dynamics and industrial development in emerging market economies by providing context-specific empirical evidence from Nigeria's manufacturing sector. The study further enriches the theoretical discourse surrounding the OLI paradigm and technology transfer frameworks as applied to Chinese outward FDI in Africa. Practically, the findings offer actionable insights for industrial policymakers, investment promotion agencies, and manufacturing sector stakeholders on how to strategically leverage Chinese FDI for sustainable industrial development. The study also holds implications for bilateral economic policy between Nigeria and China, particularly regarding the structuring of investment agreements to maximize technology transfer outcomes and long-term industrial growth.

LITERATURE REVIEW

Conceptual Clarification

Foreign Direct Investment

Foreign Direct Investment refers to investments made by a company or individual in one country into business interests located in another country (Jajere & Shehu, 2025). It is distinct from portfolio investment and loans in that it represents long-term interest and control over an investment, providing significant advantages including access to superior information and added market value (Jajere & Shehu, 2025). Unlike other forms of capital movement, FDI encompasses the acquisition of long-term stakes in foreign enterprises, the management of subsidiaries, joint ventures, and mergers and acquisitions, making it a uniquely strategic and sustained form of international economic engagement. FDI has become the largest source of external capital for emerging economies, driven by the principle that capital flows toward regions where returns are higher, and this movement of resources not only enhances total global output but also fosters economic integration (Jajere & Shehu, 2025).

Beyond its role as a capital flow mechanism, FDI functions as a conduit for broader developmental outcomes in host economies. FDI often leads to the transfer of advanced technologies and management practices to host countries, which can significantly enhance local productivity, modernize industries, and build a skilled workforce (Jajere & Shehu, 2025). In this regard, the productive and transformative dimensions of FDI extend well beyond the financial, touching directly on industrial capacity and human capital development. FDI is also a major source of job creation, particularly in developing countries where local employment opportunities may be limited, and it stimulates the overall economy by fostering the growth of new industries, services, and sectors (Jajere & Shehu, 2025). These dual contributions of technology transfer and employment generation position FDI as a central instrument of industrial development policy, particularly in economies like Nigeria where manufacturing sector growth remains a critical development priority.

In the Nigerian context specifically, Nigeria has been one of the largest recipients of FDI in Africa, particularly in the oil sector, and following economic reforms, policies aimed at liberalizing the market, privatizing state-owned enterprises, and offering incentives contributed to the growth of FDI inflows (Jajere & Shehu, 2025). Despite these positive trends, Nigeria still faces challenges such as power shortages, political instability, and inadequate infrastructure (Jajere & Shehu, 2025), all of which constrain the extent to which FDI inflows translate into sustained industrial development outcomes. Furthermore, the benefits of FDI are not without their complications. FDI, particularly in sectors such as mining and oil, can have detrimental effects on the environment, and foreign firms with superior resources may outcompete local firms, especially small and medium-sized enterprises, resulting in the closure of local businesses (Jajere & Shehu, 2025). This tension between the developmental promise of FDI and its potential to displace domestic productive capacity underscores the importance of examining not merely the volume of FDI inflows, but the specific sectoral and institutional conditions under which those inflows generate meaningful industrial development, a concern that is central to the present study.

Technology Transfer

Technology is a foundational concept that must be understood before examining its transfer. Technology consists of two primary components: a physical component which comprises items such as products, tooling, equipment, blueprints, techniques, and processes; and an informational component which consists of know-how in management, marketing, production, quality control, reliability, skilled labor and functional areas (Kumar *et al.*, 1999, as cited in Telila *et al.*, 2023). Beyond this, technology is also defined as the information necessary to achieve a certain production outcome from a particular means of combining or processing selected inputs, which include production processes, intra-firm organizational structures, management techniques, and means of finance, marketing methods or any of its combination (Mascus, 2003, as cited in Telila *et al.*, 2023). This broadened conceptualization is particularly relevant to the present study, as it situates technology not merely as machinery or equipment, but as an encompassing system of knowledge, processes, and organizational arrangements that foreign investors carry into host economies.

Building on this understanding, technology transfer is typically defined as the process of transferring scientific findings from one organization to another, frequently through the licensing of intellectual property rights, for further development and commercialization (Aridi & Cowey, 2018, as cited in Telila *et al.*, 2023). More broadly, technology transfer is the process of transferring scientific findings or new knowledge and technologies for public use or for commercialization after validating their usefulness through participatory demonstration and evaluation with users, and it means using existing technology in a place where it has not been previously used (Farhadikhah & Husseini, 2015, as cited in Telila *et al.*, 2023). In operational terms, technology transfer is defined as the transfer of systematic knowledge for the manufacture of a product or provision of service, and it is a process by which one party gains access to technological information and successfully learns and absorbs it into his production process or

service provision, involving sharing of skills, knowledge, methods of manufacturing, samples of manufacturing and facilities (Telila *et al.,* 2023). The main purposes of technology transfer are to create innovation, improve productivity and economic growth (Telila *et al.,* 2023), all three of which are central outcomes this study seeks to examine within Nigeria's manufacturing sector

Industrial Development

Both developed and developing countries prioritize industrialization as a driver of structural change and long-term growth due to its potential for high productivity growth, technology development, and technological spillovers (Dijkstra, 2000; Zattler, 1996, as cited in Umoinyang & Amarachi, 2025). Neglecting industry can lead to dependence on primary exports, which are vulnerable to declining terms of trade (Dickey & Fuller, 1981, as cited in Umoinyang & Amarachi, 2025). It is within this understanding that the concept of industrial development must be situated, particularly in the context of developing economies like Nigeria where structural transformation remains an urgent developmental priority.

Industrial sector performance refers to the ability of the industrial sector to produce goods and services, create employment opportunities, and contribute to economic growth and development (Rodrick, 2004, as cited in Umoinyang & Amarachi, 2025). It can be measured using indicators such as industrial production index, capacity utilization rate, and industrial employment rate. The industrial sector plays a crucial role in driving economic development in many countries (UNIDO, 2020). A well-performing industrial sector can contribute to economic growth, job creation, and poverty reduction (Kaya, 2010, as cited in Umoinyang & Amarachi, 2025). The critical role of the industrial sector is predicated on the fact that it acts as an engine of growth by broadening the productive and export base of the economy, reducing unemployment and stemming rural-urban drift as well as helping to reduce poverty (Umoro & Eborieme, 2013, as cited in Umoinyang & Amarachi, 2025). In Nigeria, the industrial sector has been identified as a key driver of economic development, with the government implementing various policies to promote industrial growth and development (Oyejide, 2007, as cited in Umoinyang & Amarachi, 2025).

The relationship between industrial sector performance and economic development is complex and multifaceted. A well-performing industrial sector can drive economic development by creating employment opportunities, as industrial growth can lead to job creation, reducing unemployment and poverty (Todaro & Smith, 2015, as cited in Umoinyang & Amarachi, 2025); increasing productivity, as industrial development can lead to productivity gains, driving economic growth and competitiveness (Rodrick, 2007, as cited in Umoinyang & Amarachi, 2025); promoting technological innovation, as industrial innovation can lead to technological advancements, improving productivity and competitiveness (Sims, 1980, as cited in Umoinyang & Amarachi, 2025); and diversifying the economy, as a strong industrial sector can reduce dependence on a single industry, promoting economic diversification and resilience (Whitfield & Therkildsen, 2015, as cited in Umoinyang & Amarachi, 2025). These dimensions of industrial development are directly relevant to the present study, as the examination of Chinese FDI's contribution to Nigeria's

manufacturing sector necessarily involves assessing outcomes across each of these channels.

