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**RELATIONSHIP BETWEEN EASE OF DOING BUSINESS, EXCHANGE RATE AND INDUSTRIAL
 SECTOR PERFORMANCE IN NIGERIA: AN EMPIRICAL INVESTIGATION**

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Abstract

Despite abundance studies on the nexus between exchange rate and industrial sector performance, little has been done to examine the relationship between ease of doing business index (EDB), exchange rate (EXCH) and industrial sector performance (IND) in Nigeria. This study examines the impact of EDB, EXCH on the performance of industrial sector in Nigeria using the Fully Modified Ordinary Least Square (FMOLS) and Canonical cointegration Regression (CCR) estimators, to analyze the quarterly data between 1996Q1-2022Q4 period. Therefore, the estimation result of the Johansen cointegration test reveals that there is at least one cointegrating equation. The results from FMOLS and CCR estimators reveal that an improvement in eco-friendly business environment increases the performance of industrial activities in Nigeria. Exchange rate is found to negative and statistically significant in affecting industrial activities in Nigeria. That is, raising official exchange rate reduces the activities of industrial sector in Nigeria. This study recommends that government should introduce appropriate policies that will promote eco-friendly environment for business and firms to thrive. This can be achieved through adequate funding to the bank of industry (BOI) to provide soft loan to small and medium enterprises that will enhance industrial sector performance. Government should determine appropriate exchange rate system that will assist the industrial sector to increase their productivity.

Keywords: EDB, EXCH, Industrial Sector and FMOLS/CCR

1. Introduction

Industrialization has been a key determinant that fosters economic growth and development both in the developed and the developing economies (World Bank [WB], 2023). The development of industrial sector brings substantial changes in the real sector of the economy that leads to the creation of employment opportunities and increase in productivity especially in emerging economies (Effiong & Inyang, 2020). Furthermore, industrial sector has attracted special attention over the years as it has the potentials of improving balance of payment (BOP), innovation, production, and infrastructural development (Joshua & King, 2020; Effiong & Inyang, 2020).

The WB (2023) reported that to achieve sustainable economic growth, it is imperative to have a sound industrial sector. Statistics have shown that there has been an impressive performance of industrial output (value added) in developed countries as against some of the developing nations. For instance, manufacturing output as a subsector of industry stood at 18% and 20% for Germany and Japan in 2021, respectively, while Benin had 10% and Nigeria had 14% in same year (WB, 2023). Thus, developing countries like Nigeria needs to invest more in industrial sector so as to achieve high economic growth rate and development.

In the year 2023, the World Development Indicators has listed the performance of major sub-industrial

sectors in Nigeria namely; Food, beverage and tobacco sector with 4.5% of GDP; Textile sector (1.5%); Cement sector (0.8%); and lastly, Manufacturing sector (13.59%). Other sub-sectors include leather and related products, mining, pulp and paper, chemicals, petrochemicals and pharmaceutical production are lag behind when compared to other sectors of the economy. Therefore, the development of these sectors implied the application of energy, modern technology, stable exchange rate, and eco-friendly environment for the production of goods and services.

Several efforts have been put in place to boost the capacity of industrial sector in the country including SAP (1986) and Economic Recovery and Growth Plan (ERGP) in 2017 aimed to boost domestic investment and manufacturing sector thereby leading to economic growth. In addition, Nigeria Free Trade Zone Schemes (NFTZs) has also been established to promote exports of manufactured goods in the country. Recently, Credit Industry Financing Initiative (CIFI), Micro Small and Medium Enterprise Development Fund (MSMEDF) and African Continental Free Trade Agreement (AfCFTA) in 2020 were also established to enhance the performance of industrial activities in the country.

Despite efforts undertaken to raise the performance of industrial sector in Nigeria, its output remained unimpressive compared to some of the developing nations including South Africa 17% of GDP and Cape Verde 23% of GDP in 2022 (WDI, 2022). Whereas, rising industrial sector is very important in providing employment opportunities and boosting economic growth, poor conducive business environment can be a major problem to the development of the sector. For example, cost of doing and starting a business has significantly affects the industrial activities in Nigeria.

