

# **LAPAI JOURNAL OF ECONOMICS (LJE)**

**Volume 5 Number 2**

**December 2021**



A Publication of the Department of Economics, Ibrahim Badamasi  
Babangida University, Lapai, Niger State, Nigeria

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**Volume 5 Number 2**

**December, 2021**

Print ISSN: 2659-028X

Online ISSN: 2659-0271



[https://journals.ibbu.edu.ng/j\\_economics.php](https://journals.ibbu.edu.ng/j_economics.php)

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A Publication of the Department of Economics, Ibrahim Badamasi  
Babangida University, Lapai, Niger State, Nigeria

Printed by:

**MR SHI2 GRAPHICS PRINTS**

Ajib Pharmacy Junction, Minna – Niger State

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## Impact of COVID-19 on External Debt in Nigeria

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DOI: 10.5281/zenodo.6348997

### Abstract

*External debt is very important for the growth of any economy. It is basically used for augmenting the revenue of a country and to finance, sometimes, long-term capital project, for which domestic debt cannot be adequate. The COVID-19 pandemic came up with increase in government expenditure and fiscal deficit. This may not be unconnected to COVID-19 induced expenditure like buying of COVID-19 test kit, evacuation of Nigerian nationals in different parts of the World, to mention but a few. The current effort investigates the effect of COVID-19 on external debt in Nigeria. Vector Autoregressive Model was employed as the estimation technique after testing for the stationarity of the variables. It was found that past external debt, exchange rate and fiscal deficit are the major determinants of external debt in Nigeria. The study also found out that COVID-19 exerts a weak influence on external debt in Nigeria. The study therefore recommend the urgent need of the government in switching and streamlining discretionary spending in order to make resources available to fund the COVID-19-related economic effect.*

**Keywords:** COVID-19, External Debt, Vector Autoregressive

**JEL Classification:** F34, I18

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### 1. Introduction

Foreign borrowing is usually contracted to achieve two major macroeconomic objectives. These include increase in investment or consumption as well as financing temporary balance of payment deficit (Akinwunmi & Adekoya, 2018). As a result economy indulges in external borrowing to accelerate economic development and bridge the gap between national revenue and expenditure. Foreign borrowing leads to increase in growth rates of employment and income, technological progress through the improvement in domestic investment and income thereby leading to higher consumption and savings levels. This will consequently leads to increase in export and imports.

However, financing economic development through foreign borrowing imposes an instantaneous obligation of interest rates payments which has to be made in foreign exchange (Onikosi-Alliyu, 2015). To meet this contractual foreign debt service responsibility or obligation, external loans must be capable of generating additional foreign exchange through investment. Hence, excessive foreign loans or borrowing for inappropriate recurrent purposes will generate debt service obligations that will constrain future economic policy as well as economic growth (World Bank, 2020).

Moreover, Coronavirus disease, 2019 (COVID-19), is a newly identified virus that first made its appearance in a food market in Wuhan, China, in the late 2019. The virus has accounted for millions of confirmed cases globally, as well as deaths (WHO, 2020). The novel virus spreads rapidly across the globe, with confirmed increase in cases and fatality rate on a daily basis, as it is easily transmitted through air and human interaction. To curb the spread of this virus, severe measures such as compulsory lockdown and border closure were embarked on by the whole world (Ibn-Mohammeda, 2020). These measures have consequently disrupted the economic activities all over the globe. Hence, the challenges of COVID-19 on public health transcend into crucial economic crisis within a very short time.

The emergence of COVID-19 coupled with the fall in the price of oil crowned the fiscal challenges of the country through significant shortfall in revenue and induces COVID-19 expenditures. To cushion the effect of the pandemic Nigerian government came up with different fiscal and monetary policies through massive stimulus packages for her citizen such as, health costs, COVID-19 test kit, stimulus packages for businesses, and enlarged social support for susceptible households (Anderm et.al 2020)

Nigeria being an oil-dependent economy, one of the direct consequences or effect of COVID-19 is the reduction in federal government revenue through its impact on oil prices. Oil prices fell by 45 percent to around USD 30 per barrel in the first quarter of 2020 (Akanni & Gabriel 2020). Another factor contributing to persistent drop in international oil and gas prices during covid-19 pandemic was the sharp drop in global oil and gas consumption, which owned to the fact that major production and manufacturing activities in the world's major industrial capitals came to a halt as a result of the coronavirus pandemic, with the resulting economic implications on the increase.

The effect of COVID-19 on economy at the country level perspective is highly desirable and inevitable because of its importance to policy direction (Olubusoye and Ogbonna, 2020). While studies have dealt with notable areas like the effect of COVID-19 on macroeconomic issue like inflation, economic growth, investment etc, its effect on external debt had not been empirically tested, hence, one major pertinent question that needs to be answered is; what is the effect of the corona virus pandemic on external debt in Nigeria? Therefore the current effort is to empirically investigate the impact of COVID-19 pandemic on external borrowing in Nigeria using a quarterly data that spanned from 2010 through 2020 and to study the determinants of external debt in Nigeria during COVID-19 pandemic. To do this the paper is divided into five sections. Section one introduces the title, followed by literature review in



section two, section three explains the methodology, section four present the results analysis, while section five concludes the study.

## **2. Literature Review**

The theoretical literature on the determinants of external debt is mainly discussed under the theory of 'dual-gap' theory propounded by Harrod (1939), Domar (1946), Chenery and Strout (1966), and Bacha (1990). These models emphasized that the output gap, fiscal deficit and trade balance constraints are the major reason for contracting external debt. Empirical studies like Greenidge, Drakes and Craigwell (2010), Anwan, Rajun and Rashin (2015) Beyene and Kotoss (2020) among others have conducted research on the determinants of external debt in different countries. Greenidge, et.al. (2010) investigated the determinants of external public debt in the Carribean community using a panel and cointegration estimation technique. The study found out that the major determinants of external debt in Carrabian countries are output gap, export, real effective exchange rate, real cost of borrowing and fiscal gap. Anwan, *et. al.* (2015) also examined the determinants of external debt in Pakistan using Cointegration and Autoregressive techniques for the period of 1976 to 2010. They concluded that Fiscal deficit, nominal exchange and trade openness are the major determinants of external debts in Pakistan. In recent time, Beyene and Kotoss (2020) found that the major determinants of external debt are the savings-investment gap, fiscal deficit, trade deficit and debt service in Ethiopia.

In Nigeria, Adamu and Rasiah, (2016) investigated the determinants of external debt for the period of 1970 and 2013 using Cointegration and ARDL techniques. Their study concluded that oil price, gross domestic savings and external service payment are the major determinants of external debt in Nigeria. They also concluded that exchange rate and fiscal deficit contributes to external debt accumulation in Nigeria. In the same regard, Sa'ad, Umar, Waziri and Maniam, (2017), also conducted research on external debt determinants for the period of 1973 through 2017. They found out that only gross domestic product is significant in both the short run and long run analysis. The study also revealed that the coefficient of error correction was significantly different from zero. Moreover, researchers have key in into the study of the impact of COVID-19 since its emergence in the world. Ozili (2021) used a textual approach to analyse the impending COVID-19 global debt problem for low and medium income economies. According to the study, during the COVID-19 pandemic, the debt burden of low and middle-income nations increased to \$8.4 trillion by the end of 2020. The study recommends that multilateral organisations should allow impacted members to access their contribution money, support the G20 Debt Service Suspension Initiative, and advocate for debt relief. Geda (2021) demonstrated the socioeconomic impact of the COVID-19 pandemic on a tiny mineral-dependent African economy like Zambia through descriptive analysis. It focuses on GDP and sectoral GDP growth, employment, and the external sector in particular. The findings suggest that the recovery of the global economy is critical for small countries that rely on a single (or a few) key commodities for their growth and development. The study also showed that there is a shortage of fiscal headroom to cope with COVID 19's economic effects without causing macroeconomic

instability, such as indebtedness and the inability to service debt that has already been incurred.

Olamide and Maredza (2021) used the ARDL technique on time series data from 1990 to 2019 to study a pre-COVID-19 depiction of the current scenario in South Africa regarding the foreign debt-GDP relationship. The authors also discussed what was known about the debt-GDP concept prior to the COVID 19 epidemic. This is likely to act as a springboard for future research into South Africa's mounting debt during and after the pandemic. According to the findings, corruption, inflation, and external debt payment have negative effects on economic growth, but investment has a favorable impact. External debt had a beneficial short-term impact on growth but a detrimental long-term impact. As a result, they urge that, in addition to targeting tax evaders and avoiders for higher government revenue, public institutions be improved and strengthened. Akomolafe et.al (2020) studied the impact of COVID-19 on the economy of Nigeria using a historical approach. The demand and supply shocks were considered and the study found out that the new shocks caused by COVID-19 pandemic have caused a significant downturn of the economy in Nigeria. Adam et.al. 2020 estimated the economic cost of COVID-19 in Nigeria using a simulation approach. They concluded that during the lockdown Nigeria's gross domestic product suffered 34.1% loss due to COVID-19 from the services sector while agricultural sector suffered 13.1 per cent loss in output. Olubusoye and Ogbonna (2020) studied the impact of COVID-19 on some macroeconomic variables such as Oil-price exchange rate, all share index inflation and output growth using a simulation approach. They concluded that COVID-19 has negatively impacted on all the aforementioned variables. Olusanya *et al* (2020) studied the impact of COVID-19 and Nigeria economy and found out that COVID-19 is negatively related to macroeconomic variables. Also the country's budget estimate is also negatively affected, given the large changes between the budget assumptions and stance during the COVID-19 pandemic. Consequently, more than 50% of the country's budget would have to be funded by external borrowing, hence increasing the debt burden of Nigeria further.

Based on an examination of secondary information and the use of a discursive method, Ejiogu, Okechukwu, and Ejiogu (2020) explored the Nigerian government's fiscal response to the COVID-19 pandemic as well as the economic and social consequences. Their study is of the view that, increased borrowing to implement COVID-19-related economic and social initiatives has considerably reduced Nigeria's budgetary capacity. To them, some measures bring short-term economic respite to the poor and small enterprises, while other interventions and policy gaps have the propensity to have a large detrimental impact on firms, consumers, and unemployment. The researchers gave a detailed description of the Nigerian government's fiscal response to the COVID 19 outbreak, as well as the economic and social consequences of that response.

### **3 Methodology**

This study is to investigate the impact of COVID-19 on external debt in Nigeria. Quarterly data set spanning from 2010 to 2020 was used, and the data set for all the variables was obtained from Central Bank of Nigeria statistical bulletin various

issues except oil price obtained from World Development Indicator. The External Debt Stock is measured as a share of GDP, Oil Price measured as crude oil price per barrel, Exchange Rate measured as Official exchange rate (Exchange rate of Nigerian Naira to U.S. Dollar), External Debt service payment measured as debt service as a percentage of exports, Fiscal Deficit measured as Government fiscal deficit as a share of GDP, and Dummy variable with the quarter affected by COVID-19 captured as one while other periods were captured by zero. This study estimates the model by using a quarterly series data regression after testing for the unit root and cointegration status of the variables, the study employed Autoregressive Distributed Lag method of analysis to investigate the effect of COVID-19 on external debt. The study adapted the model of Adamu and Rasiah (2016). The empirical model for this study is therefore specified as:

$$exd = \alpha_0 + \alpha_1 oilp + \alpha_2 er + \alpha_3 edsp + \alpha_4 def + \alpha_6 dummy + \mu \dots\dots\dots 1$$

where *exd* is external debt stock, *oilp* refers to oil price, *er* stands for Exchange rate, *edsp* represent External debt service payments, *def* is Fiscal deficit, *Dummy* is dummy variable for COVID-19 such that  $oilp < 0, er, edsp, def > 0, \& cov > 0$

**4. Results**

*Unit Root Test Result*

The study employs the Augmented Dickey-Fuller’s unit root test to understand the properties of the data set and hence, choose appropriate method of analysis. The result is presented in Table 1:

**Table 1: Unit root test results**

Variable	At level	At First Difference	Critical Value	Order of Integration
LOG(EXD)	2.207695	-5.357259	-2.938987	I(1)
LOG(EDSP)	-1.736556	-6.699554	-2.941145	I(1)
LOG(DEF)	1.252877	-6.264286	-2.941145	I(1)
LOG(EXR)	-0.153822	-5.996695	-2.936942	I(1)
LOG(OILP)	-0.324579	-3.872002	-2.936942	I(1)

*Source: Authors Computation*

The result presented in Table 1 shows that all the variables are stationary at first difference i.e all variables are integrated of order 1. These results, therefore, justify the use of Vector Autoregressive method of estimation.

*Lag Length Selection*

The study moves further to test for the lag length of the variables. The result is presented in Table 2

**Table 2:: Lag Length Selection**

Lag	LogL	AIC	SC
0	13.82172	-0.368742	-0.063974
1	56.37782	-2.615017*	-2.266711*
2	56.49604	-2.567353	-2.175509
3	57.45529	-2.565151	-2.129768
4	57.51415	-2.514278	-2.035357

*Source: Authors Computation*

Using Akaike Information criterion the result indicates that the lag length of the variables is order one as presented in Table 2

*VAR Result*

The VAR result for external debt is presented in Table 3:

Table 3: VAR Result

	LOG(EXD)	LOG(EXR)	LOG(EDSP)	LOG(OILP)	DEF	DUMMY
LOG(EXD(-1))	0.933714 (0.04196) [ 22.2501]	0.070216 (0.04831) [ 1.45343]	0.551636 (0.41778) [ 1.32040]	-0.208465 (0.10022) [-2.08008]	-302.0029 (184.195) [-1.6395]	0.023782 (0.11047) [ 0.21528]
LOG(EXR(-1))	0.249439 (0.07784) [ 3.20465]	0.772977 (0.08961) [ 8.62630]	0.390957 (0.77490) [ 0.50452]	0.353627 (0.18589) [ 1.90235]	-429.6955 (341.648) [-1.2577]	0.155098 (0.20490) [ 0.75693]
LOG(EDSP(-1))	-0.010542 (0.01724) [-0.61132]	-0.040572 (0.01985) [-2.04369]	-0.045917 (0.17168) [-0.26746]	-0.010392 (0.04118) [-0.25233]	-114.7137 (75.6909) [-1.5155]	0.013516 (0.04540) [ 0.29775]
LOG(OILP(-1))	0.017804 (0.03318) [ 0.53667]	-0.096011 (0.03819) [-2.51387]	0.398361 (0.33028) [ 1.20614]	0.979772 (0.07923) [ 12.3662]	81.93900 (145.617) [ 0.56270]	-0.021692 (0.08733) [-0.2483]
DEF(-1)	6.55E-05 (3.8E-05) [ 1.72469]	-8.59E-05 (4.4E-05) [-1.96420]	-0.000382 (0.00038) [-1.01093]	-2.77E-05 (9.1E-05) [-0.30563]	0.006310 (0.16680) [ 0.03783]	0.000319 (0.00010) [ 3.19113]
DUMMY(-1)	0.039569 (0.05872) [ 0.67389]	0.022934 (0.06760) [ 0.33927]	0.048543 (0.58457) [ 0.08304]	0.628814 (0.14023) [ 4.48413]	34.47210 (257.731) [ 0.13375]	0.832653 (0.15457) [ 5.38674]
C	-0.695481 (0.37168) [-1.87117]	1.118623 (0.42789) [ 2.61429]	-4.188069 (3.70027) [-1.13183]	-0.464158 (0.88765) [-0.52291]	4694.895 (1631.42) [ 2.87780]	-0.707918 (0.97844) [-0.7235]
R-squared	0.993058	0.969178	0.504860	0.905400	0.760941	0.636495
Adj. R-squared	0.991833	0.963739	0.417482	0.888706	0.718754	0.572347

Source: Authors Computation

The result indicates that the past realization of external debt is associated with 93.37 per cent increase in external debt. Going by the t-statistic the effect is highly significant at 5 per cent significant level. External debt service payment (EDSP) has a negative impact on external debt. This simply means increase in external debt service will lead to non-association with accumulation of external debt, though the impact is not significant. In addition the coefficient of exchange rate is significantly positive as expected. A one percent increase in exchange rate will lead to about 24.94 percent increase in external debt. Oil price also exerts a positive insignificant impact on external debt. This simply means that a percentage increase in the price of oil will lead to increase in external debt. This is contrary to apriori expectation. The differential Intercept coefficient of COVID-19 is positive but statistically not significant. The coefficient of determination indicates that 99.2 per cent variations were explained by the dependent variables. F-Statistic shows that the model is of good fit.

*Diagnostic Test*

Table 4: Residual Serial Correlation Test

VAR Residual Serial Correlation LM Tests		
Lags	LM-Stat	Prob
1	47.90900	0.0885

Probs from chi-square with 36 df.

Source: Authors Computation

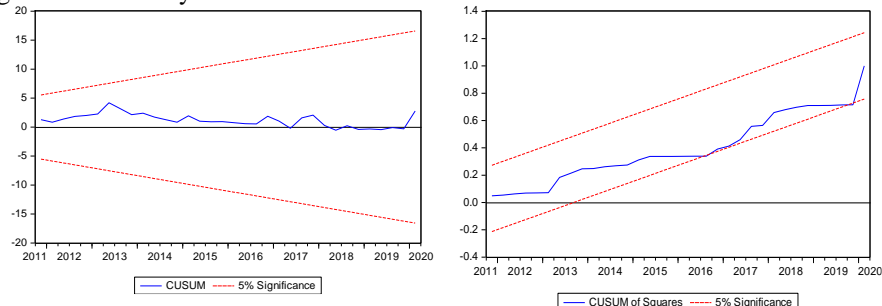
Table 4 shows the Residual Correlation LM test result. This is used to test for absence or presence of serial correlation in the model. Null hypothesis of no serial correlation is accepted as the probability value is greater than 0.05 level of significance. We then conclude that error terms are not serially correlated and therefore, there is absence of serial correlation among variables in the model.

Table 5 Heteroskedasticity Test

VAR Residual Heteroskedasticity Tests		
Chi-sq	df	Prob.
242.0488	210	0.0639

Source: Authors Computation

The Heteroskedasticity Test presented in Table 5 confirms that the model is stable given the Stability Test Result



The result of the stability tests which is based on CUSUM and CUSUM squared stability test is presented in figure 2 and 3. Both graphs indicated that the model passes the stability test and hence the residual is stable. This is because the trend line is in between the two critical lines as seen in the figure 2 and 3 above.

The variance decomposition is presented in Table 6. The result shows that in the short run external debt contributes 100 per cent to itself while all other variables are strongly exogenous. However, the contribution of external debt continues to decrease in the long run. By the tenth period, the contribution of external to itself reduced to 48.53 percent. Log of exchange rate also contributes to external debt by 3.99 per cent

in the short run to variable and it continues to increase in the long run. In fact, the percentage of contribution increased to 26.10 in the tenth period. This simply corroborates the positive influence of exchange rate on external debt in Nigeria. All other variables including COVID-19 indicate weak influence on external debt in Nigeria.