In Nigeria specifically, the industrial sector's performance has been lackluster, contributing only about 6% to the country's economic activity, while the manufacturing sector accounted for a mere 4% of GDP in 2011 (Ekpo & Umoh, 2016, as cited in Umoinyang & Amarachi, 2025). The economy is heavily reliant on the primary sector, particularly oil and gas, which dominates export earnings and government revenue. Despite efforts to promote industrial development, the sector faces significant challenges including low capacity utilization, as industries operate below capacity, leading to reduced productivity and efficiency (Akinbola, 2001, as cited in Umoinyang & Amarachi, 2025); limited contribution to GDP, as the industrial sector's contribution to GDP is relatively low compared to other countries (Oyejide, 2007, as cited in Umoinyang & Amarachi, 2025); dependence on oil, as the economy's heavy reliance on oil and gas makes it vulnerable to fluctuations in global oil prices (Blomstrom et al., 1994, as cited in Umoinyang & Amarachi, 2025); and infrastructure challenges, as inadequate power supply, poor transportation networks, and limited access to finance hinder industrial growth (Haraguchi et al., 2017, as cited in Umoinyang & Amarachi, 2025). These persistent structural constraints underscore the argument that FDI-led technology transfer cannot be examined in isolation from the institutional and infrastructural conditions that shape industrial development outcomes in Nigeria.

Nigeria has adopted various industrialization strategies since independence, including export promotion, import substitution, and local resource-based strategies (CBN, 2018, as cited in Umoinyang & Amarachi, 2025). The government has also introduced incentives to boost the industrial sector's performance and productivity, including tax holidays, tariff protection, and import duty relief. Nigeria's quest for self-reliance and industrialization has led to the adoption of liberalization policies to open up the economy to the industrialized world (Egbon, 1995; Egwaikhide, 1997; Ayodele & Falokun, 2003; Udah, 2010, as cited in Umoinyang & Amarachi, 2025). However, the collapse of the global oil market in the early 1980s severely reduced Nigeria's oil export earnings, making its import-dependent industrial structure unsustainable due to inadequate foreign exchange earnings to pay for huge import bills (Oyelaran-Oyeyinka, 1997; Anyanwu et al., 1997, as cited in Umoinyang & Amarachi, 2025). This historical trajectory reveals a recurring pattern of industrial underperformance driven by structural vulnerabilities, making the question of how Chinese FDI and technology transfer can contribute to reversing this trajectory a matter of considerable policy significance.

Manufacturing Sector Performance

The industrial sector, including manufacturing, contributes significantly to Nigeria's GDP, and the manufacturing sub-sector in particular has a positive correlation with economic growth (Mkandawire, 2001, as cited in Umoinyang & Amarachi, 2025). The industrial sector, especially manufacturing, provides a significant number of jobs, contributing to reduced unemployment and improved livelihoods (Borensztein *et al.,* 1998, as cited in Umoinyang & Amarachi, 2025). The manufacturing sector is vital for achieving sustainable economic growth in Nigeria (Hirschman,

1977, as cited in Umoinyang & Amarachi, 2025). Industry and in particular the manufacturing sub-sector is the heart of the economy (Kayode, 1989, as cited in Umoinyang & Amarachi, 2025), a characterization that remains analytically relevant to the present study's focus on manufacturing as the principal site through which Chinese FDI and technology transfer effects are to be assessed. Despite its potential, the Nigerian industrial sector faces several challenges, including inadequate infrastructure, especially power supply, high cost of production, and excessive taxes (Umoinyang & Amarachi, 2025). Nigeria's industrial sector has consistently operated below capacity, with average capacity utilization rates ranging from 30% to 50% (Adelegan, 2000, as cited in Umoinyang & Amarachi, 2025). Nigeria's manufacturing sector has been characterized by low output, with many industries operating at low capacity or shutting down due to various challenges (World Bank, 2020). Despite its potential, the industrial sector has not been able to create sufficient employment opportunities, contributing to high unemployment rates in the country (Modebe & Ezeaku, 2016, as cited in Umoinyang & Amarachi, 2025). The percentage of industrial value added to GDP declined from 39.245% and 37.71% for 1981 and 1992 respectively to 27.383% and 28.221% for 2019 and 2020 respectively (Umoinyang & Amarachi, 2025), reflecting a long-run deterioration in the manufacturing sector's contribution to economic output that underscores the urgency of identifying new drivers of industrial growth.

Government policies and initiatives are crucial for driving industrial development, including promoting industrialization through the National Economic Reconstruction Fund and other policies aimed at attracting foreign investment and supporting local industries (Umoinyang & Amarachi, 2025). Industrialization can lead to increased tax revenue, improved living standards, and greater global competitiveness in the production of goods and services (Sangosanya, 2011, as cited in Umoinyang & Amarachi, 2025). Encouraging industries with export potential can increase foreign exchange earnings and contribute to economic growth (Shafaeddin, 2005, as cited in Umoinyang & Amarachi, 2025), while promoting innovation and entrepreneurship through supportive policies and incentives is essential for long-term industrial growth (Umoinyang & Amarachi, 2025). Improving infrastructure, particularly electricity and transportation, is crucial for the industrial sector's development, and effective industrial policies require synergies between different sectors of the economy, including agriculture, trade, and services (Kraus & Litzenberger, 1973, as cited in Umoinyang & Amarachi, 2025). These policy imperatives collectively frame the context within which Chinese FDI must operate if it is to yield meaningful manufacturing sector performance improvements in Nigeria, making them foundational to the analytical framework of this study.

Theoretical Review

The theoretical framework of this study is anchored on five key theories that collectively explain the relationship between Chinese foreign direct investment, technology transfer, and industrial development in Nigeria's manufacturing sector. These are the OLI Eclectic Paradigm, Internalization Theory, Endogenous Growth Theory, Structural Change Theory, and Dependency Theory.

The OLI Eclectic Paradigm

The OLI Eclectic Paradigm, developed by John Dunning, remains one of the most widely applied theoretical frameworks for explaining the nature and direction of foreign direct investment. The Dunning theory is based on location-specific advantages that can help explain the nature and direction of FDI. By location-specific advantages, Dunning means the advantages that arise from using resource endowments or assets that are tied to a particular location, such as the firm's technological, marketing or management know-how, and it requires the firm to establish production facilities where those foreign assets or resource endowments are located (Ibrahim, 2023). An example of Dunning's argument is natural resources, such as oil and other minerals, which are specific to certain locations, and Dunning suggests that a firm must undertake FDI to exploit such foreign resources (Ibrahim, 2023).

The OLI paradigm is directly relevant to this study because it explains why Chinese firms invest in Nigeria. China's industrialization drive has led to a fast growing manufacturing economy which requires oil and mineral inputs that are outstripping the country's own domestic resources, and there is therefore a need to source them from abroad including Nigeria which is abundant in natural resources (Gboyega *et al.,* 2011, as cited in Aisien & Adesuwa, 2019). Beyond resource acquisition, scholars such as Dunning (1980), through the eclectic OLI paradigm, have long argued that the ownership, location, and internalization advantages that drive FDI decisions are inseparable from the technology and knowledge assets that multinationals carry into host economies, making technology transfer a central theoretical lens through which FDI impacts must be assessed. This makes the OLI paradigm a foundational framework for understanding how Chinese FDI carries the potential for technology transfer and industrial development within Nigeria's manufacturing sector.

Internalization Theory

Internalization theory provides a complementary explanation for the FDI mechanism, focusing specifically on why multinational enterprises choose to invest directly rather than license or contract with foreign firms. Internalization theory relies heavily on the concepts of transaction costs, which are the costs of entering into a transaction, that is connected to negotiating, monitoring and enforcing a contract (Griffin & Pastay, 2005, as cited in Ibrahim, 2023). A firm must decide whether it is better to own and operate its own factory overseas or to contract with a foreign firm to do this through a franchise, licensing, or supply agreement, and internalization theory suggests that FDI is more likely to occur, that is international production will be internalized within the firm, when the costs of negotiating, monitoring and enforcing contracts with a second firm are high (Griffin & Pastay, 2005, as cited in Ibrahim, 2023).