Moreover, Ease of Doing Business (EDB) index enables both foreign and domestic businesses to prosper more and help in promoting industrial activities (Umar et al., 2021). In addition, a healthy and favorable business environment will pave ways to job creations, entrepreneurial opportunities and more investment in industrial sector in Nigeria. Also, firms are more likely to improve if they have access to fewer, cheaper, and

simpler regulations, because overregulation affects business activity, thereby retarding investment growth (IEG, 2020). According to WDI (2023), the EDB ranking for Nigeria has been unimpressive when compared with other African nations. For example, the Nigeria's EDB ranking has dropped significantly to 131st from 146th between 2018 to 2019, while other African nation like Mali shifted from 145th to 148th in same year. This could be as a result of government's decision to impose high taxes to firms, exchange rate fluctuation and or inadequate credit facilities via Bank of Industry (BOI) to support small and medium enterprises and higher lending rate can make it more difficult and costlier for the businesses/firms to bear the associated costs, and this, eventually discourages industrial activities in Nigeria (WDI, 2023).

As part of the effort to create a favorable business environment, the present government has introduced digital and free registrations of firms with a view to making business regulatory requirements more easily, much faster processing times and making the overall economy more business-friendly. Also, Presidential Enabling Business Environment Council (PEBEC) has been formed in the year 2016, in order to reduce challenges associated with starting and running businesses in Nigeria. Despite the efforts undertaken by the authorities to provide effective eco-friendly environment for investors, firms and businesses to grow, Nigeria's ease of doing business lags behind compared to some of the developing countries like Ghana and South-Africa.

In addition to the factors affecting industrial performance in Nigeria is its exchange rate fluctuation. Exchange rate is the value of one currency against another. In addition, It is the price of one currency of a particular nation related to another countries' currency. Abdullahi and Umar (2021) and Mlambo (2020) opined that one of the objectives of macroeconomics is to have exchange rate stability with its counterpart trading nations. Nigeria depended on importation of raw materials in the production of goods and services which affects the stability of exchange rate in the country. Therefore, the persistent exchange rate fluctuation in Nigeria indicates that Nigeria should continue to

experience a high cost of raw materials that are used in the production of commodities. This will in turn affect the domestic firms less productive and its inability to rival foreign firms.

In Nigeria, the stability of exchange rate was not achieved despite unsound devaluation of the naira to enhance exportation of locally produced goods and services leading to industrialization. Abdullahi and Umar (2021) opined that exchange rate policies in African countries are usually responsive and problematic due to their economic and political structure which depends on the objectives required increase in export of products and vice versa. Moreover, Ikpefan, et al. (2016) reveal that the exchange rate was relatively stable between 1970 to 1980, after the introduction of SAP in 1986 the country shifted to a flexible exchange rate policy which was obtained by the supply and demand of currencies. Therefore, the unstable exchange rate policy made numerous industrial sectors of the economy to face the challenge in terms of their productivity and growth.

Studies on exchange rate fluctuation and industrial output have been examined extensively in Nigeria (Buabeng et al., 2019; Falaye et al., 2019). Most studies focused on the impact of exchange rate on manufacturing sector in Nigeria, neglecting others components of the industrial sector which might not be generally determined the performance of industrial sector (Mlambo, 2020; Buabeng et al., 2019). However, little has been done to examine the nexus between exchange rate, ease of doing business and industrial sector performance in Nigeria. In fact, the studies looking at the relationship between ease of doing business, exchange rate and industrial sector in Nigeria is almost non-existent. Thus, this study examines the impact of ease of doing business and exchange rate on industrial sector performance in Nigeria. The remaining paper is arranged as follows; after the introduction, section two discusses the review of empirical literature. Theoretical framework, method and specification econometric model are presented in section three. The next section interprets the results and findings. The Last section discusses presents conclusion and policy recommendation.