**Table 6 Variance Decomposition of log of EXD**

Period	S.E.	LOG(EXD)	LOG(EXR)	LOG(EDSP)	LOG(OILP)	DEF	DUMM
1	0.054	100.000	0.0000	0.0000	0.0000	0.000	0.0000
2	0.074	89.7958	3.9885	1.6101	0.0160	4.218	0.3703
3	0.090	78.9816	9.0527	4.9683	0.0109	5.479	1.5072
4	0.105	68.9439	14.4652	6.9887	0.1115	6.529	2.9614
5	0.118	60.7848	19.3088	8.1945	0.6108	7.110	3.9899
6	0.132	54.9305	23.2542	8.6132	1.8198	7.175	4.2062
7	0.145	51.2476	26.096	8.3728	3.8692	6.682	3.7312
8	0.159	49.3186	27.603	7.5985	6.6128	5.763	3.1026
9	0.176	48.6033	27.573	6.4728	9.5893	4.732	3.0282
10	0.196	48.5386	26.064	5.2371	12.1699	3.975	4.0143

*Source: Authors Computation*

**Discussion of Result**

The result of exchange rate is in line with studies like as Adam and Rasiah (2016) and Anwan et.al (2015) that showed that exchange rate is an increasing function of external debt. The coefficient of the fiscal deficit conforms to the apriori expectation by being positive and it has significant impact on external debt at 10 per cent significant level. This shows that a percentage increase in fiscal deficit will lead to about 0.00006 percent increase in external debt. This results corroborates the study of Adamu and Rasiah (2016), Anwan et. Al and Greenidge et al (2010). This result clearly supports the fact using external borrowing to finance fiscal deficit would always lead to accumulation of external debts due to extra outflow from the country’s increase in debt repayment service. On COVID-19 the differential coefficient was an increasing but insignificant function of external debt. This effect shows that the increase in external debt may not be connected to COVID-19 in Nigeria.

**5. Conclusion and Recommendation**

This study empirically studies the determinants of external debt and the effect of COVID-19 on external debts in Nigeria using a quarterly data set from 2010-2020. The study adopted VAR model as the best estimation method after testing for unit root and orders of integration. Based on the findings, the study concluded that past external debt stock fiscal deficit, exchange rates are the major determinants of

external debt accumulation in Nigeria. The study also concluded that COVID-19 has no significant contribution to external borrowing in Nigeria. The policy implication of these findings is that the policy makers should ensure that while solving the problem of COVID-19, close monitoring and transparency should be ensured on the external borrowing. In addition, the study suggested that the government should restructure and consolidate discretionary spending in order to free up resources to fund the COVID-19-related economic effect. The domestic post-pandemic policy should also focus on ensuring the confidence of investors by restoring fiscal sustainability.

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## **Telecommunication Infrastructure Investment and Economic Growth Nexus: Evidence from Nigeria**

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DOI: 10.5281/zenodo.6349118

### **Abstract**

*This study analyzes the nexus between telecommunication infrastructure investment and economic growth in Nigeria using time series data for the period of thirty-nine (39) years (1981-2019). In analyzing the data, the study used Autoregressive Distributed Lag (ARDL) approach and Granger Causality Test. The results reveal that telecommunication investment and telecommunication revenue exert a positive impact on economic growth in both long run and short run. The Granger causality analysis divulges the existence of a bidirectional causality between telecommunication investment and GDP, telecommunication revenue and GDP as well as telecommunication revenue and telecommunication investment. Furthermore, there is no causality between teledensity and the other variables; GDP, telecommunication investment and telecommunication revenue. The study therefore, recommends that government should give more licenses to GSM operators, provide concessionary fiscal incentives and aggressively promote investment in fixed telecommunication assets.*

**Keywords:** Telecommunication, Investment, Growth, Teledensity, Nexus

**JEL Classification:** L96, R42, O47

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### **1. Introduction**

The telecommunication sector in Nigeria is one of the fastest-growing sector, this is due to the government's deregulation policy in the year 2000 (Sadiq, Oyelade & Ukchukwu, 2011). The development of the sector in Nigeria had been a gradual process since independence. The sector in 1960 was under the jurisdiction of the Federal Government-owned Nigerian Post and Telecommunications (P&T) with only 18,724 telephone lines (Ndukwe, 2003). In the early 1980s, the Nigerian External Telecommunications (NET) was established to provide external communication services. Following the rising demand for commercialization of telecommunication services, the federal government merged NET and P&T's telecoms unit in 1985 to establish the Nigerian Telecommunications Limited (NITEL), which was given full responsibility for addressing the country's telecommunications needs. Even at this time, the telephone system was unreliable,

crowded, costly, and unpleasant to customers. Regrettably, NITEL, which had a monopoly in the market for more than a decade could not meet the growing demand for telecommunication services by Nigerians. In 1992, the sector was partially deregulated with the establishment of the Nigerian Communication Commission (NCC) saddled with the responsibility of issuing a license to private telephone operators (Ajiboye, Adu & Wojuaye, 2007). With the restoration of democracy in 1999, the nation's telecommunications industry was freed and fully deregulated, as a result it grows in leaps and bounds.

The telecommunication sector in Nigeria has no doubt grown phenomenally ever since, mobile cellular subscriptions surged from 0.03 per 100 people in 2000 to 83 per 100 people in 2016, and mobile cellular subscriptions went from 30000 to a staggering 154.3 million users (World Bank Development Indicators, 2019). Furthermore, the percentage of people who use the internet have climbed from 0.06 percent in 2000 to 25.7 percent in 2016. While these achievements speak in volumes, subscribers who pay the bills running into trillions of naira via call cards and others are however, still hankering for improved services and lower tariffs, better network, affordable charges just to mention but few. Telecommunications has pervasive economy-wide effects on economy, most evidently, reducing transaction cost, increasing total factor productivity (TFP) of the private sector, and increasing the efficiency of interaction and coordination, hence influencing the success of economic activities (Belaid, 2002; Rickets, 2002).

It has been argued that telecommunication investments have important spillovers and create externalities on economic growth, captivatingly a considerable number of studies on Nigeria attempted to identify telecommunication infrastructure as an essential component of the economic infrastructure, fostering productivity and economic growth. Most of these studies found a positive and significant impact of telecommunication infrastructure on Nigerian economic growth (Lola, 2011; Onakoya, Tella & Osoba, 2012; David, 2013; Akanbi, Ogunleye, Akanbi & Isah, 2013; Isa & Adeniji, 2015; Oyeniran & Alliyu, 2016; Okon & Abel, 2016). However, the major deficiency in the studies is lack of a precise causal mechanism between telecommunication infrastructure and economic growth, which is usually assumed rather than explored. This study fills the gap by disentangling the direction of causality between telecommunication infrastructure investment and economic growth in Nigeria. This is another empirical concern yet to be study. Given the foregoing, this study is set to analyze the nexus between telecommunication infrastructure investment and economic growth in Nigeria within the framework of the Autoregressive Distributed Lag (ARDL) estimation technique and the Granger causality test. The findings of this study will therefore contribute to knowledge and serve as reference material to potential academic researchers. It will hopefully help the appropriate authorities to take actions that will further intensify investment in the Nigerian telecommunication industry.

The paper is structured into five sections including this introduction, section two reviews related literature, section three deals with methodology, section four is the results and discussion of findings while section five is the conclusion and recommendations.

## **2. Literature Review**

Previous studies had investigated the relationship between telecommunication infrastructure and economic growth. Ding and Haynes (2006) investigated the impact of telecommunication infrastructure on economic growth in China from 1986 to 2002. The study revealed that telecommunications infrastructure has a significant impact on regional economic growth in China. The results further indicate that the telecommunications investment is subject to diminishing returns, suggesting that regions at an earlier stage of development are likely to gain the most from investment in telecommunications infrastructure. Lola (2011) investigated the effects of telecommunication infrastructural development on the economic growth of Nigeria from 2001 to 2008. The study employed the Ordinary Least Square method (OLS) and found that GSM connected lines (GSM) and Tele-density (TELED) which proxy telecommunication infrastructure have a significant positive effect on the gross domestic product (GDP). Onakoya *et al.* (2012) empirically analyzed the impact of telecommunications infrastructure investment on economic growth in Nigeria from 1970 to 2008 and a three-stage least squares (3SLS) was deployed. The study found that telecommunications infrastructural investment has a significant impact on economic growth. The results also show a bi-directional causal relationship between telecommunications infrastructure and economic growth. The study recommended the need for a more effective telecommunications infrastructure that will further impact on economic growth in Nigeria. David (2013) studied the impact of telecommunication investment on economic growth in Nigeria from 1980 to 2010. Ordinary Least Squares techniques, Johansen Juselius cointegration technique and error correction model were employed and the study found that the labour employed, capital stock, real investment in telecommunication and electricity supply have a statistically significant effect on economic growth in the long run and short run in Nigeria. The study recommended that the Promotion of investment policy targeted at telecommunication infrastructures to reduce the digital divide rate in Nigeria is necessary.

Akanbi *et al.* (2013) investigated the impact of telecommunication service expansion on economic growth in Nigeria, Ordinary Least Squared (OLS) regression methods were used and the result showed that there exists a positive relationship between economic growth and telecommunication (GSM) variables (teledensity, telecommunication contribution to GDP, private investment in telecoms and mobile subscribers) in Nigeria. The study recommended the need for government to implement policies that could lead to continual expansion in teledensity rate through the provision of a supportive infrastructural base in the sector. Isa and Adeniji (2015) used an autoregressive distributed lag model (ARDL) estimation technique to examine the relationship between telecommunication infrastructure and economic growth in Nigeria from 2002 to 2014. The study revealed that a long-run relationship exist between telecommunication infrastructure and economic growth in Nigeria. The study recommended that government should implement policies that will enhance the development of the telecommunication sectors and complementary factors such as electrification.

Oyeniran and Alliyu (2016) employed the autoregressive distributed lag (ARDL) bounds testing approach in their study to examine the effect of investment in telecommunication infrastructure on economic growth in Nigeria from 1980 to 2012. The study found the presence of a long-run relationship between the dependent and all the explanatory variables and that foreign direct investment in information and communication technology is more effective in improving and raising economic growth in Nigeria than government investment. The study recommended the need for the Nigerian government to increase its expenditure on telecom as well as attract more foreign investment in telecommunication to boost the economic growth of the nation. Okon and Abel (2016) analyzed the relationship between telecommunication infrastructural development and the economic growth of Nigeria in the period after deregulation. The Ordinary Least Square (OLS) technique was used and the study revealed that telecommunication has significantly influenced the country's economy by increasing market access and reducing distribution costs. The study recommended the need for government to issue more licenses to GSM operators to allow for healthy competition among the GSM operators. Pradhan, Arvin, Nair, Mittal & Norman (2017) evaluated the causal link between telecommunication infrastructure, foreign direct investment and economic growth in the Asian-21 countries from the period of 1965 to 2012. The study used a panel vector auto-regression model to reveal the nature of Granger causality and found that telecommunications infrastructure/usage, FDI, and economic growth appeared to be cointegrated and that FDI and telecommunications infrastructure/usage are general long-run causes for economic growth. However, the short-run causality results revealed a wide range of short-run adjustment dynamics between the variables including the possibility of feedback between them in several instances.

Matalqah and Warad (2017) examined the impact of telecommunication infrastructure investment on economic growth in the 12 Arab countries from 1996 to 2015. The study found evidence that telecommunication infrastructure investment has a positive and significant effect on economic growth in non-oil producing countries in the long-term while in oil-producing countries no impact was noticed. The study recommended the need for government to review the utilization of telecommunication services to be more efficient in the business and social environment. Sharif (2017) studied the relationship between telecommunication and economic growth in Bangladesh, India, Pakistan, Srilanka and Nepal as members of SAARC countries from 1975-to 2015. Ordinary Least Square method (OLS) regression model was used and the study reveals that the telecommunication industry had a strong and positive relationship with economic growth. The study concluded that the positive relationship between telecommunication and economic development indicates that higher investment in economic development will enhance economic development and that telecommunication help to minimize the digital and economic gap between developed countries and SAARC members. Johnson, Olabisi and Folake (2021) investigated the impact of telecommunication on economic growth in Nigeria from 1999 to 2018. The study used fully modified ordinary least squares techniques, cointegration and error correction model and found that teledensity and telecommunication sector revenue had an insignificant impact on Gross Domestic Product, while Investment in telecommunication Sector had a significant impact on

Gross Domestic Product in Nigeria. The study recommended the need for government to expand teledensity and the interests of the consumer of telecommunication services should be protected.

**3. Methodology**

This study used secondary data to analyze the relationship between telecommunication infrastructure investment and economic growth in Nigeria. An annual time series data for Nigeria from 1981 to 2019 as sourced from the Central Bank of Nigeria Statistical Bulletin, the World Bank World Development Indicators (WDI) and the World Telecommunication Union Telecommunication/ICT Indicators were employed. Since this research involves time series macroeconomic variables, it's necessary to check for unit root in each of the variables. The study used the Augmented-Dickey Fuller (ADF) and Philip-Perron (PP) test for stationarity test.

The model of the study is used to analyze the relationship between telecommunication infrastructure investment and economic growth in Nigeria. Therefore, the model is specified following the lead from Sharif (2017). Our model is stated below.

$$GDP = f (TELINVEST, TELREV, TELD) \dots\dots\dots 1$$

Where GDP denotes gross domestic product which is a proxy for economic growth, TELINVEST stands for telecommunication infrastructure investment measured by the annual investment in telecommunication services, TELREV is the telecommunication revenue measured by the revenue from all telecommunication services, TELD represents telecommunication density measured by the number of telephones per 100 inhabitants, including both fixed-line and mobile subscribers.

For econometric analysis, equation (1) is restated as thus:

$$GDP = \beta_0 + \beta_1 TELINVEST + \beta_2 TELREV + \beta_3 TELD + \mu_t \dots\dots\dots 2$$

The semi log-linear specification of equation (2) is expressed as:

$$LGDP = \beta_0 + \beta_1 LTELINVEST + \beta_2 LTELREV + \beta_3 LTELD + \mu_t \dots\dots\dots 3$$

The a priori expectation is that a positive relationship exists between the independent variables and the dependent variable. In mathematical terms, we expect  $\beta_1, \beta_2, \beta_3 > 0$ .

An ARDL representation of equation (3) above is specified in equation (4) below:

$$\begin{aligned} \Delta LGDP_t = & \alpha + \sum_{i=1}^q \beta_{i,1} \Delta LGDP_{t-i} + \sum_{i=0}^q \beta_{i,2} \Delta LTELINVEST_{t-i} + \\ & \sum_{i=0}^q \beta_{i,3} \Delta LTELREV_{t-i} + \sum_{i=0}^q \beta_{i,4} \Delta LTELD_{t-i} + GDP_1 LGDP_{t-1} + \\ & GDP_2 LTELINVEST_{t-1} + GDP_3 LTELREV_{t-1} + GDP_4 LTELD_{t-1} + \mu_t \dots\dots\dots 4 \end{aligned}$$

The ECM representation takes the following form:

$$\begin{aligned} \Delta LGDP_t = & \alpha + \sum_{i=1}^q \beta_{i,1} \Delta LGDP_{t-i} + \sum_{i=0}^q \beta_{i,2} \Delta LTELINVEST_{t-i} + \\ & \sum_{i=0}^q \beta_{i,3} \Delta LTELREV_{t-i} + \sum_{i=0}^q \beta_{i,4} \Delta LTELD_{t-i} + ECM_{t-1} \dots\dots\dots 5 \end{aligned}$$

Where ECM is the error correction version of the ARDL model and all other variables are as explained under equation (2).

The study employed the Autoregressive distributed lag estimation technique (ARDL) to examine the linkage between telecommunication infrastructure investment and economic growth in Nigeria. The ARDL procedure can be employed when the variables are integrated of order zero. The procedure is also relatively more efficient in small or finite sample data sizes as is the case in this study (Giles, 2013). The ARDL cointegration procedure involves several stages. In the first stage, the stationary properties of time series variables were examined by using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The second stage involves testing for the existence of a long-run relationship between the dependent and independent variables. The last step of an ARDL procedure is to obtain the short-run dynamic parameters by estimating an error correction model associated with the long-run estimates.

Finally, our approach follows Granger (1969), who proposed a time-series data based approach to determine causality between economic variables. A question that frequently arises in time series analysis is whether or not one economic variable can help forecast another economic variable. In the Granger-sense therefore, a time series  $x$  is a cause of  $y$  if it is useful in forecasting  $y$ . More precisely, variable  $X$  is said to Granger-cause another variable,  $Y$ , if the current value of  $Y$  ( $y_t$ ) is conditional on the past values of  $X$ .

**4. Results**

*Descriptive Statistics*

**Table 1: Summary Statistic of Variables**

Statistics	GDP	TELINVEST	TELREV	TELD
Mean	27568.69	143.4605	799.2518	0.408799
Median	6102.422	157.64	854.17	0.326851
Maximum	127736.8	238.47	1369.17	1.184223
Minimum	144.8312	44.9	156.8	0.071725
Std. Dev.	37733.05	58.12827	447.915	0.283057
Skewness	1.279753	-0.36888	-0.107389	1.197249
Kurtosis	3.322305	1.772077	1.38955	3.63539
Jarque-Bera	10.53701	3.249135	3.179493	9.717458
Probability	0.005151	0.196997	0.123718	0.00776
Sum	1047610	5451.5	30371.57	15.53438
Sum Sq. Dev.	5.27E+10	125019.1	7423231	2.964477
Observations	38	38	38	38

*Source: Authors' computation*

The descriptive statistics in Table 1 indicate that the mean of GDP is 27568.69, the standard deviation is 37733.05, the highest and lowest values are 127736.8 and 144.8312 correspondingly. Then its coefficients of skewness and kurtosis are 1.279753 and 3.322305 respectively. It indicates that GDP is positively skewed and the distribution is leptokurtic (a distribution with kurtosis greater than 3). The result is not normal due to the significant probability value of the Jarque-Bera.

The mean of TELINVEST has been 143.4605 with a standard deviation of 58.12827. The highest rate is 238.47 and the least is 44.9. The coefficients of skewness and kurtosis are -0.36888 and 1.772077 respectively. This shows the distribution is negatively skewed and platykurtic. TELINVEST is normally distributed due to the insignificance of the probability value of Jarque-Bera. TELREV is negatively skewed and the distribution is platykurtic, it is on average 799.2518 with a standard deviation of 447.915. The highest value is 1369.17 while the least value is 156.8. The distribution of TELREV is normally distributed. Lastly, TELD is on average 0.408799 with deviations of 0.283057. The least value of TELD reported is 0.071725 while the highest value is reported at 1.184223. The distribution of FOREV is not normally distributed.

*Unit Root Test Result*

The results presented in Table 2 revealed that the Augmented Dickey-Fuller test shows that LGDP and LINVEST are stationary at first difference while LTELREV and LTELTD are stationary at level. Similarly, from the Philips Peron test, LGDP and LTELINVEST are stationary after the first difference whereas LTELREV and LTELTD are stationary at level values. The conclusion of the unit root result shows that the variables are integrated of either order zero, i.e. I(0), or order one, i.e., I(1). The combination of both I(0) and I(1) series provide a strong reason for the application of the ARDL bound testing technique.