In the words of Musabah (2018, as cited in Ibrahim, 2023), the theory posits that as a business firm migrates from its present state in order to obtain higher return on investment, the firm will therefore decide to transfer its knowledge, that is technology, in exchange for higher prices by investing in

subsidiaries, instead of selling it in an open market to licensees, import agents and distributors, and by this implication firms will condense the chain of supplies by investing direct under a common ownership. This theoretical position is particularly relevant to the present study because it explains the mechanism through which Chinese firms transfer technology to Nigeria not through open market licensing but through direct investment, subsidiary establishment, and joint ventures, making the internalization of production the primary vehicle through which technology knowledge enters the Nigerian manufacturing sector. Ibrahim (2023) identified internalization theory as the most appropriate theory for understanding FDI and technology transfer in developing countries, a position that directly supports its selection as a foundational framework for this study.

Endogenous Growth Theory

The Endogenous Growth Theory provides the theoretical link between FDI, technology transfer, and industrial development outcomes. This theory emphasizes technological innovation and human capital as factors driving economic growth, and the industrial sector's performance can be seen as a key driver of endogenous growth (Umoinyang & Amarachi, 2025). Paul Romer, Robert Lucas, and Sergio Rebelo are some of the key proponents of endogenous growth theory, and they argue that internal factors, such as technological innovation and human capital, drive economic growth (Umoinyang & Amarachi, 2025).

In connection with this study, the theory suggests that the industrial sector's performance can drive economic growth through technological innovation, human capital development, and productivity gains, and also examines how internal factors, such as investment in technology and human capital, contribute to the industrial sector's performance and economic growth in Nigeria (Umoinyang & Amarachi, 2025). This theoretical position directly supports the study's argument that Chinese FDI-induced technology transfer has the potential to stimulate endogenous industrial growth in Nigeria's manufacturing sector by building the technological and human capital base of local firms. However, critics argue that the theory is too focused on internal factors and neglects the role of external factors, such as institutional and policy frameworks, in driving economic growth (Umoinyang & Amarachi, 2025), a limitation that reinforces the need to examine both the internal absorptive conditions and the external FDI environment when assessing technology transfer outcomes in Nigeria.

Structural Change Theory

The Structural Change Theory highlights the importance of structural changes in the economy, such as the shift from agriculture to industry, in driving economic development, and the industrial sector's performance can be seen as a key driver of structural change (Umoinyang & Amarachi, 2025). Scholars such as Simon Kuznets, Hollis Chenery, and Moshe Syrquin have contributed to the development of structural change theory, and they argue that economic development is driven by structural changes in the economy, such as the shift from agriculture to industry (Umoinyang & Amarachi, 2025).

Both developed and developing countries prioritize industrialization as a driver of structural change and long-term growth due to its potential for high productivity growth, technology development, and technological spillovers (Dijkstra, 2000; Zattler, 1996, as cited in Umoinyang & Amarachi, 2025). Neglecting industry can lead to dependence on primary exports, which are vulnerable to declining terms of trade (Dickey & Fuller, 1981, as cited in Umoinyang & Amarachi, 2025). This theoretical position is directly applicable to the Nigerian context, where the economy has historically relied on the oil sector, resulting in the phenomenon known as the resource curse, where other sectors, particularly manufacturing and services, have stagnated (Rowden, 2013, as cited in Umoinyang & Amarachi, 2025). In connection with this study, the theory examines how the growth of the industrial sector contributes to structural change and drives economic development in Nigeria, and how structural changes in the economy, such as the growth of the industrial sector through Chinese FDI and technology transfer, contribute to economic development in Nigeria (Umoinyang & Amarachi, 2025).

Dependency Theory

The Dependency Theory provides the critical analytical lens through which the China-Nigeria investment relationship must be examined, particularly regarding the risk that FDI inflows may reinforce rather than transform existing structural inequalities. The dependency theory tends to explain the historical condition which shapes a certain structure of the world economy such that it favors some countries to the detriment of others and limits the development possibilities of the subordinate economies, thus conditioning it to the development and expansion of another economy to which it is subject (Aisien & Adesuwa, 2019). Dependency theory also suggests that, despite increased trade with poorer countries, the international system is controlled by richer states seeking to maximize their benefits at the expense of poorer states, and poorer states then become subject to economic policies which are in the favour of the richer states (Aisien & Adesuwa, 2019).

Developing countries sell raw materials to developed countries who use those materials to create manufactured value-added products which are then sold back to the developing countries at a higher price, and a trade imbalance then exists, as finished goods cost more than raw materials, thus developing countries cannot accrue enough income from their exports to pay for their imports, resulting in debt and decrease of economic growth (Ferraro, 1996, as cited in Aisien & Adesuwa, 2019). The trade between Nigeria and China has largely followed a classical pattern of trade disequilibrium between the developing and the developed economies, and while Nigeria's exports to China consist mainly of primary commodities, its imports from that country are made up largely of industrial goods (Soludo, 2006; Agbu, 2006, as cited in Aisien & Adesuwa, 2019). About 75% of Chinese investment in Nigeria is in the oil and gas sector, indicating a lopsided investment in the oil and gas sector which has little linkage with other sectors of the economy (Aisien & Adesuwa, 2019). This theoretical framework therefore cautions that Chinese FDI in Nigeria's manufacturing sector must be critically examined not merely for its volume but for the structural conditions it creates or reinforces, making dependency theory an essential counterbalancing lens to the more optimistic projections of the OLI paradigm and endogenous growth theory in the

context of this study.

Empirical Review

A growing body of empirical literature has examined the relationship between foreign direct investment, technology transfer, and industrial development, with particular attention to developing economies in sub-Saharan Africa. The following studies are directly relevant to the present inquiry.

The relationship between FDI and economic growth in developing countries has generated substantial empirical debate. FDI has been established as the largest source of external capital for emerging economies, and countries with high inflow of FDI are generally more developed than those with little inflow, though evidence also shows that foreign firms with superior resources may outcompete local firms, rendering domestic investment less competitive (Jajere & Shehu, 2025). In the Nigerian context, following economic reforms including market liberalization and privatization of state-owned enterprises, FDI inflows grew significantly, though the benefits have not been evenly distributed across the population (Jajere & Shehu, 2025).

Empirical evidence from Umoinyang and Amarachi (2025), using a vector autoregression model and annual data spanning 1980 to 2022, confirmed a positive and significant relationship between industrial sector performance and economic development in Nigeria. The study established that industrial output, manufacturing capacity utilization, and industrial employment are important factors of economic growth, with a bidirectional relationship existing between FDI and industrial sector output, while FDI itself has only a slight significant positive impact on GDP. The study concluded that Nigeria is yet to fully reap the benefits of FDI and industrial sector performance in driving economic growth (Umoinyang & Amarachi, 2025).

Ibrahim (2023) further established that FDI by multinational companies brings capital into the economy, new technologies, new methods of doing business, new skills, and increases employment opportunities available to local workers, while also helping the host country to build and expand procurement and marketing networks and increase foreign exchange earnings through export expansion. Crucially however, the study found that these benefits do not automatically accrue to the host country, but rather technology is transferred to host industries with strong absorptive capability through technological spillovers rather than via direct effect, underscoring the importance of domestic industrial capacity as a prerequisite for realizing FDI-led technology transfer outcomes (Ibrahim, 2023).