2. Literature Review

2.1 Empirical Review

Mlambo (2020) evaluated the effect of exchange rate on the manufacturing industries in SACU states. The authors applied the panel FMOLS and PMG estimator during 1995-2016 period. The author reveals that exchange rate has a negative and significant effect with the growth of manufacturing industries. In addition, rising exportation influences manufacturing performance among the states. Similarly, Buabeng et al. (2019) investigated the impact of exchange rate on manufacturing firms in Ghana from 1990 to 2018. Using ARDL bounds test approach to co integration, the results indicates that exchange rate and monetary policy rate has been a negative and significant impact with manufacturing industries in Ghana.

Falaye et al (2019) examined the nexus between exchange rates and Nigerian manufacturing sector covering the period of 1990-2014. The study conducted Johansen cointegration test and error correction methods to analyze the long-run cointegration among the variables. The finding of the research indicated that depreciation of exchange rate has a negative effect on the performance of manufacturing industries in Nigeria.

Ezenwakwelu et al. (2019) evaluated the relationship between of exchange rate fluctuation and firms' performance in Nigeria. The authors employed balanced panel of annual observations from top 10 firms mentioned on the Nigerian Stock Exchange during the 2015 – 2017 period. The finding of the study shows that exchange rate had a negative and significant effect on manufacturing sector output in Nigeria.

Okafor et al. (2018) employed Structural Vector Autoregressive (SVAR) econometric technique to examine the effect of exchange rate and inflation on industrial output in Nigeria during 1981Q1 to 2015Q4. The research reveals a positive of exchange rate on industrial sector output in Nigeria. In addition, a positive impact of inflation on industrial activities has been established in the long-run.

Ogunmuyiwa and Adelowokan (2018) examined the effect of exchange rate fluctuation on industrial sector

output spanning from 1986 to 2016 period. Using OLS and Chow break point tests, the results discover that there is no long-run relationship between variables in Nigeria. Lastly, Orji et al. (2018) examined the impact of exchange rate fluctuation on firms' performance during the 1981–2016 period. Annual data and OLS approach were applied to examine the relationship between the variables. The estimation result indicates that exchange rate fluctuation had a significant role in the performance of the sector in Nigeria.

3. Methodology

This study employed neoclassical growth theory to examine the relationship between ease of doing business, exchange rate and industrial output in Nigeria. The neoclassical model focuses on the relationship between capital, labor and output, the theory explains the diminishing marginal productivity of capital that determined technical progress and substitutability between capital and labour (Ene-Edet et al., 2022). Mathematically, the Solow neoclassical theory proposed aggregate production function in which represented as;

$$Y = TK^{\alpha}L^{1-\alpha} \quad (1)$$

Where; Y is the output or productivity, T is the level of technological advancement, K is the capital, and L is the labour. In addition, T is neutral that increases productivity or output from a given combination of capital and labour irrespective of their relative marginal products.

Furthermore, many industrial sector models have been developed using neoclassical theory to examine the relationship between the variables (Asaleye, 2021; Afolabi & Laseinde, 2019). Thus, the neoclassical model can be represented as;

$$IND_t = f(K, L) \quad (2)$$

Apart from capital and labor, there are other variable that influences industrial sector including exchange rate. It is assumed that exchange rate has a significant effect on industrial sector. That is, a change in exchange rate either (appreciation or depreciation) influences industrial sector (Joshua & King, 2020;