Table 2: Summary of Unit Roots Test Results

		ADF	PP
LGDP	Level	-0.1443	-1.1444
	1 <sup>st</sup>	-3.1801**	-3.0962**
LTELINVEST	Level	-2.8926	-0.9016
	1 <sup>st</sup>	-4.2506***	-4.0366***
LTELREV	Level	-3.6561***	-3.2594**
	1 <sup>st</sup>	-6.4428***	-4.4079***
LTELTD	Level	-3.9784**	-1.1914***
	1 <sup>st</sup>	-3.1083**	-4.2722***

Note: \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% respectively  
 Source: Authors' computation

*Bound Test for Cointegration*

The results of the bound test approach for cointegration is presented in Table 3. The rule of thumb is that, if the F-statistics is greater than the 1% and 5% upper limit, we accept the alternative hypothesis and conclude the existence of cointegration. The test result indicates that the value of the F-statistics (4.052205) is greater than the upper and lower critical values of 3.67 and 2.79 at 5 percent level of significance. We therefore, reject the null hypothesis and infer the presence of cointegration amongst the variables.

Table 3: ARDL Bounds Test

F-Statistics	4.052205	4
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Significance	Critical Value Bounds	
	I0 Bound	I1 Bound
10%	2.37	3.2
5%	2.79	3.67
2.50%	3.15	4.08
1%	3.65	4.66

Source: Authors' computation

#### Result of the Estimated Long-Run Coefficients of the ARDL

This section contains the results of long run relationship among the variables. The results are summarized and presented in Table 4.

Table 4: Dependent Variable: LGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTELINVEST	0.719878	0.961455	3.748738	0.0046
LTELREV	3.560632	0.745044	4.779092	0.0000
TELD	-0.671628	0.485018	-1.384749	0.1767
C	-9.838505	1.498741	-6.564512	0.0000

$R^2 = 0.99$ ; AIC = -1.962, SBC = -1.654, HQC = -1.855; DW = 2.077, ADJ.  $R^2 = 0.99$ ; F-Stats = 4225.627, P (F-Stats) = 0.000000.

Source: Authors' computation

The result as indicated above reveals that the coefficient of determination ( $R^2$ ) of the model is 0.99, indicating that approximately 99 percent of the variations in economic growth are explained by variations in LTELINVEST, LTELREV and TELD. The F statistic value of the long-run model is also significant and implies that all the dependent variables included in the model are jointly significant. In the result, there exist a positive and significant relationship between telecommunication infrastructure investment and economic growth in Nigeria in the long run. The result indicates that holding all other variables constant, if telecommunication infrastructure investment in Nigeria increases by one percent, GDP will also increase by about 0.719878 percent. This finding implies that an increase in telecommunication infrastructure investment propels the economic growth of Nigeria. This result is consistent with the work of Oyeniran & Alliyu 2016, Sharif (2017), Johnson, Olabisi & Folake (2021). Nevertheless, the result is contrary to the observations of Olalekan (2013).

In addition, telecommunication revenue has a positive and significant impact on economic growth in Nigeria in the long run. This shows that a one percent increase in the telecommunication revenue leads to about 3.560632 percent increase in GDP provided other variables are kept constant. This finding implies that an increase in telecommunication revenue has the capacity of increasing economic growth. The finding is similar to the work of Sharif (2017), Johnson, Olabisi & Folake (2021). Finally, teledensity has an insignificant negative impact on economic growth in Nigeria. One percent increase in teledensity leads to about 0.671628 percent decrease in Gross Domestic Product in Nigeria provided other factors are kept constant. It is expedient to note that the result of a negative and statistically insignificant impact of teledensity on economic growth is not strange or novelty in the Nigerian economy because teledensity is still very low in rural areas to permit an overall boost in economic growth in Nigeria.



*Result of the Estimated Short-Run Coefficients*

The error correction term (ECT) explains how quickly or slowly in which the relationship is restored to its equilibrium path. The coefficient is expected to be negative and must be statistically significant. A highly significant ECT (-1) provides proof of the existence of a stable long-run relationship. The short-run result reveals that one percent change in telecommunication infrastructure investment in the short-run will lead to 0.094162 percentage change in economic growth. Also, one percent change in telecommunication revenue will lead to 0.020849 percent change in economic growth. The result further shows that one percent change in teledensity will lead to 0.046299 percent decrease in economic growth. The results are significant as indicated by their probability values except for teledensity. The estimated coefficient of the error correction term is -0.128136. This suggests a relatively low speed of adjustment to any disequilibrium in the short run. The negative value of the ECM coefficient confirms that there is disequilibrium in the short run which the set of variables in the model is trying to correct in the long run.

Table 5: Estimated Short-Run Coefficients of the ARDL Model

Dependent Variable: LGD				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTELINVEST)	0.094162	0.145588	3.64677	0.0029
D(LTELREV)	0.020849	0.272485	3.46515	0.0095
D(TELD)	-0.046299	0.129258	-0.35819	0.7228
CointEq(-1)	-0.128136	0.029246	-4.38133	0.0001

Source: Authors' computation

*Result of the Granger Causality Test*

According to Table 6, the results suggest a bidirectional causality running from LTELINVEST to LGDP. This is because the respective probability values of (0.0125, 0.0017), are below the threshold of determination (0.05). This implies that telecommunication infrastructure investment granger cause economic growth and vice versa. Similarly, a bidirectional causality running from LTELREV to LGDP with probability values of (0.0246, 0.0122) is found. This means that telecommunication revenue granger cause economic growth and vice versa. Additionally, a bidirectional causal relationship running from LTELREV to LTELINVEST was found. This is because the respective probability values of (0.0161, 0.0397) are below the threshold of determination (0.05). This implies that granger causality runs from telecommunication revenue to telecommunication investment and vice versa.

However, there is no evidence of causality from LTELD to LGDP, LTELD to LTELINVEST, LTELD to LTELREV and vice versa. This is due to the respective probability values of more than 0.05. It clearly indicates that there exist no causal relationships running from teledensity to economic growth, teledensity to telecommunication investment, teledensity to telecommunication revenue and vice versa.

Table 6: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
LTELINVEST does not Granger Cause LGDP	36	3.34667	0.0125

LGDP does not Granger Cause LTELINVEST		4.68681	0.0017
LTELREV does not Granger Cause LGDP	36	4.15573	0.0246
LGDP does not Granger Cause LTELREV		4.79827	0.0122
LTELD does not Granger Cause LGDP	36	0.60895	0.1503
LGDP does not Granger Cause LTELD		1.23200	0.1943
LTELREV does not Granger Cause LTELINVEST	36	4.41342	0.0161
LTELINVEST does not Granger Cause LTELREV		3.76399	0.0397
LTELD does not Granger Cause LTELINVEST	36	0.74779	0.4534
LTELINVEST does not Granger Cause LTELD		0.55190	0.2814
LTELD does not Granger Cause LTELREV	36	1.85933	0.3219
LTELREV does not Granger Cause LTELD		1.23062	0.1772

Source: Authors' computation

#### Post Estimation Diagnostics Test

To ensure the adequacy of the model, as well as the reliability of the results, a series of post-estimation diagnostic tests were carried out on the selected ARDL model.

Table 7: Results of the Diagnostics Tests

Normally test			
JarqueBera	0.435473	Prob.	0.704165
Breusch-Godfrey Serial Correlation LM Test			
F-statistics	0.189854	Prob. F(2,27)	0.8282
Breusch-Pagan-Godfrey Heteroscedasticity Test			
F-statistic	0.930543	Prob. F(8,29)	0.4881

Source: Authors' computation

From the result, the Breusch-Godfrey Serial Correlation LM test shows that the F statistics value of 0.189854 (corresponding to a p-value of 0.8282) is insignificant, thus confirming the presence of no serial correlation. For the Breusch-Pagan-Godfrey test above, the null hypothesis of no heteroscedasticity in the residual is accepted, since the probability of its F-statistic value is 0.4881, which is greater than the 5% level, hence concluding that the model is free from the problem of heteroscedasticity. Finally, the test for normality of residual was carried out using the popular Jarque-bera statistics. The normality test testified that the model is normally distributed. This has resulted from the fact that the probability value of the Jarque-Bera is not statistically significant even at 10% level of significance.

To determine the stability of the estimated ARDL model within the context of the coefficients of the long run and the short run relating to the link between telecommunication infrastructure investment and economic growth, the researchers use the Cumulative Sum of Recursive Residuals (CUSUM) and the Cumulative Sum of Squares (CUSUMQ). Closer scrutiny of CUSUM depicts that the model and the estimated parameters are stable, given that the graph moves within the 0.05 critical lines. The CUSUMSQ also shows that the model is stable and confirms the stability of the coefficients, given that the blue line veers within the two red lines indicating 5% level of significance, although there was divergence in 2003, but was restored in 2005.

Figure 1

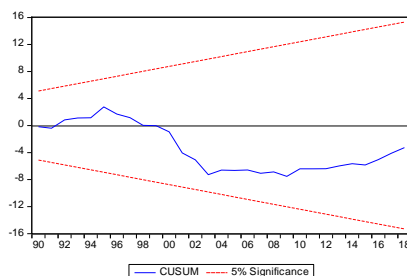
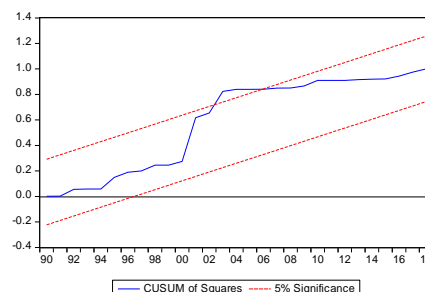


Figure 2



## 5. Conclusion and Recommendations

The conclusion emanating from the above research findings is that telecommunication infrastructure investment and telecommunication revenue have statistically significant impact on economic growth in Nigeria both in the short run and long run and a cointegration exist among the variables, therefore the telecommunication sector is fundamental and a prerequisite to the attainment of sustainable development in Nigeria.

Therefore, this study recommends that the government of Nigeria should give more licenses to GSM operators to allow for healthy competition, and further concessionary fiscal incentives should be provided to the investors. This will help in increasing the telecommunication revenue. In addition, the Nigerian Communication Commission should defend the interests of telecommunication customers by encouraging competitive pricing. Lastly, a strict policy should be in place to aggressively promote investment in fixed telecommunication assets. This is because more telecommunication assets can increase aggregate output hence fostering economic growth.

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## **Empirical Analysis of the Role of Money Market Instruments on Economic Growth in Nigeria: 1994-2018**

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DOI: 10.5281/zenodo.6349149

### **Abstract**

*This study investigate the role of money market on economic growth in Nigeria, from 1994 to 2018. It employed the Autoregressive Distributive Lag (ARDL) Bound Testing approach and the result shows that there is long-run relationship among the money market instruments. It also revealed that the money market variables have negative but significant impact on economic growth both in the long-run and in the short-run, except for commercial paper which has positive impact on economic growth, though not significant. This study therefore recommended that since treasury certificate has proven to have the most influential impact on economic growth, central bank should give priority to it. Furthermore, the players, which are the savers and the investors should be encouraged to invest more on the treasury certificate by making it more attractive through appropriate and relevant incentives. The monetary authority should introduce innovative policies into the Money market for it to contribute positively and significantly to economic growth. In addition, interest rate as a major determinant in Money market operations should be well positioned in order for it not to tilt in favour of one of the players in the market thereby discouraging other players from investing in the instruments.*

**Keywords:** Money Market, Economic Growth, Interest Rate, ARDL

**JEL Classification:** E43, E51, F43

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### **1. Introduction**

Financial markets are vital components of the financial system that play important role in the mobilization of financial resources for long term investment. A well functioning financial market will be critical for the promotion of global integration and economic growth and development. The Money market as the other financial market in the financial system is a market for short term debt instruments. Money market primarily exist as a means of liquidity adjustment, in other words, it provides the mechanism for short-term funds of less than one year. Surplus funds are lent out to the market for varying periods, from over night, to a full day, and a fortnight to three months (Okoroafor, Magaji & Eze, 2018).

However, the focus of this study is on Money market. From the foregoing, Money market forms an integral part of the financial market where security and financial assets with high liquidity and short-term maturity periods are transacted. Money as a means of exchange, becomes a conduit for borrowing and lending very liquid assets; and the Money market becomes the best place to invest liquid assets in every economy including Nigeria. Magaji, Micheal & Anthony (2018) explained that Money markets play a crucial role in banks' liquidity management and the transmission of monetary policy, control of money supply and demand-pull inflation, and determination of short-run interest rates. Ikpefan and Osabuohien, (2012) also posited that the event of the Money market smoothens the progress of monetary intermediation and boosts lending to the economy. Money market instruments include Treasury bills, Commercial papers, Banks' acceptances, Deposits, Certificates of Deposit, Bills of Exchange, and Repurchase Agreements. These money market instruments are seen as cash equivalent because they are highly liquid short-term debt securities and they can be easily sold in the market at a low cost. Treasury bills offer private investors zero or minimal credit risk and the interest earned is not subject to any form of withholding tax. However, Magaji (2000) advocates for zero interest charges to achieve economic growth and development by African countries. According to Magaji & Adamu (2009) there is a need for uniform African single currency for money market to impact on economic growth and development. We have seen that Money market, provides ample opportunities for investors and corporate financial managers with surplus funds to lend at short term, thereby meeting the demands of borrowers who are in need of temporary finance for liquidity and can offer an acceptance claim to money (Omelomo, 2001). The question remains; how has all the transactions in Money market impacted positively on the Economic growth of Nigeria? Has the Money market operation translated into the growth of output of goods and service? How has the Money market instruments traded by investors and corporate financial managers, impacted on the Economic growth of the country? Despite the vast opportunities that are in the Money market and the operations of the money market instruments, there is still gap in the reality of its impact in the economy.

Several studies have been done which try to look at the relationship between Money market instruments and Economic growth in Nigeria such as Eze and Mansi (2017); Okoro, Ogoma and Ume (2018); Uruakpa (2019); Orugun, Saliu and Ajayi (2020) and Eze and Krokeme (2021) as well as the study of Andrew and Deborah, (2015). Mohammed (2014) suggested that further improvement in the industry is needed as it is characterized with operational inefficiency, low capital base, the absence of efficient and cost effective system for transferring ownership of securities in a repurchase transaction of the secondary Money market (where investors buy and sell securities they already own; they exchange with each other than with issuing entity; it is also known as stock market); also the delay of payment to owners of securities in the same market. The problem of interest in this study is on how to provide empirical analysis on the role of money market instrument on economic growth in Nigeria during the period 1994-2018

This study is significant in the sense that following the recommendation made by Eze and Mansi (2017) in their study in which they suggested the increase in the number of instruments traded in the Money market; it therefore seeks to make an addition in the number of instruments used in their study to see how it will affect the outcome of the impact of Money market on the economic growth in Nigeria. Furthermore, the study is expanding its scope from 1994 to 2018 and also adding interest rate as a control variable. The number of years used is considerably larger than the previous studies in scope. The study is also expected to serve as a stepping stone to other researchers who may want to acquire more fact on how Money market and its instruments impact economic growth. The study shall help corporate bodies, firms, companies, households and investors to know the huge investment opportunities that are in the Money market. It will help them know the financial instruments that are available in Money market and which one they can invest in. It will also afford the borrower of funds to know how vibrate the Money market of the country is. It can also be a source of information for policy makers on how to direct and make policies to improve the nation's Money market.

Therefore, this research work by extending its scope of coverage seeks to empirically analyse the impact of the current Money Market on the economic growth in Nigeria. And by extension, the impact of Money market instruments traded in the Nigerian Money market on economic growth in Nigeria. It is therefore, the objective of this article to find out how Commercial Papers, Bankers' Acceptances, Treasury Bills, Certificate of Deposit, and Treasury Certificates impacted on economic growth in Nigeria. The study also seeks to fill in the gap discovered in previous studies done particularly by Eze and Mansi (2017) and Andrew and Deborah (2015) with the inclusion of interest rate as a control variable. The study decides to include interest rate because it discovered that Money market instruments were majorly used as independent variables without considering the role of interest rate which is a major determinant of how these instruments are traded. Therefore, it seeks to find out how interest rate affects the volume of transaction of Money market instruments as different from the previous work done by Andrew and Deborah (2015).

## **2. Literature Review**

We present here briefly, some early economic theories or thoughts as they relate to the topic being researched. The most common and widely used theories are as follows

### *Theoretical Framework*

The "Efficient Market Theory" (EMT) states that the prices of securities in financial markets reflect all information that is available to the investors. An early contribution to EMT is an article by Alexander in a book on the random character of stock prices (Alexander, 1964). Fama has written a famous survey article on tests for market efficiency (Fama, 1970). EMT is important in the context of investment advice and portfolio management like Money market security management. EMT also implies that the use of technical analysis to predict future stock prices is a waste of time. EMT is also important in the context of disclosure requirements for listed companies and rules concerning insider trading. EMT assumes that investors are rational. This implies that they currently follow the flow of information, which is relevant to the



pricing of the securities they hold. It implies also that they currently adjust the composition of their portfolios, when new relevant information is disclosed. Every day, investors and their advisors are confronted with an enormous amount of new information, which may or may not have an influence on the pricing of the financial assets they own or have the opportunity to buy. It is also important to evaluate the realism of the EMT in the light of transaction costs.

Financial intermediation theory is one of the theories that postulate that financial market has an impact on real sector of the economy. The theory was first formalized in the works of Goldsmith (1969), McKinnon (1973), and Shaw (1973) that see financial markets as playing a pivotal role in economic development, attributing the differences in economic growth across countries to the quantity and quality of services provided by financial institutions. Furthermore, Shaw (1973) proposed a debt intermediation hypothesis, whereby expanded financial intermediation between the savers and investors resulting from financial liberalization (higher real interest rates) and development increase the incentive to save and invest, stimulates investments due to an increase in supply of credit, and raises the average efficiency of investment.

This study therefore adopts the financial intermediation theory because it tries to link the financial market with economic growth. And it best explains what this study is out to achieve.

#### *Empirical Literature*

Several other relevant related empirical literatures have looked at impact of Money market on economic growth in Nigeria. Among such studies is the study done by Isibor, Ikpefan and Okafor, (2015) which examined the impact of the Nigeria Money market instruments on the liquidity of ten selected quoted banks from 2005 to 2014. Secondary data were used and the multiple regression econometric technique was used to analyze the data. The study found that firms' working capital and profitability have a significant impact on the money market instrument. They recommended that adequate monitoring and surveillance of the activities of the market participants should be improved on and also that, new and flexible financial instruments be introduced.