The growth impact of Chinese trade and investment on Nigeria has attracted growing empirical attention, with results yielding largely mixed findings. Aisien and Adesuwa (2019), using cointegration and error correction modelling covering the period 1994 to 2017, found that imports from China have a significant and positive impact on Nigeria's economic growth both in the short run and in the long run, while the impact of FDI inflow from China was not a statistically

significant determinant of economic growth in Nigeria in either time horizon. The study further revealed that about 75% of Chinese investment in Nigeria is concentrated in the oil and gas sector, indicating a lopsided investment pattern with little linkage with other sectors of the economy. It was therefore recommended that a deliberate government policy be put in place to redirect FDI inflow to the non-oil sector, particularly manufacturing, agriculture, education, health, and tourism (Aisien & Adesuwa, 2019).

These findings are broadly consistent with the conclusions of Du Sheng, Singh, Dan and Joshi (2025), who investigated the productivity impact of Chinese FDI within Nigeria's Free Trade Zones using OLS regression and data drawn from UNCTAD, NBS, and China's Ministry of Commerce. The study found that Chinese FDI and imports from Nigeria exert no significant effect on productivity, while Chinese exports to Nigeria show a positive and significant impact, suggesting that trade relations rather than investment inflows alone are key drivers of productivity improvement. The study concluded that from 2000 to 2020, Chinese foreign direct investments in Nigeria's Free Trade Zones improved infrastructure development, generated employment opportunities, and enabled technology transfer, but cautioned that it is simplistic to assert that these investments alone may provide the substantial and transformative development anticipated by successive Nigerian administrations, and that strengthening Nigeria's regulatory framework regarding transparency, accountability, and labor and environmental standards is necessary to maximize the developmental benefits of Chinese engagement (Du Sheng *et al.,* 2025).

The mechanisms through which FDI facilitates technology transfer have been extensively examined in empirical literature. Ibrahim (2023) established that multinational corporations through FDI are the primary channel through which technology is transferred to developing countries, with technology transfer activities including training of technical staff, exchange of technological information, transfer of production technology, and technology advisory and consulting. The study distinguished between embodied technology transfer, referring to the flow of knowledge embodied in new products, materials, tools and machines, and disembodied technology transfer, referring to other forms of flow of technical knowledge, and found that the choice of transfer mechanism depends on the host country's market size, market growth, and intellectual property right protection (Ibrahim, 2023).

Telila, Tadesse and Badada (2023) corroborated these findings, establishing that FDI has spillover effects in transferring technology for local firms, and that since FDI comes with more advanced technology, host countries learn knowledge transfer in terms of training, skill acquisition, new management practices, and organizational arrangements, with local firms acquiring new technology more directly through the involvement of foreign businesses and domestic producers. The study however identified a recurring challenge in that industrial parks, which serve as a primary vehicle for FDI-led technology transfer, tend to hire unskilled and semi-skilled employees, which adversely affects technology transfer outcomes, and that there is often a lack of transparency in transferring important knowledge of products or technologies such as design and basic

equipment maintenance (Telila *et al.,* 2023).

Empirical evidence on the factors shaping manufacturing sector performance in Nigeria points consistently to infrastructure deficits, policy inconsistencies, and limited access to finance as primary constraints. Sunday (2025), examining 342 manufacturing firms across Nigeria's six geopolitical zones using chi-square tests and correlation analysis, found that infrastructure development has the strongest relationship with manufacturing sector performance, with power supply reliability showing a significant positive correlation of r = 0.687 with production capacity utilization. Manufacturing firms in Nigeria typically operate at 40 to 60% capacity utilization due to infrastructure constraints, compared to 80 to 90% in countries with robust infrastructure, and high interest rates were identified as a major constraint by 78.4% of manufacturing firms surveyed. Firms with better access to finance showed significantly higher capacity utilization rates of 72.3% compared to 45.6% for firms with limited financial access, while investment incentives had the most positive policy impact on manufacturing development, with 52.3% of respondents reporting positive effects (Sunday, 2025).

These findings align with those of Umoinyang and Amarachi (2025), who documented a long-run deterioration in Nigeria's manufacturing sector contribution to economic output, with the percentage of industrial value added to GDP declining from 39.245% in 1981 to 27.383% in 2019. The manufacturing sector accounted for a mere 4% of GDP in 2011, and the sector faces challenges including low capacity utilization, limited contribution to GDP, infrastructure deficits, and lack of diversification, with manufacturing output, capital, and technology identified as key determinants of economic growth (Umoinyang & Amarachi, 2025). The evidence collectively suggests that while Chinese FDI carries potential for manufacturing sector transformation in Nigeria, realizing this potential depends critically on the institutional conditions, sectoral targeting, and absorptive capacity of the host economy, all of which remain significantly constrained in the Nigerian context.

Literature Gap

The foregoing review of conceptual, theoretical, and empirical literature reveals significant advances in understanding the relationship between foreign direct investment, technology transfer, and industrial development in developing economies. However, several important gaps remain that the present study seeks to address.

First, while existing empirical studies such as Aisien and Adesuwa (2019) and Du Sheng *et al.* (2025) have examined the impact of Chinese trade and investment on Nigeria's economic growth, their focus has largely been on macroeconomic outcomes such as GDP growth and trade balance, with limited attention given to the specific sectoral effects of Chinese FDI on Nigeria's manufacturing industry. The manufacturing sector, which represents the most critical pathway for industrial transformation in Nigeria, has not been adequately disaggregated from broader economic growth analyses in the existing China-Nigeria FDI literature.

Second, the empirical literature on technology transfer in sub-Saharan Africa, including Telila *et al.* (2023) and Ibrahim (2023), has concentrated primarily on technology transfer mechanisms and models in general developing country contexts, without sufficient empirical grounding in the specific dynamics of Chinese-sourced technology transfer within Nigeria's manufacturing sector. The nature, depth, and productivity outcomes of technology transfer facilitated specifically by Chinese FDI in Nigerian manufacturing firms remain empirically underexplored.

Third, existing studies such as Umoinyang and Amarachi (2025) and Sunday (2025) have documented the persistent underperformance of Nigeria's manufacturing sector and identified infrastructure, finance, and policy inconsistency as primary constraints, but have not specifically examined the role of Chinese FDI and technology transfer as potential remedies or compounding factors within that underperformance. The intersection between Chinese FDI, technology transfer outcomes, and manufacturing sector performance in Nigeria has therefore not been adequately captured in a single integrated empirical study.

Fourth, the theoretical frameworks applied in existing studies tend to adopt either an optimistic lens, drawing on the OLI paradigm and endogenous growth theory to project positive spillover effects, or a critical lens drawing on dependency theory to highlight structural inequalities, without empirically testing which theoretical position better explains actual manufacturing sector outcomes in the Nigerian context. This theoretical tension remains empirically unresolved in the Nigeria-specific literature.

Fifth, most of the empirical studies reviewed, including Aisien and Adesuwa (2019), relied on data predating 2018, and therefore do not capture the more recent dynamics of Chinese investment in Nigeria following the signing of the Agreement to Boost Industrial Activities and Infrastructural Development in Nigeria in 2016 and the subsequent growth in Chinese manufacturing-oriented FDI. More recent empirical evidence covering the period 2016 to 2024 is therefore needed to provide an accurate and current assessment of Chinese FDI's contribution to Nigeria's manufacturing sector development.

It is against this background of identified gaps that the present study seeks to examine the relationship between Chinese foreign direct investment, technology transfer, and industrial development in Nigeria's manufacturing sector, with specific focus on industrial output, manufacturing productivity, and employment generation as measurable dimensions of industrial development outcomes.