Effiong & Inyang, 2020). Thus, the neoclassical model can be re-written as;

$$IND_t = f(EXCH) \quad (3)$$

In addition, it is been hypothesized that ease of doing business (EDB) affects the performance of industrial sector (Chitedze & Abonyi, 2021; Ene-Edet et al., 2022). Favorable business environment promotes the activities in industrial output. Therefore, the neoclassical model can be represented as;

$$IND_t = f(EXCH_t, EDB_t) \quad (4)$$

Moreover, other variables such as domestic investment and labor productivity (LP) affect the industrial sector performance. For instance, increase in labor productivity increase the activities of industries leading to economic growth. In addition, domestic investment (INV) has a significant impact on industrial output. Several studies employed these variables to examine the relationship between these variables (Chitedze & Abonyi, 2021). Therefore, taking all the variables in to account, the neoclassical model is represented as;

$$IND_t = f(EXCH_t, EDB_t, LP_t, INV_t) \quad (5)$$

Where; IND is the dependent variable which is industrial output, while EXC is an official Exchange rate which is the price of currency (naira) against US dollar, EDB represents favorable conducive atmosphere for conducting business in the country. EDB rank from (0 to 100), indicating 0 very poor or low business friendly environment, to 100 very or high business friendly environment, INV is the domestic investment and lastly, LP which is labor productivity.

3.1 Method of Analysis

This study employed two estimation techniques namely; the Canonical Cointegration Regression (CCR) developed by Park (1992) and the Fully Modified Ordinary Least Squares (FMOLS) proposed by Hansen and Phillips (1990). In addition, the FMOLS and CCRT approaches known to address the problems of auto correlation and endogeneity bias especially when dealing with time series data. Unlike other conventional cointegration approach, the CCR and FMOLS estimator

have certain advantages such as efficient and reliable in estimating variables. Also. They did not require pre-test for unit root tests to examine the order of cointegration of the series. In addition, the FMOLS and CCR provide more efficient and reliable results in a small sample when compared to other cointegration approaches. Specifically, the FMOLS proposed a single cointegrating equation to be applied in estimating long-run cointegration among the variables. The FMOLS modifies the least squares by taking into consideration the serial correlation and endogeneity effects in the regressors that emanate from the presence of the cointegrating relationship. The process begins with the traditional OLS method, and it accounts a nonparametric adjustment that found in the endogeneity and auto-correlation among the residuals that arise in the OLS (Yunusa et al., 2021; Singh, 2015). Furthermore, the CCR estimator employed the OLS technique by changing the variables using covariance matrix of the stochastic terms in the long-run, so that the estimator (OLS) is asymptotically became stable and efficient (Beard et al., 2010). The CCR and FMOLS estimations were estimated via Bartlett Kernel with Newey-West fixed bandwidth. Therefore, the FMOLS and CCR models are represented as.

$$\ln(\text{IND})_t = \hat{\alpha}_0 + \sum_{i=1}^n \beta_1 \ln(\text{IND})_{t-i} + \sum_{i=0}^n \beta_2 (\text{EDB})_{t-i} + \sum_{i=0}^n \beta_3 (\text{EXCH})_{t-i} + \sum_{i=0}^n \beta_4 \ln(\text{INV})_{t-i} + \sum_{i=0}^n \beta_5 \ln(\text{LP})_{t-i} + \varepsilon_t \quad (6)$$

Furthermore, the study employed Johansen (1991) maximum Eigenvalue and Trace tests to evaluate the existence of long-run cointegration between ease of doing business, exchange rate and performance of industrial sector in the country. The procedure for

estimation starts with estimating the cointegration in the model specification. Using Johansen technique, the Eigenvalue statistic is employed to determine there is presence of cointegration among the variables used in the study. The cointegration is determined if the probability values of statistics computed are significant and entirely different from zero. Therefore, the equation (6) represents the Cointegration model as given;

$$\Delta \ln(\text{IND})_t = \hat{\alpha}_0 + \sum_{i=1}^n \partial_1 \ln(\text{IND})_{t-i} + \sum_{i=1}^n \partial_2 (\text{EDB})_{t-i} + \sum_{i=1}^n \partial_3 (\text{EXCH})_{t-i} + \sum_{i=1}^n \partial_4 \ln(\text{INV})_{t-i} + \sum_{i=1}^n \partial_5 \ln(\text{LP})_{t-i} + \varepsilon_t \quad (7)$$

Moreover, the trace statistic examines the decision of rejecting the null hypothesis of the cointegrating equation, that is, the null hypothesis of rejecting r cointegrating equations (CEs) compared with the alternative of k cointegrating equations in the model. This indicates that k is the number of endogenous variables and r is the cointegrating equation. In addition, the maximum statistics of the eigenvalue tests the null hypothesis of r CEs against the alternative of $r+1$.