Andrew and Deborah, (2015) undertook a study on Developments in Money Market Operations and Economic Viability in Nigeria. The data used for empirical estimation covered the period 1981 to 2011 and were sourced from CBN statistical Bulletin, 2011. Analysis of data was carried out using Multiple Regression technique parameters. Research findings were robust. The variation in the growth trends of GDP and the explanatory variables appear to cast doubts on whether Money market operations made significant contributions to GDP in the period under review. However, the results from Pearson correlation coefficient matrix substantially attest to strong linear relationship the explained and explanatory variables. Iwedi and Igbaniho (2015), in their study, empirically examine the nexus of Money market operations on economic growth in Nigeria. The study made use of secondary data which were obtained from the Central bank of Nigeria Statistical Bulletin (2018). The data were collected for a period of thirty-three years (1980-2013). The descriptive statistical tools and sophisticated econometric tools of the vector auto-regressions (VAR), Johansen Co-integration, and Granger causality tests was

employed in the analysis of the data. It was found among other things that there is a positive significant short-run and long-run relationship between money market operations and economic growth in Nigeria. The result shows that causality flows from economic growth proxy by GDP to money market operations but not vice versa. Based on the empirical analysis, it is concluded that money market operations deliver short term growth tendencies and can help to ensure long run impressive and steady growth rates in Nigeria as it is a key component of the financial system, a fulcrum of monetary operations conducted by the central bank in its pursuit of monetary policy objectives. They therefore recommended that, the government should both in short and long-run prioritized policies geared towards increasing/developing money markets operations in Nigeria in order to make the economy more stable.

Eze and Mansi (2017) carried out a study on the role of money market on economic development of Nigeria. They sought to examine the relationship between different Money market instruments and the economic development of Nigeria. Four money market instruments (Treasury Bills, Treasury Certificates, Certificates of Deposits, and Bankers' Acceptances) were chosen to regress against the Gross Domestic Product (representing economic growth), on the basis of which four research objectives and four hypotheses were formulated. Their scope of study was from 1990 to 2014. The method of analysis they used include regression, unit root tests, co-integration tests, and parsimonious error correction. They found that money market instruments positively impacted on economic growth. They recommended among others, base on their findings, that, more instruments and innovations should be introduced into the money market to enlarge the scope of the market, and that the money market should be fragmented for expansion. Okoro, Ogoma and Ume (2018), investigated the influence of interest rate on outstanding money market instruments in Nigeria. They adopted the quasi-experimental and analytical method using secondary data drawn from the Central Bank of Nigeria Statistical Bulletin covering the period 1981 to 2014. OLS econometrics tool was used as its major tool for estimation. It was found out that interest rate positively and significantly impact on the investment in both public Money market instrument (Treasury bill) and corporate Money market instrument (Commercial Papers) in Nigeria. However, Magaji & Aliyu (2006) argued that interest charges inversely affect economic growth and development. Uruakpa (2019) examined the impact of money market reforms on economic growth of Nigeria. And he sought to find out as his objective how reform of the market since 1990 has impacted on Nigeria's GDP through money market transactions, Treasury bill rate and Treasury bill outstanding. The result however, showed that Treasury bill rate has negative but significant effect on GDP. The F-statistics suggests that all the money market proxies jointly impacted on GDP, an implication that money market is a viable financial market in Nigeria. Moreover, the variance decomposition from the study showed that GDP has a decreasing variance with money market value and Treasury bill rate but an increasing variance with Treasury bill outstanding. The variance impulse showed that GDP responds to the activities or movement in money market value and Treasury bill rate. He concluded by saying that, money market reform has helped boost the effect of the market on Nigeria's economic growth.

Orugun, Saliu and Ajayi (2020) in their study, examined the impact of selected Money Market Instruments on Economic growth based on time series data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2020). They employed econometric and statistical techniques such as ADF, Unit Root Test, OLS, multiple-regression, and Granger Causality Test to analyze data collected for the study which covers the period 1989 –2019. Based on their findings, they recommended that Nigerian money market should be reformed in line with the current globalization trend and internationalization of the money market to allow a flow of foreign investment into the economy in order to increase the number of tradable instruments in the market. Eze and Krokeme (2021) examined in their study, the effect of Money market instruments on capital market performance in Nigeria using time series spanned data over a period, 1981-2018. Secondary data were sourced from the central bank of Nigeria statistical bulletin 2018. Descriptive statistics, covariance Analysis, Johansen co-integration and vector error correction model were used in the study. They found a varying degree of relationship with economic growth but interest rate impacted negatively. From the results of their study, the following recommendations were made by them: Firstly, there should be adequate market information to investor on stocks to enable them transform their stock from money market to capital market depending on the market outlook. Secondly, both markets (money and capital market) should ensure that they work harmoniously because investors holding one stock can cause adverse negative effect on the other.

From the various empirical literature studied so far it was discovered that most of them in their findings show that there is positive impact of money market on the economy particularly the studies of Andrew and Deborah (2015) and Iwedi and Igbanibo (2015), which established a positive impact of money market on the economy. However, this study sought to ascertain by increasing the number of money market instruments used, if the Money market still has a significant impact on the economy in this present time, due to the fact that so many things have happened in the Nigerian economy with the emergence of a new government which has introduced its own economic policies.

### **3. Methodology**

Econometrics methodology is therefore employed as the analytical tool for the examination of the impact of Money market on economic growth in Nigeria. Five instruments were selected to represent the instruments traded in the Nigerian Money market which include Commercial paper, Bankers' acceptances, Treasury bills, Certificates of deposits, and Treasury certificates; whereas, Gross Domestic Product (GDP) was used as a proxy for economic growth. The model states that economic growth is a function of Commercial Papers, Bankers' Acceptances, Treasury Bills, Certificate of Deposits and Treasury Certificates. The secondary data used for this study covering the period 1994-2018 were obtained from the Central Bank of Nigeria Statistical Bulletin, 2018 edition and National Bureau of Statistics. This study utilizes ex-post facto research design, which uses secondary data to establish the relationship between the dependent variable and independent variables. The ex-post facto research design is appropriate for this study because of the nature of the study, which shows the following characteristics: the study covers more than one-year period, and

also the data used are already in existence which cannot be manipulated by the researcher. The Variables include in this study are measured in Naira (₦' Billion). GDP as Gross Domestic Product (Output) is used as a proxy to measure Economic Growth. CP is the Commercial Paper and a money market instrument used in the model. BA refers to Banker's Acceptance, TB entails Treasury Bills which are money market instruments used in the model measured in denominations. CD represent certificate of Deposit which are issued in money terms. TC stands for Treasury Certificate is another money market instruments used in the model which comes in denominations or money terms. INTR refers to interest rate measured in percentage.

Descriptive analysis is done to capture the nature and structure of the data, while an Autoregressive Distributed Lag model (ARDL) is employed to show the nexus that exist between dependent and independent variables. The econometrics technique of Multiple Regression analysis was used to obtain the estimates. The mathematical expression of the regression model is given as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6) \dots\dots\dots 1$$

Where Y is the dependent variable and X<sub>s</sub> are independent variables

The econometric Model of this study is expressed as follows:

$$GDP = \beta_0 + \beta_1 CP + \beta_2 BA + \beta_3 TB + \beta_4 CD + \beta_5 TC + \beta_6 INTR + \mu \dots\dots\dots 2$$

Such that GDP is the dependent variable and CP, BA, TB, CD, TC, INTR are independent variables with  $\beta_0$  as the intercept (the expected value of Y when all the explanatory variables assume zero as value) and the remaining  $\beta_s$  as the parameters of the independent variables of the model or slope coefficients.  $\mu$  stand for disturbance or error term (a random or stochastic variable). In order to test for stationarity and robustness, unit root and co-integration tests are performed. This enables us examine and draw inferences based on maximum likelihood which identifies long-run associations that exist among integrated time series data. The Johansen co-integration test is based on the maximum Eigen-value of the stochastic matrix. The model further helps us to check for the presence of co-integrating relationships among the variables and also to identify the number of stationary long-run relationships that exist among the integrating variables. If the series are further co-integrated, then it will be most efficiently represented by an error correction method, which is used to tie short run behaviour of the variables to its long-run values. Engel and Granger (1987) stipulated that the ECM will correct disequilibrium error

The Error Correction Model is given as:

$$\Delta GDP_t = b_0 + b_1 \Delta CP_t + b_2 \Delta BA_t + b_3 \Delta TB_t + b_4 \Delta CD_t + b_5 \Delta TC_t + b_6 INTR_t + \delta ECM_{t-1} + \mu_t \dots\dots\dots 3$$

Where  $\Delta$  is the first difference operator,  $\delta$  measures the speed of adjustment of disequilibrium in short-run to obtain the long-run equilibrium, and ECM is the error correction term

**4. Result**

The individual graphical characterization of the series is visually examined here to determine the presence of a trend factor. An observance of a directional movement of data in the respective graphs of the variables will indicate stationarity or not (presence of unit root) in figure 1;

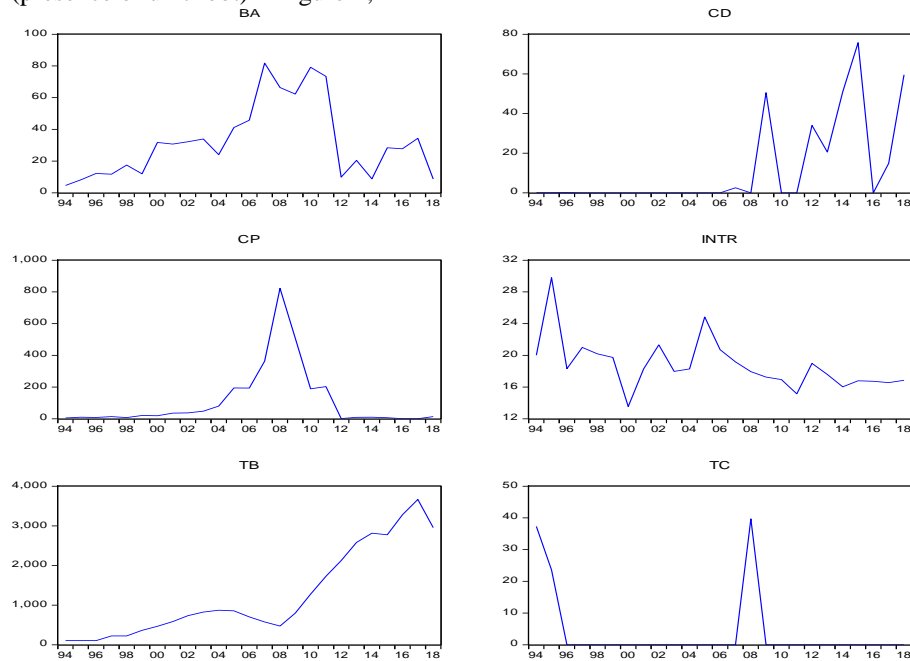


Figure 1 Trend Analyses of Macroeconomic Variables

The descriptive statistics as derived through E-Views 9.0 shows the Mean, Median, Maximum, Minimum, Standard Deviation, Skewness, Kurtosis, Jarque-Bera and Probability of each of the variables as presented below:

Table 1: Descriptive Analysis of Data

Statistics	BA	CD	CP	INTR	TB	TC
Mean	32.2823	12.3497	112.0159	18.8004	1247.635	4.0257
Median	28.4178	0.0000	19.0025	18.2900	797.4825	0.0000
Maximum	81.8340	75.7028	822.7009	29.8000	3665.250	39.7059
Minimum	4.6602	0.0000	0.4904	13.5400	103.3265	0.0000
Std. Dev.	23.5731	22.7426	195.7462	3.2425	1129.172	11.4065
Skewness	0.8461	1.6276	2.3987	1.6536	0.843249	2.5349
Kurtosis	2.5720	4.2239	8.4502	6.7385	2.249503	7.7052
Jarque-Bera	3.1742	12.5988	54.9182	25.9530	3.549499	49.8353
Probability	0.2045	0.0018	0.0000	0.00002	0.169526	0.0000
Sum	807.0580	308.7428	2800.398	470.0100	31190.88	100.6449
Sum Sq. Dev.	13336.63	12413.52	919597.4	252.3375	30600699	3122.645
Observations	25	25	25	25	25	25

Sources: Authors' Computation

Table 1 shows the descriptive statistics of BA, CD, CP, INTR, TB and TC. It can be shown that the variables contained 25 observations with TB having the highest mean value followed by CP, BA, INTR, CD and TC respectively. The table also revealed that BA and TB are platykurtic as the value of their kurtosis are less than three, while CD, CP, INTR and TC are mesokurtic in nature as the value of their kurtosis are greater than three. Furthermore, with reference to the Jarque-Bera estimates and probability value that BA and TB are normally distributed due to their high probability values of 0.204510 and 0.169526 which are higher than the probability value of 0.05. On the other hand it was observed that the probability value for CD, CP, INTR, and TC are not normally distributed due to their low probability value of 0.001837, 0.000000, 0.000002 and 0.000000 respectively which are lower than the probability of 0.05.

Table 2: ADF Unit Root Tests Results

Variables	ADF Statistics	Critical Value	Stationary Status
BA	-5.577786	-2.669359(1%)	I(1)
		-1.956406(5%)	
		-1.608495(10%)	
TB	-4.525217	-2.679735(1%)	I(2)
		-1.958088 (5%)	
		-1.607830 (10%)	
CP	-4.422674	-2.6693599(1%)	I(1)
		-1.956406(5%)	
		-1.608495(10%)	
CD	-4.937584	-2.708094(1%)	I(2)
		-1.962813(5%)	
		-1.606129(10%)	
TC	-4.880011	-3.737853(1%)	I(0)
		-2.991878(5%)	
		-2.635542(10%)	
INTR	-3.847799	-3.737853(1%)	I(0)
		-2.991878(5%)	
		-2.635542(10%)	

*The critical values for rejection of hypothesis of unit root were from MacKinnon (1991) as reported in e-views 9.0.*

*Sources: Authors' Computation*

The six variables (BA, TB, CP, CD, TC, and INTR) underwent unit root test using the Augmented Dickey-Fuller (ADF) test. As is the case most times, most of the variables were found to be non-stationary at level except (TC and INTR) which was stationary at levels. While (BA and CP) were stationary at first difference but (TB and CD) were found to be stationary at second difference.

*ARDL Bound Test Approach to Co-integration*

The bound test approach to co-integration seeks to confirm if there is long run relationship among the variables in the model. This is done by testing if their coefficients are equal to zero in our estimated model or not. The F-Statistic value from the bound test and the critical value bounds as revealed by the regression result using E-views 9 is presented in the Table 3;

Table 3: ARDL Bound test of Co-integration

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	11.935357	6
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Sources: Authors' Computation

The Co-integration test was done using the ARDL Bound test. This became necessary to avoid a spurious regression result. Using the ARDL Bound test with critical value, the variables were co-integrated at 1per cent level of significance since the Wald F- statistics is greater than the critical lower and upper bound (see Table 3).

Table 4: Error Correction Mechanism

Variable	Co-integrating Form			
	Coefficient	Std. Error	t-Statistic	Prob.
D(BA)	-0.0502	0.1278	-0.3934	0.6992
D(CD)	-0.0271	0.0951	-0.2857	0.7788
D(CP)	0.0046	0.0210	0.2192	0.8292
D(INTR)	-0.8014	0.7012	-1.1429	0.2699
D(TB)	-0.0017	0.0020	-0.8184	0.4251
D(TC)	-0.0577	0.3183	-0.1814	0.8583
Co-int.Eq. (-1)	-0.7223	0.2933	-2.4625	0.0255

Sources: Authors' Computation

Since the variables were found to be co-integrated implying that they have long run equilibrium relationship, it is necessary to test for short run relationship. From table 4, the lag length is determined automatically using akaike info criterion. ECM parameter is negative (-) but significant which is -0.722310, this shows that 72 percent disequilibrium in the previous period is being corrected to restore equilibrium in the current period.

It has been established; the variables are co-integrated and also have short run relationship established from the ECM.

From the ARDL result, a unit increase in Bank Acceptances will lead to 0.050286 decrease in economic growth. A unit increase in Certificates of Deposit will lead to 0.027187 decrease in economic growth. A unit increase in Commercial Papers will lead to 0.004615 increase in economic growth. A unit increase in Interest Rate will lead to 0.801471 decrease in economic growth. A unit increase in Treasury Bills will lead to 0.001705 decrease in economic growth. Finally, a unit increase in Treasury Certificate will lead to 0.057750 decrease in economic growth. The *R-Square* shows that the model has a good fit with 0.825411 (82%) change in economic growth is accounted for by change in the independent variables. This

Table 5: ARDL Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPGR(-1)	0.2776	0.2933	0.9467	0.3579
BA	-0.0502	0.0278	-2.3934	0.0190
CD	-0.0271	0.0151	-1.8857	0.0231
CP	0.0046	0.0010	4.2192	0.0000
INTR	-0.8014	0.2112	-4.1429	0.0000
TB	-0.0017	0.0010	-0.8184	0.4251
TC	-0.0577	0.0183	-4.1814	0.0000
C	22.8532	14.4493	1.5816	0.1333
R-squared	0.8254	Mean dependent var		5.4916
Adjusted R-squared	0.7509	S.D. dependent var		6.6565
S.E. of regression	7.2158	Akaike info criterion		7.0516
Sum squared resid	833.0878	Schwarz criterion		7.4443
Log likelihood	-76.6195	Hannan-Quinn criter.		7.1558
F-statistic	9.5104	Durbin-Watson stat		2.0076
Prob(F-statistic)	0.0000			

\*Note: p-values and any subsequent tests do not account for model

Sources: Authors' Computation

implies that 82% of the change in economic growth was explained by changes in the independent variables. The *Adjusted R<sup>2</sup>* is given as 0.750981 (75%). This means that precisely 75% of the variations in the economic growth in Nigeria were accounted for by the included variables (Bank Acceptance, Certificate of Deposit, Commercial Paper, Interest rate, Treasury Bills and Treasury Certificate), after the co-efficient of determination ( $R^2$ ) has been adjusted to make it insensitive to the number of included variables. The Durbin-Watson (D-W) Statistics is 2.007687 approximately 2 indicating the absence of autocorrelation in the model.

Table 6: Long run Coefficients  
Dependent Variable: GDPGR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BA	-0.0696	0.0177	-6.3915	0.0000
CD	-0.0376	0.0106	-3.2880	0.0070
CP	0.0063	0.0081	0.2266	0.8236
INTR	-1.1095	0.2747	-5.8704	0.0000
TB	-0.0023	0.0032	-0.7251	0.4789
TC	-0.0799	0.0264	-3.1874	0.0036
C	31.6390	28.2108	1.1215	0.2786

Sources: Authors' Computation

From the result of the long-run analysis, a percentage increase in Bank Acceptance will lead to 0.069618 percentage decrease in economic growth. In addition to this, the impact is statistically significant at 1% level of significance. This result fulfils a priori expectation. A percentage increase in certificates of Deposit will lead to 0.037638 percent decrease in economic growth. The increase is statistically significant at 1% level of significant. This result implies that increase in Certificate of Deposit will lead to decrease in economic growth. Also, a percentage increase in Commercial papers will lead to 0.006390 increase in economic growth. The increase is statistically insignificant as indicated by the probability value of the t statistic. This



result conforms to a priori expectation. An increase in Interest rate will lead to a decrease in economic growth by percent. 1.109595. This decrease is statistically significant at 1 percent level of significance. An increase in treasury bills will lead to 0.002361 decrease in economic growth in addition, this decrease is statistically insignificant. Finally, an increase in treasury certificate will lead to 0.079952 decrease in economic growth. In addition, this decrease is statistically significant at 1 percent level of significance.