METHODOLOGY

This study adopted an ex-post facto research design. This design is considered appropriate for studies that seek to investigate the relationship between variables using already existing data without any form of manipulation or interference with the variables under examination. Given that this study relies on historical data on Chinese foreign direct investment, technology transfer, and

industrial development indicators in Nigeria, the ex-post facto design provides a suitable framework for establishing the relationships among these variables. This is consistent with the approach adopted in related studies on foreign direct investment and industrial sector performance in developing economies (Aisien & Adesuwa, 2019; Umoinyang & Amarachi, 2025).

The population of this study comprises all manufacturing firms operating within Nigeria's industrial sector that have documented evidence of Chinese foreign direct investment engagement within the period under review. These firms are captured in the records of the Nigerian Investment Promotion Commission, the Central Bank of Nigeria, and the United Nations Conference on Trade and Development databases. Given the macroeconomic and time series nature of this study, the unit of analysis is the Nigerian manufacturing sector as a whole, represented through aggregate annual data over the study period. This approach is consistent with prior macroeconomic studies examining the sectoral impact of foreign direct investment in Nigeria (Umoinyang & Amarachi, 2025; Du Sheng *et al.*, 2025). The study covers a period of five years, spanning from 2021 to 2025. This period was deliberately selected to capture the most recent dynamics of Chinese foreign direct investment in Nigeria's manufacturing sector, particularly following the signing of bilateral agreements between Nigeria and China aimed at boosting industrial activities and infrastructural development. The five-year window provides a sufficient data range for meaningful time series analysis while ensuring the currency and relevance of the findings to contemporary industrial policy discourse in Nigeria.

Secondary data were employed exclusively in this study. Data on Chinese foreign direct investment inflows into Nigeria were sourced from the UNCTAD World Investment Reports and the China Africa Research Initiative database. Data on industrial output, manufacturing capacity utilization, and employment generation in the manufacturing sector were obtained from the National Bureau of Statistics publications and the Central Bank of Nigeria Statistical Bulletin. Additional macroeconomic data including GDP figures, inflation rates, and exchange rates were sourced from the World Bank Development Indicators. These sources are well established in the empirical literature on FDI and industrial development in Nigeria and are widely regarded as reliable and credible repositories of macroeconomic and sectoral data.

The variables of the study were operationalised as follows. Industrial development, which serves as the dependent variable, was measured across three dimensions corresponding to the three hypotheses of the study. Industrial output was proxied by manufacturing value added as a percentage of GDP. Manufacturing productivity was proxied by the manufacturing sector capacity utilization rate, expressed as a percentage of installed capacity actually used by manufacturing firms. Employment generation was proxied by the total number of persons employed in the manufacturing sector on an annual basis. The independent variable, Chinese foreign direct investment, was measured as the total annual inflow of Chinese FDI into Nigeria's manufacturing sector, expressed in millions of United States dollars. Technology transfer, which serves as both an independent and mediating variable in this study, was measured by the proportion of

manufacturing firms reporting technology acquisition, skills development, and knowledge sharing activities attributable to Chinese FDI partnerships, as documented in NIPC and NBS annual reports. A control variable, infrastructure development, was included in the model and measured by the manufacturing sector capacity utilization rate as a broad proxy for the quality of the operating environment within which manufacturing firms function, consistent with the approach adopted by Sunday (2025).

Model Specification

Three regression models were specified, one for each hypothesis, to examine the effect of the independent variables on each dimension of industrial development. The models are stated as follows:

Model 1: Effect of Chinese FDI on Industrial Output

$INDOUT_t = a0 + B1CFDI_t + B2IDI_t + u_t$

Model 2: Effect of Technology Transfer on Manufacturing Productivity

$MCUR_t = a0 + B1TT_t + B2CFDI_t + u_t$

Model 3: Effect of Chinese FDI-Induced Technology Transfer on Employment Generation

$EMPG_t = a0 + B1CFDI_t + B2TT_t + B3IDI_t + u_t$

Where: INDOUT = Industrial Output measured by manufacturing value added as a percentage of GDP; MCUR = Manufacturing Capacity Utilization Rate; EMPG = Employment Generation in the manufacturing sector; CFDI = Chinese Foreign Direct Investment inflow in millions of US dollars; TT = Technology Transfer index; IDI = Infrastructure Development Index; a0 = Constant Term; B1, B2, B3 = Regression Coefficients; u = Stochastic Error Term; t = Time Period

The a priori expectation is that Chinese foreign direct investment and technology transfer will exert positive and significant effects on industrial output, manufacturing productivity, and employment generation, consistent with the theoretical positions of the OLI Eclectic Paradigm and Endogenous Growth Theory.

Ordinary Least Squares regression analysis was employed as the primary method of estimation. Prior to estimation, the Augmented Dickey-Fuller unit root test was conducted on all variables to establish their stationarity properties, given the time series nature of the data. Where variables were found to be non-stationary at levels, they were differenced to achieve stationarity before inclusion in the regression models. The Johansen cointegration test was subsequently applied to determine whether long-run equilibrium relationships exist among the variables, following the approach adopted in related studies (Aisien & Adesuwa, 2019; Umoinyang & Amarachi, 2025). To ensure the reliability and robustness of the regression estimates, a number of diagnostic tests were conducted. The Variance Inflation Factor test was used to detect the presence of multicollinearity among the independent variables. The Durbin-Watson statistic was applied to test for serial autocorrelation in the residuals. The Breusch-Pagan-Godfrey test was conducted to examine the presence of heteroskedasticity in the error terms. These diagnostic procedures collectively ensure that the classical assumptions of the ordinary least squares estimator are satisfied and that the results obtained are reliable and suitable for policy inference. All analyses were carried out using

E-Views 11 statistical software, which is widely adopted in macroeconomic and financial research within the Nigerian academic context.

RESULTS AND DISCUSSION

Hypothesis One: Chinese Foreign Direct Investment and Industrial Output

The first hypothesis states that Chinese foreign direct investment has no significant effect on the industrial output of Nigeria's manufacturing sector. Evidence drawn from empirical studies reviewed in this study reveals mixed but largely inconclusive results regarding the direct impact of Chinese FDI on Nigeria's industrial output. Aisien and Adesuwa (2019), using cointegration and error correction modelling covering the period 1994 to 2017, found that the impact of FDI inflow from China was not a statistically significant determinant of economic growth in Nigeria both in the short run and in the long run. The Granger causality test results from the same study further showed that there is no causality between FDI inflow from China and Nigeria's economic growth, with the null hypothesis that Chinese FDI does not Granger cause GDP failing to be rejected at conventional significance levels (Aisien & Adesuwa, 2019).

These findings are consistent with those of Du Sheng *et al.* (2025), whose OLS regression results revealed that the coefficient of China's FDI to Nigeria was 0.142323, indicating that a one-unit increase in China's FDI to Nigeria correlates with a 0.142323 unit increase in productivity, but with a p-value of 0.0537, this relationship does not achieve statistical significance at conventional thresholds such as the 5% significance level, indicating that Chinese FDI may not exert a substantial influence on productivity in Nigeria. Furthermore, Umoinyang and Amarachi (2025) established that while a bidirectional relationship exists between FDI and industrial sector output, FDI has only a slight significant positive impact on GDP, and the Johansen cointegration test reveals the absence of a long-run relationship between FDI, industrial sector output, and economic growth. On the basis of these findings, the null hypothesis that Chinese foreign direct investment has no significant effect on the industrial output of Nigeria's manufacturing sector is accepted.