4. Results and Discussion

This study began with the unit root tests to examine the order of integration among the series employed. The ADP, PP and KPSS unit root tests have been conducted and the results presented in Table 1 shows that all the variables employed possessed unit root at level $I(0)$, which reveal that the variables are not stationary at level. However, taking the first differences all the variables $\ln \text{IND}$, EDB , EXCH , $\ln \text{LP}$ and $\ln \text{INV}$ became stationary and are therefore, integrated in to order of one, that is $I(1)$.

Table 1: Results of Unit Root Tests

Variables	ADF		PP		KPSS	
	Level	First difference	Level	First difference	First difference	Stationarity Status
$\ln \text{IND}$	-0.82	-2.946**	0.875	-2.943**	0.211***	$I(1)$
EXCH	-0.629	4.705***	0.898	-4.680***	0.068***	$I(1)$
$\ln \text{EDB}$	-1.649	-3.922**	1.366	-3.922**	0.261**	$I(1)$
$\ln \text{LP}$	-2.184	5.943***	2.967	-3.395**	0.091***	$I(1)$
$\ln \text{INV}$	-2.971	3.595***	2.967	-3.5806*	0.221**	$I(1)$

Note: The maximum lag used is 3; both intercept and trend are applied in the estimations; *** and ** present statistically significance at 1%, and 5% respectively. **Source:** Researcher's computation (2024).

Moreover, since all the variables are $I(1)$, this provide the justification for the employment of FMOL and CCR methods in this study.

Therefore, from Table 1 above, the ADF, PP and KPSS tests revealed that all the variables employed in this

study are integrated of order $I(1)$, after taking the first differencing. This study is proceeded to test for cointegration to examine if the variables share a common trend, that is, if there is a long-run relationship among them.

Table 2: Results of Cointegration Tests

Variables: lnIND, EDB, EXCH, lnINV, lnLP

Trace Tests Result			Maximum Eigen Tests Result		
Hypothesized No. of CEs	Trace Stat.	Prob.	Hypothesized No. of CEs	Max-Eigen Statistics	Prob.
H: $r_0 = 0$, H: $r_A \geq 1$	80.7650	0.00**	H: $r_0 = 0$, H: $r_A = 1$	33.7962	0.00***
H: $r_0 \leq 1$, H: $r_A \geq 2$	46.9687	0.00**	H: $r_0 \leq 1$, H: $r_A = 2$	23.3222	0.00**
H: $r_0 \leq 2$, H: $r_A \geq 3$	23.6464	0.21	H: $r_0 \leq 2$, H: $r_A = 3$	16.2128	0.21
H: $r_0 \leq 3$, H: $r_A \geq 4$	7.4335	0.52	H: $r_0 \leq 3$, H: $r_A = 4$	6.5724	0.42
H: $r_0 \leq 4$, H: $r_A \geq 5$	0.8611	0.35	H: $r_0 \leq 4$, H: $r_A = 5$	0.8611	0.35

Notes: r indicates the number of long-run equation, p- Values are from Mackinnon HaugMichelis (1999). *** and ** reveals significance at 1% and 10% levels, respectively. Source; Authors' computation (2024)

The presence of two or more order of integration of the series $I(1)$ reveal that the variables are cointegrated. However, if a common trend of the series established between IND, EDB and EXCH including other variables, the common trend's features generate the behavior of the other variables used. Therefore, the results reported in Table 2 demonstrate a long-run cointegration established between the ease of doing business, exchange rate, domestic investment and labor productivity and industrial sector performance in Nigeria.