The findings obtained from the study, show that Bankers' Acceptance, Certificate of Deposit, Treasury Bill, Treasury Certificate all have negative but significant impact on Economic growth. It is only Commercial Paper that has a positive impact; but the impact as the analysis shows, is statistically insignificant. Interest Rate too has a negative but significant impact on Economic growth. The  $R^2$  of 0.825411 and adjusted  $R^2$  of 0.750981 show that the model used has a good fit. The F-statistic of 9.510406 indicates that Money market through the variables in the overall has a negative but statistically significant impact on Economic growth. Durbin-Watson (D-W) Statistics of approximately 2 indicates absence of autocorrelation in the model. The result from this study revealed that Money market through its traded instruments and interest rates have in the overall, negative and significant impact on economic growth. This result is in contrast with particularly the studies of Andrew and Deborah (2015) and Iwedi and Igbani (2015), which established a positive impact of money market on the economy. However, the result of this study shows that Certificate of Deposit (CD) has a negative but significant impact on economic growth which is in line with the findings of Magaji et al (2018). From their finding, it was established that Certificate of Deposit has inverse relationship with economic growth.

### **5. Conclusion and Recommendations**

Considering the above information and estimation; it has clearly shown that Treasury Bills, Treasury Certificate, Commercial Papers, Certificates of Deposit and Bankers' Acceptance and Interest rate are Money market instruments used as independent variables. And these variables have shown collective impact on economic growth. The result from this study revealed that Money market through its traded instruments and interest rates have in the overall, negative but significant impact on economic growth. This result is in contrast with the studies of Andrew and Deborah (2015) and Iwedi and Igbani (2015), which established a positive impact of money market on the economy. However, the result of this study shows that Certificate of Deposit (CD) has a negative but significant impact on economic growth. But from their finding, it was established that Certificate of Deposit has inverse relationship with economic growth.

We therefore recommend that treasury Bills and Commercial Papers as instruments in Money market be given adequate attention and also revitalization in order to enhance their contributions to economic growth. Government should see money market as one of the avenues for boosting the economy and encouraging businesses most especially SMEs to thrive. The Central Bank of Nigeria should introduce innovative policies that will strengthen the money market operations for it to contribute positively and significantly to economic growth. Interest rate as a major determinant of how the money market instruments are traded in the market should

be well adjusted to the lowest level to make it contribute positively to economic growth. Also, new, flexible and versatile money market instruments suited to the prevailing economic conditions of the country should be introduced into the market by the monetary authority to boost its operations and contribution to economic growth. We observed that Treasury certificate has proven to have the most influential impact on economic growth. The addition of interest rate as control variable makes this study unique. Furthermore, the tests conducted did not only identify problems and solutions but also pointed out the synergy or relationship that existed between money market and economic growth. We recommend that further research should be made on the relationship between interest rate and economic growth covering longer period of time.

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## Do Governance Matter for Economic Growth? Evidence from West Africa Countries

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DOI: 10.5281/zenodo.6349183

### Abstract

*The study examines the impact of governance on economic growth in selected West African countries namely Nigeria, Ghana, Benin and Niger republic from 1996 to 2020 using panel data. The study employed traditional panel data analysis which is pooled ordinary least square and random effect model as suggested by Hausman test. The result of the pooled least square indicates that, gross fixed capital had positive impact on economic growth and employment had positive but not statistically significant impact on economic growth, while control of corruption and political stability had a negative impact on economic growth but accountability and voice on the other hand have positive impact on economic growth. The result of the random effect model showed that gross fixed capital had positive impact on economic growth in West Africa. Employment had a positive but not statistically significance impact on economic growth, control of corruption had negative and not statistically significant impact on economic growth. Political stability had negative and statistically insignificant impact on economic growth in West African countries, while accountability and voice have positive impact on economic growth in West Africa. This study recommends that West African countries should address the issue of corruption so as to improve economic growth in the region and also create employment opportunities among youths to ascertain higher economic growth and good governance.*

**Keywords:** Governance, Economic, Institutions, Political Stability, Accountability

**JEL Classification:** O24, E63, C23, O41

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### 1. Introduction

Governance as a concept has been studied by many scholars, researchers and policy analyst in general but there is yet to be a satisfactory and precise definition of governance. The definition by Kaufmann and kray (2010) shows all the units of governance. In which their study described governance as authority working out through institutions and customs in a country. Mastruzzi Mehanna, Yazbeck and Saredidine (2011) divide this definition of governance into three parts, namely:

process by which regimes are elected to check and substitute, potentialities of government to begin and put into action the define policies effectively, and finally to have social and economic interface among civilians and state in order to achieve respect for institutions. Chaudhry (2009) opined that Governance is the process of basic leadership and implementation and a tool for economic, political and administrative establishment to manage a nation's affairs to embrace stability. North (1981) stressed that institutions serve as a set of rules, procedures and ethical and moral behavioral norms which are shaped to restrict the actions of individuals to maximize utility of principals. According to United Nations development program (UNDP, 1997), governance means the implementation of administrative, economic and political authority to control the affairs of a country at each and every level, because all the institutions are considered responsible to perform their prescribed activities in order to fulfill the demand of common man. In addition, the international monetary fund (IMF) gives more importance to economic side of governance and which stimulate the quality of resources available to public, and make the activities of private sectors more efficient. For investment and growth, government institutions are important especially the ones that protect the property rights (Knack & Keefer, 1995). Kaufmann et al (2002) and Chaudhry et al (2009) argued that in order to achieve rapid economic growth, good governance plays effective role with the help of better and useful provisions of resources including both the capital and labour. Many West Africa countries have in recent decades experienced steady growth performance of their economies and there is an increase in the global focus of the continent as the world new palace for investment (Mduduzi & talents. 2015: Lawson, 2015).

In West African nations, poor governance has resulted to poor economic growth and it is manifested through corruption, political instability, ineffective rule of law and constitutions. However, this could happen if governance capacity was poor and non-sustainable therefore good governance necessitate and initiate economic growth (Makolo & Rester, 2005). The challenge for West Africa is to restructure governance strategy and learn from other countries viable governance strategies that would be suitable to their own conditions. Thus, the actual governance system does not sustain good growth performance (Khan, 2006). Corruption usually takes place when public officials break the laws to fulfill their own interest. The most common types of corruption are bribery and extortion as well as allocation of public resources to favour political benefits (Obadina, 2000). Therefore, in many African countries, corruption takes place as a rule based decisions. That is, public officials influence the economic decisions in detriment of the entire society. This results to inefficiency and high transaction cost as well as distortion of transparent and normal markets operations and thus, result in insecurity for investors. Typically, African countries have a weak tax base and the policy makers lack integrity thus, facilitating corruption. Corruption is strongly correlated to poor public governance. Despite the increase in aid flows and renewed emphasis and attention to improving the environment for effective aid. The experience with good economic growth within the developing countries remains deeply disappointing, with falling average per-capital incomes resulting to escalating poverty levels (Khomba, 2017). For African countries, since independence from the periods of 1970s to the late 1990s can in general be considered lost decades. This

period has been characterized by a combination of serious governance. Low and sub-optimal investment in health, education and in other social services; significant macroeconomic imbalance; poor infrastructure; and structural trade deficits (Bhorat & Naidoo, 2014). Some elements of governance requires the capacity to design and implement effective polices and to regulate effectively and efficiently, and has the political will to eliminate negative elements such as corruption and political instability that serve only to enrich political elites in low- income countries which leads to incompetent governances (Khomba, 2017).

Despite the 2013 growth rates recorded in Africa, there is a renewed concern regarding the long term sustainability of Africans rapid economic expansion and importantly, whether the growth at the country level can be translated into achieving key good governance, such as political stability, corruption control, accountability, equitable distribution of income, and enhanced gross capital accumulation. The deriviers of economic growth are critical to understanding whether the growth is likely to be sustainable and more importantly inclusive (Alomaisi, Schormacker & Shmeaileh, 2016; Bayer, 2016). Although a large number of studies around the subject unveils that, governance has positive impact on economic growth focusing on the following indicators; violence/terrorism, regulatory quality, government effectiveness and the rule of law (Afolabi, 2019; liu, Tang, Zhou & Liang, 2018; Apaza 2009). Yet there is a noticeable shortfall of empirical researches that specifically pay attention to the impact of these governance indicators (political stability, corruption control and accountability voices). The implication of this paper is that holistic relationship between dependent and independent variables may be blurred and incomplete. Realizing these gaps in the extant literature. This paper seeks to investigate the impact of governance on economic growth using political stability, corruption control, accountability voice and gross capital formation. The significance of this study lies in its contribution to knowledge as it integrates within a single framework, the relationship between governance and economic growth in West African countries. In addition to this introductory section, this study will be discussed under four other sections. Section 2 considers the review of literature; the methodological framework is put forward in Section 3 while Section 4 discusses results, and Section 5 concludes the study.

## **2 Literature Review**

Governance is a broad concept with great complexity to its major pillars (Kaufmann, Kray & Mastruzzi, 2010) and (Emara & Chiu, 2016) defined Governance as a set of traditions and institutions that can be used to exercise the power of authority. The basic dimension of the governance include political stability and absence of violence/terrorism, voice and accountability, government effectiveness, regulatory quality, control of corruption and the rule of law. Contrary to this, Lin (2014) stressed that good governance means strong government capacity in such a way that, local government has enough resources, such as manpower and financial resources, to improve the capital market and investment climate, to keep the bureaucratic system stable and maintain bureaucratic professionalization, to develop a good economic power structure and political power structure to promote system reform in all fields like science and technology, and to provide public services like medical treatment

and education which facilitates industrial upgrading and economic growth. Governance is broad and multi-facet concept; it shows the way that state power is exercised to manage its economic and social component (World Bank, 1994). The way in which the state exhibits its power has a link to a set of institutions that serves as enhancement keys to economic growth, Political stability, the absence of terrorism and violence, proficient government policy formulation and implementation, improved regulatory mechanism, minimized corruption and ensuring the rule of law can be regarded as high government qualities. It is expected that the provision of accomplished governance leads to improvement in the institutions (Samarassinghe, 2018).

The concept of Institutions has been defined and perceived in several ways in the literatures, institutions are universally self-explanatory, though the concept's abstract nature requires it to be unbundled in order to ease comprehension. The mostly widely conceptualized concept is that of North (1990) who argued that; institutions are the rules of the game in a society, institutions are the boundaries and means by which human activity is regulated and as institutions changes the society "evolve". He is more explicit in his conviction that institutions shape economic performance, hence his emphasis on framework to understanding the complexity of institutions apply to the society. North (1997) differentiated among institutions; informal and formal institutions, informal institutions constituting norms, traditions and moral, while formal institutions shaping laws and property rights. Another useful distinction is made by (Cole, 2011), who conceptualizes institutions of governance as subjected to the institutional environment, thus it frames the theoretical assumption in this paper i.e. institutions matter. Indeed the assumption necessity for economic performance is accepted as a corner stone to growth. The importance of institutions is unmistakable. As (Okeke 2005) argued, the "Rule structure" of institutions needs to be understood as they shape everyday life.

According to (Otuballa, 2011) and (Olubusoye et.al (2016) they sees economic growth as the increase in the value of goods and services produced by an economy and how it is conventionally measured as the percent of increase in real GDP). Similarly, Johson (2000) defined economic growth as that part of economic theory that explains the rate at which a country's economy grows over time. It is usually measured as the annual percentage rate growth of the country major national income. Accounting aggregates, such as the gross national product (GNP) or the gross domestic product (GDP) with appropriate. Shahabad (2014) and Kandil (2009) stated that, economic growth focuses on the expansion of productive capacity over time. The expansion of productive capacity requires an increase in natural resources, human resources, capital and technology. Thus, economic growth is due to growth in inputs, such as labour and technological improvement. Jhimghan (2003), Mo (2011) and Jagadish (2018) viewed economic growth as an increase in the real GDP per capital of a nation, while the encyclopedia of earth defined economic growth as an increase in real gross domestic product (GDP). Furthermore, Economic growth occurs when an economy's productive capacity increase which. In turn is sued to produce more goods and services.

*Governance Indicators*

Several governance indicators have been highlighted in the literature, which are discussed below: Annan (1998), Corruption means selling of organizations resources, exclusive information and decision making power by a governmental party to a non-governmental party. In corruption action, there is a supply arising from government party and a demand arising from the government party. It is argued that, people have a different understanding of the impact of government on economic growth. One group believes (sender) that corruption has a negative effect on economic growth because it increases the transaction cost and the production cost. Most importantly, (Aidt, 2009). Corruption decreases the consumer confidence and investor confidence and degenerate the trust of the society. The higher corruption causes a reduction in the overall institutional quality of a particular society. Another group thinks that corruption brings an improvement in economic performance by removing bureaucratic bottlenecks such as delays in decision making regarding the issuing of license permits, approval and the enforcement of contract. The under development of Africa and the wide spread political instability in the continent were connected to the high rate of corruption as its politicians, leaders and public servants illegally collect wealth using public office for private gains. Corruption persists in the contents as long as a large proportion of the population engages in it and less benefit goes to the few honest Africans, this problem may persist in the continent as long as the governance system is perpetrated by dictators and the system remains weak without institutional checks and balances (Oweye & Bissessar, 2014).

In the same vein, Control of corruption is another governance indicator which reflects perceptions of the extent to which public power is exercised for private gain. This includes both petty and grand forms of corruption, as well as capture of the state by elite and private investors. It is one of the sick dimension of the world wide governance indicators (World Bank, 2016). Several studies have looked into the relationship between corruption and economic growth. However, this relationship varies from study to study and different studies show completely different results. Mo (2001), Pere (2015) and Al-amin, Kazi & kabir (2017) all found an insignificant relationship between control of corruption and economic growth. The result concludes that, there is a 0.72% reduction in growth rate, per 1 % increase in the level of corruption. While Barro, (2003), Mo, (2001) and Andrews (2008) concluded that the impact of corruption varies from country to country in accordance with the prevailing political regime. They argued that the influence of corruption is more harmful for the countries that have sound political institutions while the negative effects of corruption are reduced in the countries with a corrupt political regime. It was concluded that corruption has a link to the social economic, cultural and judicial system of a country.

Similarly, the political stability of the country both democratic regimes and the multiple party systems combine to reduce political stability and thereby reduce economic growth (Younis, Lin, harahiliand & Selvarathinam, 2008). Political stability is defined as the potentials for maintaining a stable government without faceting from constitutional or unconstitutional changes.(Alesina, Ozler, Roubininand & Swagel,1996). The government or the political regime may change due to the voting power of the people within the constitutional framework of the



country. In some countries, the political regime may change due to unconstitutional actions such as civil wars and unrest (Shahabad, 2014). The political stability of a country may shift due to regular government changes and irregular government change. In this view, regular government changes are similar to institutional changes. When there is political stability, stable political environment of the country increases; human capital and physical capital accumulation are also enhanced thereby increasing the growth process. (Younis et al, 2008).

The need to improve transparency and accountability in the management of natural resources becomes an important part of the global governance agenda (Derby, 2010). The voice and accountability variables link with the political system of the country. The participation of people in governance process are high in democratic system in comparison with more authoritarian system. Higher levels of democracy means increased levels of voice and accountability, which in turn allow the rise of multiple political parties. Economic reforms are more difficult under multiple political parties because the reforms create a heightened political risk for the next period office for the existing ruling party. Decisions of the political elites are based on the self-interest and uncertainty. The political system of a country may be democratic or authoritarian or combine parts of both. Under a democratic system, public participation is important in the selection process of political leaders. Voice and accountability describes the public participation in governance. This dimension of governance is directly related to democracy and transparency. Democracy in a country allows people to choose their rulers by votes (Afolabi, 2019).

#### *Empirical Literature*

Several studies have been conducted on the impact of governance on economic growth, using different measures or proxies for governance (see Kaufmann & Kraay 2002; Chang 2012; Pere 2015). The results also indicated that economic growth influence institutional quality. Although their findings shows that policies which attempt to improve the state institutional quality by securing property right, controlling corruption and limiting ascertain need considerable time to achieve the desired goal, these policies are important for economic growth. In addition, such a study has shown that institutional reform has high influence on economic growth especially for poor countries. Majority of the empirical findings indicate that there is a statistical relationship between good governance and economic growth. Moreover, the positive relation between good governance and economic growth is consistent for different good governance indicators.

The evidence for a positive relationship between good governance and economic growth of emerging economies has also been recorded (Hna, Khan & Zhaung 2014; Emara & Jhonsa 2014; Ju Huang 2015; Shuaibu, Ekeria & Ogedengbe 2015; Elbargathi & Al-Asaaf 2019; Afolabi 2019). Other studies obtained a negative relationship between both variables (Ahmed et al 2012; Singh 2014; Sanarge, Fidrmuc & Ghosh 2015; Arcand, Berkes, & Panizza 2015; Demestraide & Roussau 2016). There is also evidence indicating that good governance is a significant predictor of cross-country differences in economic growth (see Zhan et al 2009; Ugar & Dasgupta 2011; Iwasaki & Suzuki, 2012; Park 2013; Campbell & Saha, 2013; Bentzen, 2014; Okafor; Smith & Ujah, 2014; Billger & Goel, 2016).

On the theoretical preposition, the institution augmented Solow model is adopted for this study. The model is a modified version of the Solow (1956) model. It implies that goods produced using a constant return to scale (CRS) technology in a market is characterized by a perfect competition. Institutions are assumed to play a central role in determining factors productivity and technology adoption, so output (Y) is produced using the following production function.

$$Y = f(A(T,t), K(T, t), L(T, t)) \dots\dots\dots 1$$

Where L denotes labour ,  $A > 1$  is an index denoting the level of state of the art technology, K is capital, T is an index denoting the quality of institutions and t I the time. The institutional augmented Solow growth model shows that differences in the quality of institutions precludes convergences and determines both the level and growth rate of output per worker. The model also shows that poor institutions induced poverty traps and the income gap between rich and poor countries will increase if poor countries institutions do not improve relatively to their counterparts the extended modified model also predict the poor institutions induced club convergence. Consider a case in which shows two economies (R and P) have identical , n, g, savings rate (s), technology (A), initial stock of capital (k) and institutions, which implies that income per worker in these economies are also equal.

The influence of institutions on output per worker originates not only from its impact on transitional and the steady state technological efficiency, but also from its impacts on capital accumulation. Institutions affect the marginal product of capital and therefore, has impact on investments and capital accumulations. In particular, given that the ratio  $Y/k$  is constant round the steady state. Therefore, the model implies that, the growth rate of the output per worker is not only determined by technological change, but also affected by the quality of institutions. An economy may have access to state of art technology, but its poor institutions may hinder the adoption of available technologies and diminish the productivity of factors of production, which impede economic growth. This implies that a country with poor institutions will be unable to fully benefit from the potential productivity gains generated by available technologies.

$$Y = A^{(t-1)} K^{\alpha T} (AL)^{1-\alpha T} \dots\dots\dots 2$$

Incorporating the impact of institutions on output in a traditional Solow production function. Since T is a normalize measure of institutional quality ranging from zero to one, an economy with the relative best institutions (T=1) should have a production function identical to the one used in the standard Solow model.