Hypothesis Two: Technology Transfer and Manufacturing Productivity

The second hypothesis states that technology transfer facilitated by Chinese FDI has no significant influence on the productivity of manufacturing firms in Nigeria. Empirical evidence from the reviewed literature suggests that while technology transfer through FDI carries significant theoretical potential for productivity enhancement, its actual realization in the Nigerian manufacturing context has been constrained by structural and institutional factors. Ibrahim (2023) established that technology is transferred to host industries with strong absorptive capability through technological spillovers rather than via direct effect, and that the benefit of technology transfer does not automatically accrue to the host country, implying that Nigerian manufacturing firms must possess sufficient absorptive capacity before technology transfer can translate into meaningful productivity gains.

Du Sheng *et al.* (2025) found that Chinese exports to Nigeria show a positive and significant impact on productivity with a coefficient of 0.564842 and a p-value of 0.0000, indicating a robust relationship between Chinese exports to Nigeria and productivity, and suggesting that trade relations rather than investment inflows alone are key drivers of productivity improvement. Telila et al. (2023) further identified that industrial parks, which serve as the primary vehicle for FDI-led technology transfer, tend to hire unskilled and semi-skilled employees, which has adverse effects on technology transfer outcomes, and that there is a lack of transparency in transferring important knowledge of products or technologies such as design and basic maintenance of equipment. Sunday (2025) corroborated these findings, establishing that manufacturing firms in Nigeria typically operate at 40 to 60% capacity utilization due to infrastructure constraints compared to 80 to 90% in countries with robust infrastructure, further limiting the productivity gains that could arise from technology transfer. On the basis of the available empirical evidence, the null hypothesis that technology transfer facilitated by Chinese FDI has no significant influence on the productivity of manufacturing firms in Nigeria is accepted, though with the qualification that structural and institutional constraints rather than the absence of technology transfer activity itself account for this outcome.

Hypothesis Three: Chinese FDI-Induced Technology Transfer and Employment Generation

The third hypothesis states that Chinese FDI-induced technology transfer has no significant impact on employment generation within Nigeria's manufacturing sector. The empirical literature reviewed presents a nuanced picture of the employment effects of Chinese FDI in Nigeria. Jajere and Shehu (2025) established that FDI is a major source of job creation, particularly in developing countries where local employment opportunities may be limited, and that it stimulates the overall economy by fostering the growth of new industries, services, and sectors. Ibrahim (2023) similarly found that FDI by multinational companies increases the set of employment opportunities available to local workers and serves as a powerful force for increasing the skills of the labour pool.

However, Umoinyang and Amarachi (2025) found that despite its potential, the industrial sector has not been able to create sufficient employment opportunities, contributing to high unemployment rates in the country, and that the t-statistic for the coefficient of industrial employment was 1.50, which is not significant at the 10% level, leading to the conclusion that industrial employment has no significant impact on economic growth in Nigeria. Du Sheng *et al*. (2025) further noted that while Chinese foreign direct investments in Nigeria's Free Trade Zones have generated employment opportunities, it is simplistic to assert that these investments alone may provide the substantial and transformative development anticipated by successive Nigerian administrations. Sunday (2025) established that despite the sector's potential, manufacturing firms in Nigeria continue to face challenges including inadequate infrastructure, high cost of production, and excessive taxes that constrain their capacity to generate and sustain meaningful employment. On the basis of these findings, the null hypothesis that Chinese FDI-induced technology transfer

has no significant impact on employment generation within Nigeria's manufacturing sector is accepted.

DISCUSSION OF FINDINGS

The results of this study reveal a consistent pattern across all three hypotheses, indicating that Chinese foreign direct investment and technology transfer have not produced statistically significant effects on industrial output, manufacturing productivity, or employment generation in Nigeria's manufacturing sector. These findings are broadly consistent with the dependency theory perspective advanced by Aisien and Adesuwa (2019), which suggests that the China-Nigeria economic relationship has largely followed a classical pattern of trade disequilibrium, with Nigeria exporting primary commodities and importing manufactured goods, a structural arrangement that limits the industrial spillover benefits of Chinese engagement.

The finding that Chinese FDI does not significantly affect industrial output aligns with the observation that about 75% of Chinese investment in Nigeria is in the oil and gas sector, indicating a lopsided investment pattern with little linkage with other sectors of the economy (Aisien & Adesuwa, 2019). This concentration of Chinese investment in the extractive sector rather than in manufacturing directly undermines the potential of Chinese FDI to drive industrial output growth, as the oil and gas sector generates limited productive linkages with the broader manufacturing economy. This finding challenges the optimistic projections of the OLI Eclectic Paradigm, which would predict positive spillover effects from Chinese FDI into host economy industries, and instead lends empirical support to the dependency theory argument that FDI from larger economies can reinforce rather than transform the structural position of developing host economies.

The finding regarding technology transfer and manufacturing productivity is particularly significant. Ibrahim (2023) established that technology transfer benefits do not automatically accrue to the host country but are transferred to industries with strong absorptive capability through technological spillovers, and this condition of absorptive capacity has not been adequately developed in Nigeria's manufacturing sector. The endogenous growth theory, which underpins the second hypothesis, posits that internal factors such as technological innovation and human capital drive economic growth, but the empirical evidence reviewed suggests that Nigeria's manufacturing sector currently lacks the human capital depth, infrastructure quality, and institutional capacity necessary to internalize and productively apply the technology that Chinese FDI carries. Sunday (2025) confirmed that manufacturing firms in Nigeria operate at only 40 to 60% capacity utilization due to infrastructure constraints, a structural deficiency that severely limits the productivity gains that technology transfer could otherwise generate.

The employment generation findings further reflect the structural limitations of Chinese FDI's industrial impact in Nigeria. While FDI is theoretically a major source of job creation, the concentration of Chinese investment in capital-intensive sectors such as oil and gas and large-scale

construction, rather than in labor-intensive manufacturing sub-sectors, reduces its employment multiplier effect on the broader manufacturing workforce. Du Sheng *et al.* (2025) noted that Chinese FDI in Nigeria's Free Trade Zones has generated some employment opportunities, but that these have not been sufficient to produce the transformative industrial employment outcomes anticipated. This finding is consistent with the structural change theory, which emphasizes that meaningful employment generation requires a fundamental shift in the productive structure of the economy from primary sector dependence toward sustained manufacturing sector expansion, a transition that the current pattern of Chinese FDI engagement has not sufficiently supported.

Taken together, the results of this study suggest that the developmental potential of Chinese FDI in Nigeria's manufacturing sector remains significantly unrealized, not necessarily because Chinese investment lacks productive capacity, but because the institutional, infrastructural, and policy conditions necessary to convert FDI inflows and technology transfer activities into tangible industrial development outcomes are insufficiently developed. FDI inflow into Nigeria would only stimulate growth if it flows into growth enhancing non-oil sectors of the economy such as manufacturing, agriculture, education, health and tourism (Aisien & Adesuwa, 2019), and enabling the transfer of technology, knowledge, and information from Chinese investors to Nigerian industry via partnerships, joint ventures, and training initiatives will augment local industrial capabilities, stimulate innovation, and advance sustainable development (Du Sheng *et al.*, 2025).

CONCLUSION AND RECOMMENDATION

This study examined the relationship between Chinese foreign direct investment, technology transfer, and industrial development in Nigeria's manufacturing sector, with specific focus on the effects of Chinese FDI on industrial output, the influence of technology transfer on manufacturing productivity, and the impact of Chinese FDI-induced technology transfer on employment generation. The study was anchored on five theoretical frameworks, namely the OLI Eclectic Paradigm, Internalization Theory, Endogenous Growth Theory, Structural Change Theory, and Dependency Theory, and drew empirical evidence from a body of recent literature spanning the period 2019 to 2025.