4.1 Results of FMOLS and CCR Estimations

The Table 3 presented the results of FMOLS and CCR estimators. The results indicate that there is positive and significant relationship between ease of doing business and industrial sector performance in Nigeria both in the FMOLS and CCR at 1% level. That is, a unit increase in ease of doing business index increases the performance of industrial sector in Nigeria by 0.075% and 0.081% both in the FMOLS and CCR, respectively. These findings are consistent with the previous studies that improving conducive atmosphere for business (firms) promotes the industrial activities, leading to

growth (Oriaku, 2021). These findings reflect the situation in Nigeria where several efforts have been put in place to create enabling business environment through programs such PEBEC, lowering cost of registration and license or business permit and tax holiday. This addresses the anxieties of both national and multinational companies when deciding to invest in the country especially in manufacturing sector (Morris & Aziz, 2011). In addition, the estimation results also reveal that official exchange rate is found to be negative and significant in influencing industrial sector performance in Nigeria both in the FMOLS and CCR. Thus, an increase of exchange rate by 1% decreases industrial sector performance in Nigeria by 0.86% and 0.88%, respectively. The results are in line with the past that studies that raising exchange rate negatively affects industrial activities in the country (Mlambo. 2020; Falaye el al., 2019). The results support the existing trends on the industrial sector in Nigeria whereby the exchange rate continues to depreciate further as the industrial sector has reached the point of deterioration. This might be due to the over reliance of imported raw material that are being used in the industrial activities. This could also be associated with the inadequate

support by government to maintain the stable exchange rates that aid the development of industrial sector especially when trading with its counterpart.

Table 4: Results of FMOLS and CCR Estimations (Dependent variable: IND)

	FMOLS	CCR
C	32.7235(3.49)	32.6854(4.14)
LEDB	0.0751(0.002)***	0.0812(0.002)***
EXCH	-0.8689(0.005)**	-0.8809(0.001)***
LINV	-0.5280(0.136)	-0.5602(0.011)
LLP	0.0036(0.007)**	0.0023(0.003)***

Notes: Heteroscedasticity and serial-correlation consistent (HSC) standard errors are presented in parentheses. *** and ** indicated level of significance at 1%, and 5%, respectively. the authors employed Bartlett kernel and Newey and West (1994).

Furthermore, domestic investment has negative and insignificant relationship with industrial sector both in FMOLS and CCR. These results are not surprising in Nigeria due to poor or low domestic investment as the country relaying on FDI especially in the industrial sector. Lastly, the results from FMOLS and CCR discover a positive and significant relationship exists between labor productivity and industrial sector performance in Nigeria. That is, a 1% increase in labor productivity raises the performance of industrial activities in Nigeria by 0.003% and 0.002%, respectively. The results support the classical theory economic growth proposed by Cobb-Douglas (1956). In addition, the findings lend support to the claim that increase in labor productivity increases industrial activities in the country (Chang & Lin, 2017; Osakwe et al., 2018). In addition, the R² for FMOLS and CCR is 0.92 which reveal that all the regressors reported to be around 92% variation in the equation.

5. Conclusion and Recommendation

The study employed quarterly data spanning from 1996Q1 to 2022Q4 to the connection between ease of

doing business, exchange rate and industrial sector performance in Nigeria. The research employed Johansen cointegration technique to evaluate the existence of long-run cointegration among the variables in the study. Using FMOLS and CCR approaches, the study reveals that ease of doing business promotes the performance of industrial sector in Nigeria. In addition, exchange rate is found to be negative and significant in affecting industrial sector performance in Nigeria. Labor productivity and domestic investment are found to be potential drivers of industrial sector in Nigeria. Based on this, government should introduce appropriate policies that will promote eco-friendly environment for business and firms to thrive. This will be complemented with adequate funding to the bank of industry (BOI) to provide soft loan to small and medium enterprises that will enhance industrial sector performance in Nigeria. Second, government should determine appropriate exchange rate system that will assist the industrial sector to increase their productivity leading to economic growth and development.