Therefore from the reviewed literatures, one can conclude that the effect of governance on economic growth in West Africa might be positive, negative or neutral, finally, the different conclusion raises important policy in questions. In spite of that, one empirical fact is that nations can improve economic growth by adopting appropriate policies. Therefore, the main objective of this paper is to measure the association between governance, economic growth and good governance indicators among West African countries and to suggest appropriate policies for the countries. One major significant shortfall in the empirical literature is the lack of consensus on

the empirical front. As most of the studies failed to include other variables that influence economic growth such as regulatory quality, absence of violence/terrorism, government effectiveness and the rule of law in line with the world governance indicators of governance measurement. This creates a missing link for a more detailed impact of governance on economic growth in West Africa. To this end, this paper seek to fill in this gap by using a panel series up to 2020, this is important given the fact that the sub-region had experienced and are still experiencing leadership tussle in recent time. Thus assessing the impact of governance on economic growth will provide a greener light in evaluating the viability of these reforms in the sub-region.

**3. Methodology**

The study adopts panel data estimation for the period of 1996 to 2020 using secondary data. The choice of duration is informed by data availability especially for the governance variable and the fundamental governance changes which occurred within the study period. The data obtained are from publicly acknowledged sources. Including the World Bank development indicators data base (World Bank, 2020), governance indicators (World Bank, 2020). The governance indicators utilized in order to avoid multi-collinearity are political stability, accountability and voice and control of corruption. They are part of the data on the six governance indicators (WGI) published by World Bank. The six governance indicator comprises; voice accountability, political stability, absence of violence, and government effectiveness. The quality of regulations, rule of law and control of corruption. Kaufmann, Kraay and Mastruzzi (2010) present the methodology for constructing these variables which are considered to have a great ability to positively influence the business environment and lead to low risk in the country. As earlier mentioned, they take the values of -2.5 to 2.5, with higher levels indicating better governance.

In line with the theoretical framework, this paper adopts institutional argument Solow model. The econometric analysis is based on panel model both cross sectional and time series components (panel data). Growth is conceptualized refers to the breaking down the rate of growth of total output of an economy into contribution from the growth of such inputs as capital, labour and technological growth. This model considered that the rate of growth is determined by the traditional factor and institutions that influence the growth of the economy. The study adopts the Afolabi (2019) model as specified below:

$$GDP = F (POLST, ACCTV, CONTRC) \dots\dots\dots 3$$

Where GDP = Gross Domestic Product, POLST = Political Stability, ACCTV= Accountability and Voice, CONTRLC = Control of Corruption. The model is modified by adding growth fixed capital formation and employment proxy to labour. The model Is further modified as:

$$GDP =f (GCF, LAB, POLST, ACCTV AND CONTRC) \dots\dots\dots 4$$

Where the main variables of interest are economic growth (GDP) and governance as indicated and controlling for the conventional growth determinants (capital and labour).In line with the objectives of the study, three governance indicators were

employed in the study namely (a) political stability (b) accountability and voice and (c) control of corruption. Due to the discrete values that the governance indicators takes (values o -2.5 to 2.5, with higher levels indicating greater effects for good governance) the risk of multi-collinearity is high if all three indicators were to be employed in the regression model. The econometric model is re specified as thus:  

$$GDP_{it} = \alpha + \beta_1 GCF_{it} + \beta_2 EMP_{it} + \beta_3 POLST_{it} + \beta_4 ACCTV_{it} + \beta_5 CONTRC_{it} + EMP_{it} + \varepsilon_{it} \dots\dots\dots 5$$

Where GDP = Gross Domestic Product, EMP = Employment, GCE = Gross Fixed Capital, POLST= political stability, ACCTV = Accountability and Voice and CONTRC = Control of Corruption

The study used panel data estimation techniques this has series of advantages over the cross section and time series data set. The techniques have a greater degree of freedom and less multicollinearity leading to more efficient and robust estimates, and it gives greater flexibility in modeling difference in behavior across countries which enable us to control for unobserved heterogeneity (Sheng, 2008). Due to the relative short term period investigated, the dynamics of the panel series was not explored. Consequently, the fixed effects model (FEM) and Random effect model (REM) will be implemented. An alternative method of estimating a model is the random effect model. The difference between the fixed effects and the random effects method is that the later handles the constant for each section not as fixed, but as random parameters. Some advantages of the random effect model is that it has fewer parameters to estimate compared to the fixed effect method (ii) it allows for additional explanatory variables that have equal value for all observation within a group ( i.e it allows us to use dummies). Hence, variability of the constant for each section comes from the fact that

$$Y_{it} = \alpha + \beta_1 X_{it} + \beta_2 X_{it} + U_i + \varepsilon_{it} \dots\dots\dots 6$$

To test whether the pooled or random model is appropriate, the langrage multiplier test was employed. The null hypothesis stated as  $H_0: \delta_2=0$ . If the calculated probability of chi square value is less than 0.001, 0.005 or 0.10 levels of significance, we reject the null hypothesis and conclude that random effect model is appropriate. Having established the presence of individual specific effect in the model, this necessitate the need for fixed model. The fixed effect model assumes that the individual specific effects are fixed across entities. The cross sectional effects are captured by the dummy which represent the countries. The fixed effect assumes that each country differs in its intercept term whereas random effect model assumed that each country differs in error term. Hausman test (1978), is employed to choose which of the model is appropriate between random and fixed model. The test assumes the null hypothesis of no correlation, that is, both ordinary least squares (OLS) and generalized least squares (GLS) are consistent and OLS is inefficient, while alternative hypothesis of the OLS is consistent but GLS is not. For robust checks, the pooled ordinary least squares regression is implemented and the results were compared to the fixed and random effect models.

**4. Results**

Table 1: Descriptive Statistics

Statistics	LGDP	LGFC	LEMP	LCONTR	POLST	ACCTV
Mean	10.2800	9.5845	0.3180	1.3980	-0.4682	-0.1200
Std. Dev.	0.7025	0.7409	0.3289	0.3273	0.8632	0.4869
Skewness	0.6773	0.3368	-0.0475	-2.0255	-0.6762	-0.6882
Kurtosis	2.3218	2.0204	1.3134	1.9697	2.2147	3.0828
Observations	94	94	94	94	94	94

Source: Author's Computation

The above Table 1 presents the descriptive statistics of the variables. The statistics shows that the standard deviation of the variables employed are not far away from their mean. The result of skewness shows a positive value and greater than zero in gross domestic product and gross fixed capital, this means that the variables are positively skewed and normally distributed. While employment, control of corruption, political stability and accountability indicates negative and less than one. This implies that variables are not normally distributed. Kurtosis shows the peakedness and flatness of the distribution in the series. The result shows that the variables are normally distributed because their kurtosis are less than or equal to three.

Table 2: Pooled Least Square Results

Variables	Coefficients	Std. error	z- statistics	Prob.
Lgfc	0.8829	0.0542	16.28	0.000
Lemp	0.1259	0.0710	1.77	0.076
Lcontr	-0.0954	0.0659	-1.45	0.148
Polst	-0.0241	0.0427	-0.56	0.573
Acct	0.0401	0.0510	0.79	0.431
Cons	1.9101	0.5250	3.64	0.000
Prob.chi2	0.0000			

Source: Authors Computation

The result of the pooled least squares estimates of the variables is presented in Table 2, the result shows that gross fixed capital has a positive and statistically significant impact on economic growth in Nigeria, Ghana, Benin and Niger while employment which is proxy to labour has positive and statistically significant effect on economic growth in Nigeria, Ghana, Benin and Niger. This is in line with economic theory which states that gross fixed capital and employment influence economic growth positively. Control of corruption shows a negative relationship but not statistically significant to economic growth in Nigeria. For Ghana, Benin and Niger, political stability has a negative relationship and statistically not significant to economic growth. This is in line with apriori expectation which shows that high corruption and political instability affects the economic growth negatively. Accountability and voice has a positive relationship with economic growth in Nigeria, Ghana, Benin and Niger. The result also shows that chi-square probability value is less than 5%, this implies that all the independent variables have 100% significant influence to the dependent variable (GDP). It also implies that the model is robust.

Table 3: Random and Fixed Effect Model Result

	Random effect	Fixed effect
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Variables	Coefficient	Coefficient
Lgfc	0.8829	0.7437
Lemp	0.1259	0.3336
Lcontrc	-0.0954	-0.2576
Polst	-0.0241	-0.0090
Acctv	0.0401	-0.0242
Hausman test	0.1079	
Prob. Chi 2	0.0000	

Source: Authors' Computation

The result of the random effect of the variables under investigation in the selected West African countries is presented in Table 3, the result shows that gross fixed capital depicts positive and statistically significant impact with economic growth in Nigeria, Ghana, Benin and Niger. Meaning that gross fixed capital impact positively on economic growth in the study area, higher economic growth will be as a result of increase in gross fixed capital. Employment indicates positive but statically insignificant impact on economic growth. This implies that when there is employment opportunities in Nigeria, Ghana, Benin and Niger there will be an increase in economic growth. Control of corruption shows negative and statistically not significant to economic growth. This means that, control of corruption has no effect in Nigeria, Ghana, Benin and Niger. This counter the apriori expectation which assume a positive relationship between control of corruption and economic growth. The negative findings is similar with findings of Shuaibu eta al (2015), Gyimah-Brempong (2012) and Ugar & Dasgupta (2011) which counter the findings of Han, Khan and Zhaung (2014). Political stability shows negative and statically insignificant effects on economic growth in Nigeria, Ghana and Niger. The negative finding is in line with the finding of Asien Veiga (2013) which is contrary to Beyar (2016) and Han, Khan and Zhaung (2014). Accountability and voice has positive relationship on economic growth in Nigeria., Ghana, Benin and Niger. This implies that accurate record and truthfulness in public and private sector in the study will boast economic growth. The positive finding is similar to the findings of Afolabi (2019), Bayar (2016) and Han, Khan and Zhuang (2014). The result above shows that Hausman test which premised this model, estimated the probability value of the chi-square as greater than 5% which necessitates the study to adopt the random effect model. The result also indicates that chi-square probability value is less than 5% which implies that all the independent variables have 100% significant influence on the dependent variable (GDP). It is further indicates that, the model is robust.

#### Diagnostic Test

The diagnostic test conducted to check the consistency and reliability of the estimated coefficient included in the model. Test such as multicollinearity, heteroskescticity and serial correlation were conducted and finally a robust standard error was conducted to clear out the above mention problems.

Table 4: Diagnostic Test

Variables	VIF	1/VIF
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M2	3.20	0.3120
OPN	3.20	0.3120
INFL	1.15	0.8733
INTR	1.13	0.8865
Ex rate	1.01	0.9908
Mean VIF	1.94	

Source: Authors' Computation

Multi-collinearity problem is checked throughout the models, through the evidence of the variance inflation factor (VIF). Based on the Table 4 and result of the VIF values is 10 which confirm that these observations are free from the multicollinearity.

Table 5: Wald test

Calculated value x2	p- value	Test
8528.42	0.0000	Ho ; rejected

Source: Authors' Computation

Heteroskedasticity test was conducted using the modified Wald test to check whether there is element of heteroskedasticity problem. The null hypothesis indicates that the observations are homoscedastic. However, based on the result of  $X^2$  probability,  $H_0$  was rejected and it was concluded that the heteroskedasticity problem exists.

Table 6: Wooldridge Test

Calculated F value	p- value	Test
142.928	0.0013	Ho : rejected

Source: Authors' Computation

A Wooldridge test is to check whether there is a serial autocorrelation problem among the observations, where  $H_0$  indicates no problems of auto correlation. Equally, having tested the probabilities, we rejected  $H_0$  and concluded that these observations also have serial correlation problems, but robust estimation was used to solve it.

### Discussion of Findings

West African countries have to work on corruption in order to have positive economic growth in the region, because high level of corruption will retard growth, no country will achieve higher economic growth with high level of corruption. The negative findings is similar with findings of Shuaibu et al. (2015), and Ugur & Dasgupta (2011) which counter the finding of Han, Khan and Zhuang (2014). The negative impact of political stability on economic growth in Nigeria, Ghana, Benin and Niger means that, an increase in political instability will bring about decrease in economic growth. The negative finding is in line with the findings of Asien Veiga (2013) while a contrary result was discovered by Bayer (2016) and Han, Khan and Zhuang (2014). West African countries have to make a review on employment opportunities and political system in order to have a speedy economic growth. Accountability and voice have a positive relationship with economic growth in

Nigeria, Ghana, Benin and Niger. The positive relationship is similar with the findings of Afolabi (2019), Bayer (2016) and Han, Khan & Zhaung (2014). This suggests that West African countries should maintain their proper record of governance as it has positive impact on economic growth in their regions.

### **5 Conclusion and Recommendations**

This paper examines the impact of governance on economic growth in West Africa between 1996- 2020, Variables employed include gross domestic product, gross fixed capital, employment, control of corruption, political stability and accountability and voice. The study employed pooled least square; the result indicates that gross fixed capital has positive and statistically significant impact on economic growth in Nigeria, Ghana, Benin, and Niger while employment has a positive but statistically insignificant effect with economic growth in Nigeria, Ghana Benin and Niger. Control of corruption shows a negative relationship and statically insignificant on economic growth in Nigeria, Ghana, Benin and Niger and also political stability has negative relationship but not statistically significant to economic growth. Accountability and voice has positive relationship on economic growth in Nigeria, Benin Ghana and Niger. This result also indicates that chi-square probability value is less than 5% which implies that all the independent variables have 100% significant influence on the dependent variable (GDP, it also implies that the model is robust.

The random effect result shows that the gross fixed capital depicts positive and statistically significant impact on economic growth in West African countries; employment indicates a positive but no significant impact on economic growth, control of corruption shows negative and no significant impact on economic growth. Political stability shows negative and no significance impact on economic growth in Niger, Ghana, Benin, and Niger while accountability and voice has positive relationship on economic growth in Nigeria, Ghana, Benin and Niger. The result also indicates that chi-square probability value is less than 5%, this implies that all the independent variables have 100% significant influence on the dependent variable (GDP). It also implies that the model is robust. Hausmann test in the study suggest the adoption of random effects model. On the whole, it is clear that good governance enhances economy in West African countries. Hence, the study recommends that west African especially Nigeria, Ghana, Benin and Niger should properly check their means of fighting corruption and apply new strategy in controlling corruption so as to have positive and steady economic growth in their regions.

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## Impact of Capital Flight on Economic Growth: Evidence from Nigeria

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DOI: 10.5281/zenodo.6349195

### Abstract

*This paper examines the impact of capital flight on economic growth in Nigeria within the context of the Autoregressive Distributed Lag (ARDL) estimation technique. The study utilizes annual data for the period 1981 to 2019, which was sourced from the Statistical Bulletin of the Central Bank of Nigeria (CBN) and World Bank's World Development Index (WDI) data on Nigeria. The result confirms the existence of cointegration and that capital flight has a negative impact on the economic growth of Nigeria. The study, therefore recommends that government should create a business-friendly environment by increasing its foreign reserve and reducing external indebtedness as well as invest heavily in basic infrastructure to attract FDI.*

**Keywords:** Capital Flight, Economic Growth, Autoregressive Distributed Lag.

**JEL Classification:** F32, F43, R53

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### 1. Introduction

One of the unresolved and perturbing macroeconomic challenges facing developing economies is capital flight, whether normal or abnormal, it affects the source country's economy (Ampah, *et al.*, 2018). The debate on capital flight emerges from its numerous long-term negative consequences, as these illicit financial outflows, deprived developing countries of resources that could be utilized to support vital government services (OECD, 2014). The economies of Sub-Saharan Africa (SSA) lost almost \$814.2 billion between 1970 and 2010, with compound interest totalling more than \$1.06 trillion, depleting vital state resources that could have been used for infrastructure and capital investment, and increasing economic inequality (Boyce and Ndikumana, 2012). Surprisingly, this amount exceeds the combined economic size of these countries as indicated by their Gross Domestic Product of \$1.05 trillion, development aid of \$659.5 billion and foreign direct investment which totalled \$306.4 billion (Boyce and Ndikumana, 2010).

Nigeria's capital flight is reaching alarming levels, presenting a serious threat to the country's long-term prosperity. In the two decades from 1970, the scale of the

challenge was modest, standing at \$7,573 million between 1972 and 1989. In contrast, between 2010 and 2018 the country lost an estimated sum of \$12.84 billion (World Development Indicator, 2019). There are fears in many quarters that capital flight in Nigeria has affected the Nigerian economy by thwarting its growth potentials since it involves the exportation of savings and foreign exchange across borders hence weakening its growth potential. Capital flight additionally, worsen the macroeconomic stability of the country which manifests in the form of budget deficits, unfavourable terms of trade, exchange rate overvaluation, current account deficits and inflation rise. In addition, capital flight has adverse implications on Nigeria's balance of payment as well as exacerbates foreign finance problems (Ajayi, 1995; Ndikumana & Boyce, 2008). Consistently this leads to a decline in economic activity and lack of opportunities for gainful investment in the domestic economy. Indeed, the high levels of capital flight provide significant hurdles for mobilizing local resources to promote investment and growth in Nigeria, this means capital flight exacerbates resource constraints and impedes long-term economic development.

A considerable number of empirical studies have tried to econometrically examine the impact of capital flight on Nigerian economic growth: Bakare (2011); Saheed and Ayodeji (2012); Henry (2013); Usman and Arene (2014); Clement and Ayodele (2016); Lawal *et al.* (2017); Orimolade and Olusola (2018); Bredino, Fiderikumo and Adesuji (2018). Looking at these studies, the contribution of the present research to the literature is the use of the four components of the residual approach as a proxy of capital flight in Nigeria as well as employing the most recent cointegration technique, the Autoregressive Distributed Lag (ARDL) approach. It is to this end that the paper would analyze the impact of capital flight on economic growth in Nigeria. The findings of this study will hopefully help the appropriate authorities to take actions to reduce the incidence of capital flight in Nigeria knowing its implications on economic growth. Apart from this introduction, section 2 presents the review of the literature while the methodology and data sources are described in Section 3. The findings of the study and discussion of results are presented in section 4, and the conclusion and suggestions are presented in section 5.

## **2. Literature Review**

### *Conceptual Review*

Cooper and Hardt (2000) defines capital flight as the transfer of assets across the national border as a result of the holder's perception that the asset being transferred is prone to a high level of risk due to devaluation, hyperinflation, political turmoil, or expropriation if retained at home in domestic currencies. The owner of the assets in this investment unfriendly environment is seeking a place that is devoid of political and economic uncertainty. Tadesse (2014) defines capital flight as illegal outflows of financial assets which is not reflected in the record of the country of origin and which subsequently do not return. This suggests that illicit practice such as falsification of trade records constitute capital flight (trade mis-invoicing). The Morgan Guaranty Trust Company (1986) adopted a more elaborate definition where capital flight is define as the reported as well as the unreported transfer of assets to foreign countries by the non-bank business sector and elements of the public sector. Finally, capital flight is any legal or illegal transfer of assets from a developing and

capital scarce economy to a capital abundant economy in seek of privacy or asset protection and investment.