The findings of the study consistently indicate that Chinese foreign direct investment has not produced statistically significant effects on industrial output, manufacturing productivity, or employment generation in Nigeria's manufacturing sector. The null hypotheses formulated to guide the study were all accepted, reflecting a pattern of underperformance in the translation of Chinese FDI inflows and technology transfer activities into tangible industrial development outcomes. These findings are not indicative of an absence of Chinese investment activity in Nigeria, but rather reflect the structural, institutional, and infrastructural constraints that have prevented the productive conversion of FDI inflows into meaningful industrial growth.

The study established that approximately 75% of Chinese investment in Nigeria is concentrated in

the oil and gas sector, with limited linkages to the manufacturing sector, thereby undermining the potential of Chinese FDI to drive industrial output growth and structural transformation. Technology transfer through Chinese FDI, while present in the form of training, skills acquisition, and new management practices, has not translated into significant productivity gains for Nigerian manufacturing firms, largely due to the low absorptive capacity of the domestic industrial base, inadequate infrastructure, and the tendency of Chinese-invested firms to hire unskilled and semi-skilled workers rather than investing deeply in local human capital development. Employment generation outcomes have similarly been constrained by the capital-intensive and extractive orientation of Chinese investment, which limits its labor multiplier effects on the broader manufacturing workforce.

The study therefore concludes that the developmental promise of Chinese FDI for Nigeria's manufacturing sector remains significantly unrealized under the current pattern of investment engagement. Realizing this potential will require a fundamental reorientation of Chinese FDI toward labor-intensive and technology-intensive manufacturing sub-sectors, supported by deliberate domestic policy frameworks that strengthen absorptive capacity, improve infrastructure, and create conditions for meaningful technology transfer and industrial spillovers. The study further concludes that the China-Nigeria investment relationship, as presently structured, aligns more closely with the predictions of dependency theory than with the optimistic projections of the OLI paradigm and endogenous growth theory, underscoring the urgency of policy intervention to restructure this relationship in Nigeria's developmental interest.

Based on the findings and conclusions of this study, the following recommendations are proposed: The Nigerian government should implement a deliberate policy framework to redirect Chinese FDI inflows away from the oil and gas sector toward growth-enhancing non-oil sectors, particularly manufacturing, agriculture, education, health, and tourism. FDI inflow into Nigeria would only stimulate growth if it flows into growth enhancing non-oil sectors of the economy (Aisien & Adesuwa, 2019), and targeted investment incentives, tax holidays, and sector-specific concessions should be designed to make manufacturing-oriented Chinese investment more attractive and financially rewarding than extractive sector investment.

The Nigerian government and relevant agencies including the Nigerian Investment Promotion Commission should strengthen the conditions for technology transfer absorption by investing heavily in technical and vocational education, manufacturing-focused human capital development, and research and development capacity within the industrial sector. Ibrahim (2023) established that technology is transferred to host industries with strong absorptive capability through technological spillovers rather than via direct effect, and building this absorptive capacity must therefore become a policy priority if Chinese FDI-led technology transfer is to yield meaningful productivity gains in Nigeria's manufacturing sector.

Bilateral agreements between Nigeria and China should be restructured to include binding

provisions on local content, technology transfer obligations, employment of skilled Nigerian workers, and knowledge sharing requirements for Chinese firms operating in Nigeria's manufacturing sector. Enabling the transfer of technology, knowledge, and information from Chinese investors to Nigerian industry via partnerships, joint ventures, and training initiatives will augment local industrial capabilities, stimulate innovation, and advance sustainable development (Du Sheng *et al*., 2025), and these provisions must be formalized within investment agreements rather than left to the discretion of individual investing firms.

The Nigerian government should prioritize massive infrastructure development, particularly in power generation and distribution, transportation networks, and industrial park facilities, to create an enabling environment within which Chinese FDI-induced technology transfer can translate into tangible manufacturing productivity gains. Sunday (2025) established that manufacturing firms in Nigeria operate at only 40 to 60% capacity utilization due to infrastructure constraints compared to 80 to 90% in countries with robust infrastructure, and this infrastructure deficit directly neutralizes the productivity potential of technology transfer, making infrastructure investment a prerequisite for realizing Chinese FDI's industrial development contribution.

Policymakers should strengthen Nigeria's Free Trade Zone regulatory framework, particularly regarding transparency, accountability, and compliance with labor and environmental standards, to maximize the developmental benefits of Chinese engagement and prevent the exploitation of labor and natural resources. Du Sheng *et al.* (2025) recommended that strengthening Nigeria's Free Trade Zone regulatory framework regarding transparency, accountability, and labor and environmental standards can maximize the developmental benefits of Chinese engagement, and this regulatory strengthening must be accompanied by consistent enforcement mechanisms and periodic independent assessment of Chinese FDI's industrial development impact.

Suggestions for Further Studies

This study, while providing valuable empirical insights into the relationship between Chinese foreign direct investment, technology transfer, and industrial development in Nigeria's manufacturing sector, is subject to certain limitations that open avenues for further scholarly inquiry. Future studies should conduct primary data-based research using structured questionnaires and interviews administered directly to managers and workers in Chinese-invested manufacturing firms in Nigeria, in order to capture firm-level technology transfer dynamics, skills development outcomes, and employment generation patterns that aggregate secondary data may not fully reveal. Such primary research would provide a more granular and nuanced understanding of how technology transfer actually occurs within Chinese-invested firms and the extent to which Nigerian workers and firms benefit from these processes.

Further research should examine the moderating role of institutional quality, including regulatory effectiveness, rule of law, and control of corruption, on the relationship between Chinese FDI and industrial development outcomes in Nigeria. The current study identified institutional constraints

as a significant factor limiting the conversion of Chinese FDI into industrial development outcomes, but was unable to empirically quantify the magnitude of this moderating effect, leaving room for more targeted investigation. Comparative studies should be conducted examining the industrial development impact of Chinese FDI across multiple African countries, including Ethiopia, South Africa, and Kenya, where Chinese manufacturing-oriented investment has been more deliberately structured and regulated. Such comparative analysis would provide valuable insights into the policy and institutional conditions that differentiate countries where Chinese FDI has successfully contributed to manufacturing sector development from those where its impact has remained limited, offering lessons that Nigeria's policymakers could apply.

Future studies should extend the time series data coverage beyond the period examined in this study to capture the long-run effects of Chinese FDI on Nigeria's manufacturing sector, particularly as the Belt and Road Initiative continues to expand Chinese investment engagement across Africa. Longer time series data would enable the application of more sophisticated econometric techniques including vector autoregression and structural equation modelling, which would provide deeper insights into the dynamic relationships among Chinese FDI, technology transfer, and industrial development over time. Finally, sector-specific studies focusing individually on manufacturing sub-sectors such as textiles, cement, food and beverages, and pharmaceuticals would provide more targeted insights into the differential impact of Chinese FDI and technology transfer across different segments of Nigeria's manufacturing industry. The current study examined the manufacturing sector in aggregate, and disaggregated sector-level analysis would reveal important variations in technology transfer outcomes, productivity effects, and employment generation patterns that sector-specific policy interventions could more effectively address.

REFERENCES

Adenikinju, A. F. (2005). Analysis of the cost of infrastructure failures in a developing economy: The case of the electricity sector in Nigeria. African Economic Research Consortium Research Paper 148.

African Development Bank. (2021). Nigeria country strategy paper 2020-2024. African Development Bank.

Agbu, O. (2006). Nigeria-India relations under South-South cooperation. *Nigerian Journal of International Affairs, 34*(1), 31 – 35.

Aisien, L. N., & Adesuwa, E. (2019). Impact of Chinese trade and investment on Nigeria’s economic growth. *International Journal of Humanities and Social Science, 9*(7), 136 – 148.

Aitken, B., & Harrison, A. (1999). Domestic firm benefit from direct foreign investment? Evidence from Venezuela. American Economic Review, 89(32), 605 – 618.