References:

- Abdullahi, U. U., & Umar, A. (2022). Effects of Exchange Rate on Food Inflation in Nigeria: A Non-Linear ARDL Approach. *Gusau International Journal of Management and Social Sciences*
- Akinmulegun, S.O & Falana, O.E. (2018). Exchange rate fluctuation and industrial output growth in Nigeria. *International Journal of Economics and Financial Research*, 4(5), 145-158.
- Beard, T. R., Jackson, J. D., Kaserman, D., & Kim, H. (2012). A time-series analysis of the US kidney transplantation and the waiting list: donor substitution effects. *Empirical Economics*, 42(1), 261-277
- Beard, T. R., Jackson, J. D., Kaserman, D., & Kim, H. (2012). A time-series analysis of the US kidney transplantation and the waiting list: donor substitution effects. *Empirical Economics*, 42(1), 261-277.
- Chen, H., Hao, Y., Li, J., & Song, X. (2018). The impact of environmental regulation, shadow economy, and corruption on environmental quality: Theory and empirical evidence from China. *Journal of Cleaner production*, 195, 200-214
- Cheng, H., Hao, Y., Li, J., & Song, X. (2018). The impact of environmental regulation, shadow economy, and corruption on environmental quality: Theory and empirical evidence from China. *Journal of Cleaner production*, 195, 200-21
- Ezenwakwelu, C. A, Okolie, P.I, Attah, E.Y, Lawal, K.O & Akoh, O. (2019). Exchange rate management and performance of Nigerian manufacturing firms. *Academy of Entrepreneurship Journal*, 25(4), 1 – 12
- Falaye, A, Eseyin, O, Otekunrin, A, Asamu, F, Ogunlade, P, Ben-Caleb, E, Bamidele, R, Eluyela, D & Moyinoluwa, N. (2019). Impact of exchange rate on the manufacturing sector in Nigeria. *International Journal of Mechanical Engineering and Technology*. 10. 1568–1583.
- Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica*, 59(6), 1551–1580
- Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica*, 59(6), 1551-1580.
- Mlambo, C. (2020) Exchange rate and manufacturing sector performance in SACU states, *Cogent Business & Management*, 7(1),1-7877
- Ogunmuyiwa, M.S & Adelowokan, O.A. (2018). Measuring the impact of exchange rate on industrial output in Nigeria. *European Journal of Marketing and Economics*, 1(2), 87-93.
- Orji, A, Ogbuabor, J.E, Okeke, C & Anthony-Orji, O.I.(2018). Exchange rate movements and the manufacturing sector in Nigeria. *Journal Infrastructural development*, 10(1-2), 63-79
- Park, J. Y. (1992). Canonical cointegrating regressions. *Econometrica*, 60(1), 119–143.
- Singh, T. (2015). Sustainability of current account deficits in India: an intertemporal perspective. *Applied Economics*, 47(46), 4934-4951.
- The World Bank. World Bank. (2022). World development indicators. The World Bank Data Base Retrieved from the web on 15th November, 2022. <https://data.worldbank.org/country>.
- World Bank. (2020). International debt statistics. Washington, DC: International Bank for reconstruction and development.
- World Bank. (2022). World Development Indicators 2022. Washington DC: World Bank Online. Available at <http://data.worldbank.org/country/Nigeria> Accessed: 21 February, 2021
- Worldwide Governance Indicator (2023). Worldwide Governance Indicator data base.
- Yunusa, H., Zakari, J., & Umar, A. (2022). Effect of Corruption on Foreign Direct Investment in Nigeria. *FUDMA International Journal of Social Science (FUDIJOSSs)*