Since there is no universally agreed definition of capital flight, there are a variety of capital flight measurements in the literature. In general, the following are the approaches to the measurement of capital flight:

*The Hot Money or Balance of Payments Method*

This approach was first proposed by Cuddington (1986). It measures capital flight as the sum of short-term capital outflows of the non-bank private sector including documented errors and omissions i. e. statistical discrepancy in the balance of payment statistics. Where the amount accumulated in the current and capital accounts differs from the amount accumulated in the reserve asset, a negative value for net errors and omissions results. This method envisages that capital flight goes unreported, due to the illicit nature of these capital movements. The unreported capital outflows are believed to appear in net errors and omissions.

*The Trade Mis-invoicing Method*

Under the trade mis-invoicing approach, trade data is compared from both importing and exporting nations. Importers are assumed to be involved in capital flight when they declare higher values for imported goods compared to the reported value of similar goods by exporters (over-invoicing). When exporters report lower values for exported goods than importers report for comparable goods, they are participating in capital flight (under-invoicing). Under-invoicing of exports and over-invoicing of imports contribute to a significant amount of capital flight from African countries (Ndikumana, Boyce and Ndiaye, 2014).

*The Dooley Method*

According to Dooley (1987), capital flight under this method is estimated as part of an increase in external claims that provides recorded investment income, which is not reported to the domestic authorities. This method differentiates between legal and illegal capital flight, as those assets which do not generate reported income are thought to be move to circumvent existing controls.

*Mirror Stock Statistics /Asset Method*

Capital flight is calculated using the asset method as an increase in private citizens' cross-border bank deposits (Fedderke and Liu, 2002). The total figure is the amount of money owing to foreign banks by citizens of a country. This is because citizen's assets can be held in forms other than bank accounts, such as foreign equity holdings. This measure can be interpreted as an indicator of the least amount of assets kept abroad (Hermes, Lensink and Victor, 2002).

*The Residual Method or World Bank Method*

This approach was introduced in pioneering studies by the World Bank (1985) and Erbe (1985). It measures capital flight by comparing the sources of capital inflows (i.e. net increases in external debt and the net inflow of foreign investment) with the uses of these inflows (i.e., the current account deficit and additions to foreign reserves). In principle, if the balance of payments statistics were to be used (reported by the International Monetary Fund Balance of Payments Statistics), the uses and

sources of funds should be equal. This suggests that for the non-existence of capital flight, the sources must be equal to the uses of capital inflows. Capital flight occurs when the sources of capital inflows exceed the uses of those inflows. If the difference is positive, it reflects capital flight; if it is negative, it reflects capital inflows.

#### *Consequences of Capital Flight*

Capital flight may affect an economy in the following ways: First, the reduction of growth potential:- capital flight hampers domestic investment by reducing the volume of funds channelled via the domestic banking system, thereby slowing economic growth (Ndikumana, 2009). Additionally, the wealth that is being siphoned out of the country might have been used to import critical equipment and supplies for the advancement of domestic industry and the economy at large. The import restriction on growth may have been eased as a result of this (Pastor, 1990). Second, the erosion of the tax base:- capital flight decreases the effectiveness of a government to raise revenue from taxes, this arises from the fact that income and wealth generated are outside the purview of relevant authorities and hence cannot be taxed. According to Ayadi (2008), this deprived nations of revenues, capable of contributing to fiscal deficits and constraining expenditures on social welfare programs, defence, and infrastructure development. Third, capital flight deepens inequality:- it is worth emphasizing that capital flight deepens the gap between the rich and the poor since individuals who participate in capital flight are few and inevitably belong to the economic and political elites; they use their most privileged positions to unlawfully drain money overseas. The negative effects of capital flight in terms of reduced income and foreign exchange are felt differently by different classes of society, with the poor bearing the brunt of the impact most. Fourth, the negative impact on the balance of payments:- capital flight accounts for a considerable amount of a country's transaction with the rest of the world. This negatively affects the current account balance of the source country. Finally, capital flight weakens the economy by depleting valuable national resources. It widens the resource gaps faced by developing countries, perpetuating their reliance on external aid. Furthermore, capital flight reduces capital accumulation and long-term growth through widening resource gaps (Tadesse, 2014).

#### *Theoretical Review*

##### *The Debt-Driven Thesis*

This assumes that when a nation has significant foreign debt, it should expect currency rate devaluation, fiscal crises, and the crowding out of local capital and asset expropriation to pay off the loan. When the debt overhang and investment-driven theories are combined, they suggest a mutually reinforcing relationship between capital flight, growth, and foreign debt. Capital flight causes slow growth, necessitating the need to borrow to maintain growth. More borrowing or indebtedness encourages capital flight, which results in slower economic growth. (Collier *et al*, 2001).

##### *The Tax- Depressing Thesis*

This postulates that capital flight leads to potential revenue loss because wealth held abroad is outside the purview of the domestic government and cannot, therefore be



taxed. High anticipated tax rates may reduce net expected returns on domestic investment, while tax rate volatility may increase investment risk, ensuing lower risk-adjusted returns on domestic investment (Ndikumana and Boyce, 2002). The fall in government revenue complicated the task of politico-economic engineering to promote growth and development. As a result, the government's ability to service its debt has been reduced, hence, the debt burden rise which constrains economic growth and development. Thus, a direct result of capital flight is the reduction in revenue-generating potential of the government.

#### *The Austerity Thesis*

This focuses on the poor in the severely indebted situation due to capital flight. They suffer more because the capital that could otherwise have been used for the provision of life-sustaining services is illegally taken out of the country (Kapoor, 2007). Poverty in developing countries reduces them to a state of relative deprivation while perpetrating international inequality and dependency and widening the gap between the rich and poor countries. Furthermore, the tax that the poor may pay is small, which again constrains the ability of the government to muster enough resources to promote growth and development with poverty alleviation. Thus, a vicious circle of external debt, capital flight, poor growth, and external debt is created.

#### *Empirical Review*

Forgha (2008) employed the Engle Granger Co-integration technique on a study of the determinants, measurements and impact of capital flight on real economic growth in Cameroon from 1970 to 2005. The study found that capital flight in Cameroon within the study period is driven by political instability, external debt servicing, real GDP, interest rate, inflation, fiscal deficit, and exchange rate. Capital flight also reported a negative impact on economic growth. The study recommended the need for quality governance, fiscal discipline, tax and tariff adjustments. Bakare (2011) investigated the determinants and roles of capital flight on the Nigerian economy's growth process from 1988 to 2010, using a Vector Autoregressive Model Approach. The study found a negative association between capital flight and economic growth, indicating that economic growth in Nigeria has the potential to reduce capital flight. The study concluded that governments should promote growth and reverse the negative distributional effects of capital flight. From 1981 to 2007, Saheed and Ayodeji (2012) studied the effects of capital flight on Nigeria's exchange rate and economic development. The study employed OLS and found a positive and statistically significant influence of capital flight on the exchange rate and economic growth in Nigeria. Based on the findings, the study suggested the need for a proper check on the menace of capital flight and further training to be given to Nigerian customs to improve their effectiveness in tackling cases of misinvoiced imports and exports. Olugbenga and Alamu (2013) employed the Johansen cointegration test to examine the impacts of capital flight on Nigeria's economic growth spanning the period of 1981 to 2010. The study revealed that capital flight has a detrimental influence on economic growth in the short run, but the contrary is true in the long run. The research concluded that an appropriate business climate is required to attract foreign investors to Nigeria and that capital outflows that finance the importation of capital goods required for development should be encouraged owing to their long-

term benefits. Henry (2013) studied the determinants, measurement and impact of capital flight on economic growth in Nigeria from 1980 to 2011. Ordinary Least Squares (OLS) was utilized and the study found that capital flight from the Nigerian Niger Delta region is caused by political instability, high fiscal deficit, high-interest rate, high external debt, macroeconomic instability, inflation, public policy uncertainty, rate of return differentials, exchange rate overvaluation and dwindling external reserves. In addition, there is a negative relationship between capital flight and economic growth. The study suggested the need for good governance, implementation of fiscal discipline, attitudinal change in the management of the national economy among others.

In a time-series study Usman and Arene (2014), empirically studied the effects of capital flight and its macroeconomic determinants on agricultural growth in Nigeria between 1970 and 2013. The study employed Ordinary Least Squares (OLS) and found that there is a negative and insignificant relationship between total capital flight and agricultural growth. In addition, total capital flight, macroeconomic instability, political instability, interest rate differential and variability in consumer price index show a negative relationship with agricultural growth. The study concluded by recommending that Nigeria should judiciously use the income accruing from loans and Foreign Direct Investment (FDI) if Agricultural growth is to be enhanced. Olawale and Ifedayo (2015) examined the impacts of capital flight on economic growth in Nigeria between the periods 1980 to 2012. Cointegration and Error Correction Mechanism (ECM) were employed and the study found that capital flight, foreign reserve, external debt, foreign direct investment and current account balance co-integrate with Gross Domestic Product (GDP) in Nigeria within the year under study and that capital flight had a negative impact on the economy. The study recommended that government should create an enabling environment for profitable investment and offer foreign investors attractive incentives that will reduce the occurrence of capital flight from Nigeria. Obidike *et al.* (2015) studied the impact of capital flight on the economic development of Nigeria from 1980 to 2011. The Autoregressive Distributed Lagged model (ARDL) was employed and the result showed that capital flight has a negative and significant impact on economic development. Based on these it was recommended that government should take concerted steps to improve the security of life and property in the country and public resource managers should sincerely partner with anti-graft agencies to ensure that all the channels through which public office holders launder money abroad are stopped. Clement and Ayodele (2016) examined empirically the impact of capital flight on the Nigerian economy between 1980 and 2014. The study found that the variables have a significant effect in the positive direction. The study recommended the need for government to create an enabling environment for investments in Nigeria, intensify effort in the recovery of looted funds in foreign accounts and monetary authorities should ensure capacity building for local investments.

Lawal *et al.* (2017) applied the Autoregressive Distributed Lag (ARDL) model to investigate the impact of capital flight and its determinants on the Nigerian economy from 1981 to 2015. The study revealed the existence of a long-run relationship among the variables studied and capital flight has a negative impact on the economic

growth of Nigeria. The study suggested the need for government to implement policies that will promote domestic investment and discourage capital flight from Nigeria. Igwemma *et. al.*, (2018) used an Autoregressive Distributed Lag (ARDL) approach to investigate the impact of capital flight on the Nigerian economy from 1986 to 2016. According to the findings, capital flight and economic growth have a negative and significant relationship, domestic investment and interest rate differential both have positive relationships with real GDP while political instability, looted funds, expenses on foreign education and medical services were found to have a positive and significant impact on capital flight. To deter capital flight, the study recommended that education and health infrastructures should be appropriately supported along with governance and prosecution of corrupt officials to discourage capital flight.

Orimolade and Olusola (2018) investigated the impact of capital flight on the growth of the Nigerian economy. The Autoregressive Distributed Lag approach was employed to analyze both short and long-run relationships between the variables. The study found that there is a long run negative relationship between GDP and all the capital flight variables in the study. The study recommended a favourable economic policy to take care of inflation, poor and inadequate infrastructural facilities, and high rate of taxation among others to discourage capital flight from the Nigerian economy. Bredino, Fiderikumo and Adesuji (2018) analyzed the impact of capital flight on economic growth in Nigeria from 1980 to 2012. The study revealed that capital flight has an adverse impact on the GDP, while exchange rate impacts positively on the GDP. The study suggested that the government should develop appropriate mechanisms to monitor the amount of capital that is flown out of the nation, as well as place controls on all levels of the government's external borrowing tendencies.

3. Methodology

The data for the study came from a secondary source and specifically time series data spanning the period of 1981 to 2019. The data was sourced from Statistical Bulletin of the Central Bank of Nigeria (CBN) and World Bank's World Development Index (WDI) data on Nigeria. To study the impact of capital flight on economic growth in Nigeria, this study adopted the residual approach to capital flight measurement as stipulated by World Bank (1985) and Erbe (1985).

KF<sub>it</sub> = ΔDEBT<sub>it</sub> + FDI<sub>it</sub> - (CA<sub>it</sub> + ΔRES<sub>it</sub>)..... 1

This is because the measurement of capital flight using this approach accommodates some important variables which determine the economic growth of Nigeria. These variables include external debt, foreign reserve, current account balance and foreign direct investment. The functional form of the research model is presented as:

GDP = f (EXD, FDI, CAB, FOREV) ..... 2

Where GDP is the gross domestic product, which is the dependent variable, EXD is the external debt proxied by the stock of gross external debt owed to non-residents, FDI is the foreign direct investment proxied by net inflows of foreign investment, CAB is the current account balance proxied by the sum of net exports of goods and

services, net primary income and net secondary income. Lastly, FOREV is the foreign reserve proxied by the level of Nigeria's real foreign exchange reserves. For empirical analysis, equation (2) is restated as thus:

$$GDP = \beta_0 + \beta_1 EXD + \beta_2 FDI + \beta_3 CAB + \beta_4 FOREV + \mu_t \dots\dots\dots 3$$

The semi log-linear specification of equation (3) is expressed as:

$$LGDP = \beta_0 + \beta_1 LEXD + \beta_2 LFDI + \beta_3 LCAB + \beta_4 LFOREV + \mu_t \dots\dots\dots 4$$

The apriori expectations of the model are that: LEXD<0, LFDI>0, LCAB<0, LFOREV>0

An ARDL representation of equation (4) above is specified in equation (5) below:

$$\begin{aligned} \Delta LGDP_t = & \alpha + \sum_{i=1}^q \beta_{i,1} \Delta LGDP_{t-i} + \sum_{i=0}^q \beta_{i,2} \Delta LEXD_{t-i} + \sum_{i=0}^q \beta_{i,3} \Delta LFDI_{t-i} + \\ & \sum_{i=0}^q \beta_{i,4} \Delta LCAB_{t-i} + \sum_{i=0}^q \beta_{i,5} \Delta LFOREV_{t-i} + GDP_1 LGDP_{t-1} + \\ & GDP_2 LEXD_{t-1} + GDP_3 LFDI_{t-1} + GDP_4 LCAB_{t-1} + FDI_5 LFOREV_{t-1} + \mu_t \dots\dots\dots 5 \end{aligned}$$

The ECM representation takes the following form:

$$\begin{aligned} \Delta LGDP_t = & \alpha + \sum_{i=1}^q \beta_{i,1} \Delta LGDP_{t-i} + \sum_{i=0}^q \beta_{i,2} \Delta LEXD_{t-i} + \sum_{i=0}^q \beta_{i,3} \Delta LFDI_{t-i} + \\ & \sum_{i=0}^q \beta_{i,4} \Delta LCAB_{t-i} + \sum_{i=0}^q \beta_{i,5} \Delta LFOREV_{t-i} + ECM_{t-1} \dots\dots\dots 6 \end{aligned}$$

Where ECM is the error correction version of the ARDL model and all other variables are as explained under equation (2).

This study employs the Autoregressive distributed lag estimation technique (ARDL) to examine the impact of capital flight on economic growth in Nigeria. The ARDL procedure can be used when the variables are integrated of order zero or one unlike in the case of Engel Granger and Johansen cointegration approaches. The ARDL procedure is also quite efficient in small sample data, as is the case in this study (Giles, 2013). There are several stages to the ARDL cointegration technique. The stationary properties of time series variables were investigated in the first step by using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The second stage is determining whether or not there is a long-run relationship between the dependent and independent variables. The last stage of an ARDL bound approach is to estimate an error correction model associated with the long-run estimates to derive the short-run dynamic parameters.

#### 4. Results

##### *Descriptive Statistics*

The descriptive statistics as derived through E-Views 9.0 shows the characteristics of the data and are presented in Table 1. It shows that GDP is on average 8.620157 with a standard deviation of 2.366814. The highest value is 11.87903 while the least value is 4.975569. The distribution of GDP is negatively skewed, platykurtic and normal. The result also shows that on average, FDI is 21.06754 with fluctuations of 1.145217. The highest value realized is 22.90267 while the least value is 19.05813.

The distribution of FDI is normal, positively skewed and platykurtic. The average rate of CAB has been 15.84817 with a fluctuation of 10.16033. The highest rate is 24.32137 and the least is 13.94090. The distribution of this variable is negatively skewed, platykurtic and not normally distributed. The variable EXD is negatively skewed and the distribution is leptokurtic, it is on average 17.48253 with a standard deviation of 8.347644. The highest value is 22.89766 while the least value is 13.27411. The distribution of EXD is not normally distributed. Lastly, FOREV is on average 22.86237 with deviations of 1.400976. The least value of FOREV reported is 20.65390 while the highest value is reported at 24.70480. The distribution of FOREV is not normally distributed, negatively skewed and platykurtic.

**Table 1: Summary Statistic of Variables**

	LGDP	LEXD	LFDI	LCAB	LFOREV
Mean	8.6201	17.482	21.067	15.848	22.862
Median	8.8389	21.407	21.019	20.907	22.747
Maximum	11.879	22.897	22.902	24.321	24.704
Minimum	4.9755	13.274	19.058	13.940	20.653
Std. Dev.	2.3668	8.3476	1.1452	10.160	1.4009
Skewness	-0.2109	-1.6130	0.0364	-0.9072	-0.0701
Kurtosis	1.6090	3.6920	1.8108	1.9066	1.4578
Jarque-Bera	3.4334	17.691	2.3063	7.2925	3.8966
Probability	0.1796	0.0001	0.3156	0.0260	0.1425
Sum	336.18	681.81	821.63	618.07	891.63
Sum Sq.Dev.	212.86	2647.9	49.837	3922.8	74.583
Observations	39	39	39	39	39

*Source: Authors' computation*

**Stationarity Test**

To determine whether there is a presence of unit root or the series are stationary, we investigated the time series characteristics of the variables (LGDP, LEXD, LFDI, LCAB, LFOREV) using Augmented Dickey-Fuller (ADF) and Philips Peron (P-P) unit root tests. The result of the Augmented Dickey-Fuller test as presented in table 2 shows that LFOREV, LCAB, LFDI and LGDP are stationary at first difference while LEXD is stationary at level.

Similarly, from the Philips Peron test, LFOREV, LFDI and LGDP are stationary after the first difference whereas LCAB and LEXD are stationary at level. Based on this result, it is obvious that the variables are integrated of the orders 1(0) and 1(1). Thus, the Autoregressive Distributed Lag (ARDL) Bounds test will be employed to investigate whether there is a long-run relationship among the variables incorporated in our model.

**Table 2: Summary of Unit Roots Test Results**

		ADF	PP
LGDP	Level	-1.0474	-0.7952
	1 <sup>st</sup>	-3.2085**	-3.1225**
LEXD	Level	-5.2575***	-5.2231***
	1 <sup>st</sup>	-6.2513***	-18.280***
LFDI	Level	-1.9505	-1.6583
	1 <sup>st</sup>	-9.8592***	-9.7738***

LCAB	Level	-1.3114	-3.8152***
	1 <sup>st</sup>	-3.8577***	-8.0547***
LFOREV	Level	-0.7393	-0.6040
	1 <sup>st</sup>	-5.5604***	-6.9705***

Note: \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% respectively.