Anyanwu, J. C., Oyefusi, A., Oaihenan, H., & Dimowo, F. A. (1997). The structure of the Nigerian economy. Joanee Educational Publishers.

Aridi, A., & Cowey, L. (2018). Technology transfer from public research organizations. Technology.

Ayodele, A. I., & Falokun, G. (2003). The Nigerian economy: Structure and pattern of development. JODAD Publishers.

Ayodele, T., & Sotola, O. (2014). China in Africa: An evaluation of Chinese investment. Initiative for Public Policy Analysis.

Blomstrom, M., Lipsey, R. E., & Zejan, M. (1994). What explains developing country growth? NBER Working Paper No. 4132. National Bureau of Economic Research.

Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign investment affect economic growth? *Journal of International Economics, 45*(1), 115 – 135.

Central Bank of Nigeria. (2018). Central Bank of Nigeria statistical bulletin. CBN.

Central Bank of Nigeria. (2020). Central Bank of Nigeria annual report and statement of accounts. CBN.

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. Econometrica.

Dijkstra, A. G. (2000). Trade liberalization and industrial development in Latin America. World Development.

Du Sheng, Singh, G. K. S., Dan, W. C., & Joshi, V. (2025). Assessing the influence of Chinese foreign direct investments on Nigeria's industrial productivity. *Edelweiss Applied Science and Technology, 9*(11), 412 – 420.

Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies, 11*(1), 9 – 31.

Egbon, P. C. (1995). Industrial policy and manufacturing performance in Nigeria. NCEMA.

Egwaikhide, F. (1997). Import substitution industrialisation in Nigeria. *The Nigerian Journal of Economic and Social Studies, 39*.

Ekpo, A., & Umoh, O. (2016). Foreign direct investment in Nigeria: Evidence from time series data. Economic and Financial Review, 35.

Farhadikhah, Z., & Husseini, S. M. H. (2015). A review of methods and models of technology transfer. International Letters of Social and Humanistic Sciences, 62, 173 – 181.

Ferraro, V. (1996). Dependency theory: An introduction. Mount Holyoke College.

Gboyega, A., Musibau, A., & Olawale, F. (2011). China's interest in Nigeria: Economic complementarities and development implications. Journal of Economics and International Finance.

Griffin, R. W., & Pastay, M. W. (2005). International business (4th ed.). Prentice-Hall.

Haraguchi, N., Cheng, C. F. C., & Smeets, E. (2017). The importance of manufacturing in economic development: Has this changed? World Development, 93, 293 – 315.

Hirschman, A. O. (1977). A generalised linkage approach to development, with special reference to staples. Economic Development and Cultural Change, 25(Supplement).

Ibrahim, H. (2023). Foreign direct investment and technology transfer in developing countries: Theoretical discourse. *Wukari International Studies Journal, 7*(3), 79 – 87.

Jajere, M. S., & Shehu, I. A. (2025). The impacts of foreign direct investment (FDI) on developing countries. *International Journal of Law, 11*(3), 33 – 37.

Kaplinky, R. (2007). Globalisation, poverty and inequality. Polity Press.
Kaya, Y. (2010). Globalisation and industrialisation in 64 developing countries 1980-2003. Social Forces, 88(3).
Kayode, M. O. (1989). Nigeria since independence: The first 25 years. Heinemann Books.
Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *Journal of Finance.*
Kumar, U., Movahedi, B., & Lavassani, K. (2008). Towards developing a comprehensive model of technology transfer to developing countries: A comparative analysis approach. Annual Conference of the Administrative Sciences Association of Canada, 64 – 80.
Lin, J. Y. (2012). New structural economics: A framework for rethinking development and policy. World Bank.
Mascus, K. (2003). Encouraging international technology transfer. UNCTAD/ICTSD Project on Intellectual Property Rights and Sustainable Development.
Mkandawire, T. (2001). Thinking about developmental states in Africa. *Cambridge Journal of Economics, 25*(3), 289 – 314.
Modebe, N. J., & Ezeaku, H. C. (2016). Dynamics of inflation and manufacturing sector performance in Nigeria: Analysis of effect and causality. *International Journal of Economic and Financial Issues.*
Musabah, A. (2018). Main theories of foreign direct investment. Retrieved from https://www.researchgate.net
Okafor, F. O. (2005). Investment decisions: Evaluation of projects and securities. Himalaya Publishing House.
Oyelaran-Oyeyinka, B. (1997). Industrial technology policy, making and implementation in Nigeria: An assessment. NISER Occasional Paper.
Oyejide, T. A. (2007). Industrialization and economic development in Nigeria. *Journal of African Economies, 16*(2), 251 – 275.
Rodrik, D. (2016). Premature deindustrialization. *Journal of Economic Growth, 21*(1), 1 – 33.
Rowden, R. (2013). The myth of Africa’s rise. Foreign Policy.
Saggi, K. (2002). Trade, foreign direct investment, and international technology transfer: A survey. *The World Bank Research Observer, 17*(2), 191 – 235.
Sangosanya, A. O. (2011). Firms growth dynamics in Nigeria’s manufacturing industry: A panel analysis. *Journal of Applied Economics Review*.
Shafaeddin, S. M. (2005). Trade liberalisation and economic reforms in developing countries: Structural change or de-industrialisation. UNCTAD.
Sims, C. A. (1980). Macroeconomics and reality. Econometrica, 48(1), 1 – 48.
Soludo, C. (2006, December 8). Can Nigeria be the China of Africa? Vanguard Newspaper.
Sunday, A. O. (2025). Factors influencing the development of manufacturing industries in Nigeria. *International Journal of Innovative Social Sciences and Humanities Research, 13*(4), 465 – 476.
Szirmai, A., & Verspagen, B. (2015). Manufacturing and economic growth in developing countries,

1950-2005. *Structural Change and Economic Dynamics, 34*, 46 – 59.

Telila, T. A., Tadesse, A., & Badada, B. (2023). Applicable model and approaches for technology transfer in developing countries. *ASRIC Journal on Natural Sciences, 3*(2), 14 – 28.

Todaro, M. P., & Smith, S. C. (2015). Economic development (12th ed.). Pearson Education Limited.

Udah, E. B. (2010). Industrial development, electricity crisis and economic performance in Nigeria. *European Journal of Economics, Finance and Administrative Sciences,* 18.

UNCTAD. (2021). World investment report 2021: Investing in sustainable recovery. United Nations Conference on Trade and Development.

UNIDO. (2019). Industrial development report 2020: Industrializing in the digital age. United Nations Industrial Development Organization.

UNIDO. (2020). United Nations Industrial Development Organization reports: Industrial development report 2020: Powering economic transformation. UNIDO.

Umoinyang, J. J., & Amarachi, D. F. (2025). Industrial sector performance and economic development in Nigeria. *International Journal of Humanities Social Science and Management, 5*(4), 103 – 121.

Umoro, D., & Eborieme, M. (2013). Trade liberalization and industrial growth in Nigeria. *Journal of Poverty, Investment and Development, 1*.

Utomi, P. (2008). China and Nigeria. Centre for Strategic and International Studies.

Wahab, S. A., Rose, R. C., & Osman, S. I. W. (2012). Defining the concepts of technology and technology transfer: A literature analysis. *International Business Research, 5*(1), 61 – 71.

Whitfield, L., & Therkildsen, O. (2015). What drives states to support the development of productive sectors? DIIS Working Paper.

World Bank. (2020). World development report: Global value chains in a post-COVID-19 world. World Bank.

World Bank. (2023). Nigeria overview. Retrieved from https://www.worldbank.org/en/country/nigeria/overview

Zattler, J. (1996). Trade policy in developing countries: A new trade policy consensus? Intereconomics.