Source: Authors' Computation

#### Bound Test for Cointegration

The results of the bounds testing approach for cointegration is presented in table 3. It is seen that the calculated F statistics of (5.392708) is greater than the upper and lower critical values of 4.37 and 3.29 at a 1 percent level of significance. Indicating that the null hypothesis of no cointegration cannot be accepted, meaning that there is a cointegration among the variables.

Table 3: ARDL Bounds Test

F-Statistics	5.392708	4
	Critical Value Bounds	
Significance	I0 Bound	I1 Bound
10%	2.2	3.09
5%	2.56	3.49
2.50%	2.88	3.87
1%	3.29	4.37

Source: Authors' computation

#### Result of the Estimated Long-Run Coefficients of the ARDL

This section contains the results of the long-run relationship among the variables. The results are summarized and presented in Table 4.

Table 4: Dependent Variable: LGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCAB	0.0485	0.0398	1.2186	0.2328
LFOREV	3.3032	0.6920	4.7733	0.0000
LEXD	-0.0732	0.0426	-1.7154	0.0969
LFDI	1.5537	0.7406	2.0977	0.0448
C	-38.119	6.0118	-6.3406	0.0000

$R^2 = 0.99$ ; AIC = -2.012, SBC = 1.624, HQC = -1.874; DW = 1.871, ADJ.  $R^2 = 0.99$ ; F- Stats = 3893.322, P (F-Stats) = 0.000000.

Source: Authors' Computation

The result as indicated in table 4 shows that the coefficient of determination ( $R^2$ ) of the model is 0.99, indicating that approximately 99 percent of the variations in economic growth is explain by the explanatory variables. The F statistic value of the long-run model is also significant and implies that all the explanatory variables included in the model are jointly significant. In the result, there exist a positive and significant relationship between the foreign reserve and economic growth in Nigeria in the long run. One percent increase in foreign reserve leads to about 3.303200 percent increases in economic growth in Nigeria. The implication of this finding is that increase in foreign reserve boosts domestic investors' confidence in the domestic economy, hence discouraging the outflow of capital and improving the potential of economic growth. This result is consistent with the work of Lawal *et al.*, (2017).

In addition, external debt has a negative impact on economic growth in Nigeria in the long run. One percent increase in external debt leads to about 0.073228 percent decrease in GDP. This finding implies that high external debt has the capacity of reducing national output thus providing unfavourable investment climate which supports capital flight. The finding is similar to the work of Mweni *et al.*, (2016) and Ngugi *et al.*, (2016).

In the result, there exists an insignificant positive relationship between current account balance and economic growth in Nigeria. One percent increase in current account balance leads to about 0.048512 percent increases in Gross Domestic Product in Nigeria.

Lastly, there exists a positive and significant relationship between foreign direct investment and economic growth in Nigeria in the long run. One percent increase in foreign direct investment leads to about 1.553727 percent increases in economic growth in Nigeria. This finding implies that foreign direct investment has the potential of improving economic growth and reducing capital flight in Nigeria. This is because an increase in FDI reflects a general improvement in the investment climate hence improving national productivity and dissuading capital outflow. The result conforms to the findings of Lawal *et al.*, (2017) and Kolapo & Ojo (2012).

*Result of the Estimated Short-Run Coefficients*

The result of the short-run analysis of the model from table 5 reveals the value of the ECM coefficient which is of most importance in the table is -0.531179. This implies that, in case of distortion in the economy, equilibrium can be re-established by approximately 53% annually. The negative value of the ECM coefficient confirms that there is disequilibrium in the short run which the set of variables in the model is trying to correct in the long run.

Table 5: Estimated Short-Run Coefficients of the ARDL Model

Variable	Dependent Variable: LGD			
	Coefficient	Std. Error	t-Statistic	Prob.
D(LCAB)	0.00013	0.00131	0.10270	0.9189
D(LFOREV)	0.09999	0.03107	3.21754	0.0032
D(LEXD)	-0.00380	0.00126	-3.00664	0.0054
D(LFDI)	0.04395	0.01823	2.41018	0.0225
CointEq(-1)	-0.53117	0.00333	15.93709	0.0000

*Source: Authors' Computation*

The results indicate that all the variables significantly affect economic growth in the short run except current account balance. The only difference between the coefficients of these variables in the short and long run is the magnitude but the signs are the same.

*Post Estimation Diagnostics Test*

To ensure the adequacy of the model, as well as the reliability of the results, a series of post-estimation diagnostic tests of serial correlation (autocorrelation), normality and heteroskedasticity were carried out on the selected ARDL model. For the serial correlation test, the Breusch-Godfrey Lagrange Multiplier LM test was adopted to test the null hypothesis of no serial correlation. The result shows that the F statistics

value of 0.093633 (corresponding to a p-value of 0.9109) is insignificant, thus confirming the presence of no serial correlation.

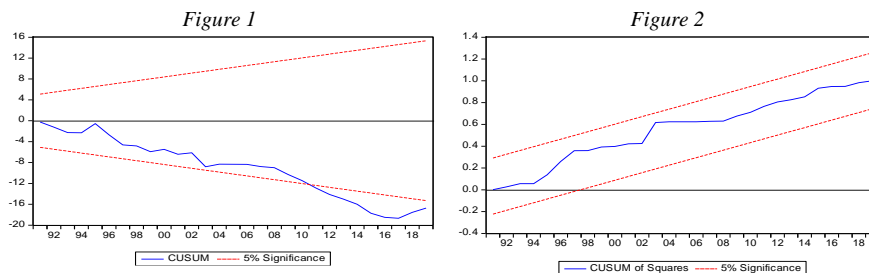
Table 6: Results of the Diagnostics Tests

Normally test			
JarqueBera	0.674152	Prob.	0.7138
Breusch-Godfrey Serial Correlation LM Test			
F-statistics	0.093633	Prob. F(2,27)	0.9109
Breusch-Pagan-Godfrey Heteroscedasticity Test			
F-statistic	2.059671	Prob. F(8,29)	0.7141

Source: Authors' Computation

For heteroskedasticity, the Breach-Pegan-Godfrey test was carried out to test the null hypothesis of no heteroskedasticity. The outcome of the test too did not show any evidence of heteroskedasticity going by the insignificant F statistics value of 2.059671 (corresponding to the p-value of 0.7141). Finally, the test of normality of residual was carried out using the popular Jarque-bera statistics. The normality test testified that the model is normally distributed. This has resulted from the fact that the probability value of the Jarque-Bera is not statistically significant even at 10% level.

To determine the stability of the model and the estimated parameters, the study applies the cumulative sum of recursive residuals (CUSUM) and cumulative sum of recursive residuals of squares (CUSUMSQ) which is shown in figure 1 and 2 respectively. The result of CUSUM depicts that the model and the estimated parameters are stable, the blue line veers within the two red lines indicating 5% level of significance, although there was divergence away in 2011 but was restored in 2019. Closer scrutiny of the CUSUMSQ also shows that the model and the estimated parameters are stable given that the graph moves within the 0.05 critical values.



**5. Conclusion and Recommendations**



From the study, it is very evident that capital flight components such as external debt, foreign direct investment, and foreign reserve, as posited by the residual method, have a major influence on economic growth in Nigeria. As a result, it is concluded that capital flight has a considerable influence on economic growth and that the variables of the study are cointegrated in the long run.

Based on this, the study recommends that the government of Nigeria should provide a business-friendly environment continuously to improve the economy by increasing its foreign reserve and reducing external indebtedness, this is crucial to the maintenance of macroeconomic stability as well as boost the confidence of domestic investors in the economy. Lastly, to attract private foreign resources in the form of Foreign Direct Investment into the nation, it is also necessary to restore and strengthen existing and decayed critical infrastructure, such as power, roads, and transportation.

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## **Integrating Theory and Empirical Data: Microfinance, Poverty and Islam in Nigeria**

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DOI: 10.5281/zenodo.6349209

### **Abstract**

*Nigerian Muslims have lived without adequate legal and regulatory provisions for microfinance institutions that are specifically targeted at their peculiar needs. Islam forbids usury (i.e. interest) and majority of poor Muslims in Nigeria avoid both conventional commercial and microfinance banks mainly to abide by the dictates of their religion (Islam). Southerners live closer to the hub of country's financial sector and do not exclude themselves from it like the Northerners. Meanwhile, the literature is replete with lots of evidence in favour of finance for growth and finance for poverty alleviation. This study expressed the rate of change of output with respect to time (i.e year) as a function of labour, capital per head, technology and effect of microfinance for both the South and the North in form of a mathematical(not econometrics) model. Geogebra mathematical software was used to simultaneously obtain output (not rate of change of output over time) for each region as a function of time. A simulation of this model was presented in graphical form for easy identifications of changes to output of each region due to the simulated figures. The results of the analysis show that the prevalence of microfinance banks in the South over the North can explain the difference in the rate of poverty between the two regions. Critical mass of Shariah-Compliant microfinance is recommended for the North to bridge the gap observed in the poverty rate between the regions.*

**Keywords:** Muslims, Microfinance, Northern Nigeria, Poverty.

**JEL Classification:** I32, O12, P43, Z12

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### **1. Introduction**

Since the colonisation of Nigeria by the British ended in 1960, the socio-economic fate of Muslims in the country like other colonised Muslim-dominated country may have suffered setbacks due to the incongruence of the ordinances in the British legal system against the permitted way of life enshrined in the Quran i.e. the Islamic Holy book to whom Muslims generally are guided in their respective socio-economic activities. However, unlike other once colonised Muslim dominated country like Indonesia, Malaysia, Bangladesh etc. not much success had been made towards setting up formal economic institutions like commercial banks, insurances companies, microfinance banks etc other than having two Islamic banks- Jaiz bank and Taj bank- to take care of the needs of Muslims who desire to adhere to the Islamic

injunctions in their respective everyday dealings. Honohon (2007) was cited in CGAP (2008) to have noted that more than 72 per cent of Muslims exclude themselves from non Shariah-Compliant financial system. This, however, may not be without implication on the socio-economic lives of such faithful in general because legal and regulatory environment put in place in any country have strong influence on the economic growth trajectory in such country (Broughel, 2017). Besides, religiosity impacts on poverty in diverse dimensions and there are several debates as to whether the impact is overall positive or negative (Schweiger, 2019). The geographical distribution of non-Sharia-Compliant banks (commercial and microfinance banks alike) in Nigeria, for example, is highly skewed against Northern Nigeria which is the Muslim dominated region. Official records of Central Bank of Nigeria (CBN) and Nigeria Deposit Insurance Corporation (NDIC) show that all the 22 commercial banks and six merchant banks have their Head Office in the Southern part of the country i.e. Lagos. The two Sharia-Compliant Islamic banks (Jaiz and Taj) have their Head Office in Abuja which is in a Northern part of the country. Similarly, the same sources (CBN(2020) and NDIC(2019) say Northern region (FCT inclusive) has only 35 per cent (310 out of 897) of microfinance banks in the country while the South has 65 per cent (587 out of 897). However, there are no indication that any of the 310 microfinance banks in Northern Nigeria are Shariah-Compliant ones. Official data of poverty rate in Nigeria show that the Northern States record higher rate of poverty than the Southern States. In South Western, Ekiti State poverty rate is least (when compared to Lagos, Ogun, Osun, Oyo, and Ondo) with the highest number of microfinance banks. In the Northern States, poverty is higher in Yobe, Taraba and Sokoto with the least number of microfinance banks.

The Nigerian economy, in the first one and half decade (1999-2015) of its return to democratisation, recorded a high (above 6% per annum) growth rate and an improved per capital income, but the proportion of persons living in poverty is rather increasing throughout that period (NBS; 2020). The situation is even worst since 2016 due to recession and rapid rate of food inflation with other essential items in the food basket and services of the masses. Nigerians living in North West, North Central and North East in particular (NBS; 2020) are the worst hit by the recession. Meanwhile, agriculture and many other activities of the primary sector are the dominant means of livelihood of majority of the poor across the country. Smallholder farms with poor yield are the common feature of the agriculture sectors. Farmer-herder crises, incessant banditry and kidnapping have become and remarkable features of the live of farmers especially in the Muslim dominated zones (North West, North Central and North East) in the past decade. Although finance has been found to impact positively on economic growth and as a result slow poverty in Nigeria. Most of the commercial money banks and microfinance are mostly sited in more commercialised communities. Lagos alone has 19 per cent of the total microfinance banks in Nigeria followed by Anambra with 8.6 percent. However, Kano the most populated States and the second most commercialised State in the country has 5 per cent of the microfinance banks in Nigeria. While Lagos, Anambra, Oyo, and Ogun are all not as populated like Kano and except Lagos they are all not as commercialised as Kano, yet they all have more microfinance banks than Kano. Again, Kano is a northern State and its indigenes/residents are mostly Muslims

whose religion forbids financial services like banks not compliant with Islamic injunction. Even though Kano is highly commercialised, poverty is high in Kano than many not so commercialised States in the Southern region.

A number of scholars have explained the financial exclusion taking place in Muslim dominated Northern Nigeria (Enhancing Financial Innovation & Access(EFInA), 2014) and (Adeyemi, Pramanik, & Ahamed, 2012) that it may not be without its implications. In particular EFInA (2014) identified Kano, Bauchi, Kaduna, Katsina and Sokoto as the top 5 States with the highest number of financially excluded adults. The gap in literature is that there has not been direct linkage between the state of poverty in most of these Muslim dominated northern States and financial exclusion in these States to the best of knowledge of the present study. Using a simulation approach which compares the state of the variables of the production/aggregate output of this part of the country to those of others, this research fills this gap by showing how differentials in financial exclusion is associated with lower per capital output. The question this research seeks to answer is to what extent is exclusion from financial activities/microfinance banks due to religious instructions account for the poverty of the people? In other words, to what extent can the prevalence of microfinance banks in Southern part of Nigeria explain relatively lower rate of poverty than the Northern part? The model in this study is similar to the quantitative macroeconomic framework of entrepreneurship by Buera, Kaboski, & Shin's (2021) which shows the aggregate impact of microfinance institutions in the country. More precisely, financing activities are required to stimulate commercial activities required to earn a living through contribution to the main stay of economy of northern Nigeria i.e. supply value-chain in agriculture and commerce. Financing activities are generally abysmally low in most of northern Nigeria; where they exist they are mostly based on interest which is not in tandem with the faith (Islam) of majority of the people living in the community. Yet poverty is relatively high in the region compared to other regions in the country. The study is divided into five sections. This introductory section is the first section and the literature review section is the second. The methods of the study is presented in the third section of the study. The fourth and fifth section respectively present the results of analysis and the conclusions and recommendation.

## **2. Literature Review**

This section conceptualizes relative poverty and financial exclusion and defines some concepts/ideas in a simplistic form. It also learns from financial exclusion experiences of other countries/community across the globe with the aim of a better appreciation of the problem in Nigeria. Finally, the chapter indicates a gap in the literature of financial exclusion in the microfinance sub-sector that the paper attempts to make some inroads towards filling

### *Conceptual Review*

The idea of poverty is widely debated in the literature and *endogenous poverty* is relative poverty especially when reference is made to the median income in the community/country as the poverty line. Poverty has been conceptualised from

different perspectives and the likely causes have also being widely discussed in the literature (Conconi & Viollaz, 2018).

*Financial exclusion* is the processes that prevent the poor and disadvantaged socio-economic groups from gaining access to the financial system. In a narrower sense, it has been defined as exclusion from particular sources of credit and other financial services (including insurance, bill-payment services, and accessible and appropriate deposit accounts). In a more wider perspective it refers to factors which have the effect of shutting out of the less well off from mainstream money services (Sinclair, 2001).

#### *Theoretical Framework*

Otherwise called the *poverty-growth-inequality triangle hypothesis*, the theoretical underpinning of the study is the idea that the extent of poverty in a country depends on the growth of average income in that community and the degree of inequality in the distribution of the income (Datt & Ravallion, 2011). In other words, exclusion from financial services by people in Northern Nigeria could limit growth in average income of people in the region and when this happens, the dynamics of the political economy of the region will cause a lopsided distribution in the income of the region.

#### *Empirical Review*

Finance is important in bringing about economic growth (Nizam, Abdul Karim, Abdul Rahman, & Sarmidi, 2020) and (King & Levine, 1993) among others and economic growth is a necessary condition to achieving poverty reduction. More particularly, Islamic finance impacts positively on economic growth (Mustafa, Baita, & Usman, 2018) (Kassim, 2016) and (Tabash & Dhankar, 2014). The literature is replete with lots of evidence on the effects of microfinance and finance in general on poverty alleviation (Machingambi, 2020) and (Egharevba, Azuh, Iruonagbe, & Chiazor, 2016). For Nigeria, the issue of high poverty rate across the country has been of great concern for policy makers, politicians and development partners for decades. What is worrisome in particular is the skewness of the spread of poverty within the northern parts of the country. Religion, population, climatic condition, cultural practices among others are some of the factors that differentiate the Northern region from the Southern region in Nigeria. Meanwhile, religion and religiosity are arguably two sides to a coin that is capable of causing poverty on one hand and alleviating it on the other (Schweiger, 2019). Sedmak (2019) used Randomised Control Experiment (RCT) to show that religion plays the function of setting normative ideas as well as serves as a motivational factor in the lives of people. It is also interpretive.

The predominant religion in Northern Nigeria, Islam, encourages accumulation of wealth, hard work, participations in commercial activities, good work ethic, partnership among other practices needed to avoid poverty (Khan, 2020). It however forbids earnings through *usury, pork meals, extortions, bribery, exploitations* among other social vices (Yeboah-Assiamah, 2014). There are instances where Prophet Muhammad (PBUH) was reported to regularly pray against poverty and even encouraged humanity to strive for financial independence. However, it is clearly prohibited for Muslims to engage in dealing in interest on loans and interest in other

form of financing (Qur'an 2:275-280). Models of non-interest financing are until a decade ago entirely absent in Nigeria's formal financial market. Most of the non-interest financial transaction in many parts of Muslim dominated communities in Nigeria were mainly informal and their limitations are highly determined by difficulty in the enforcement of informal loan contracts (Uruakpa, 2018), (Adeusi & Ibitoye, 2014) among others. Although Muslim dominated north is richly endowed in agriculture, the region does not have a robust financial sector capable of unlocking the potentials in agriculture (Muhammad, Alhaji Dauda, & Mamman, 2018). Even at that Abraham (2015) showed that lending to the rural poor in Northern Nigeria has significant positive impact on poverty alleviation. This is similar to the conclusion by Donou-Adonsou & Sylwester (2017) that microfinance is capable of bringing about increased economic growth than banks would do. In addition to restricted access to microfinance, the land tenure system in the country is such that makes it difficult to securitise landed property for the sake of using them as collateral to unlock the potentials in agriculture by freeing resources for adequate investment in the sector especially for a region (the North) that owns the larger percentage of land in the country (Kehinde, Shittu, Adewuyi, Osunsina, & Adeyonu, 2021)

### 3. Methodology

The study used both descriptive and analytical approach to show the aggregate impact of microfinance on economic growth and by extension poverty. Graphical plot of a number of microfinance banks and poverty rate and that of number of commercial banks and branches of commercial banks are the descriptive approach. A model of aggregate impact of microfinance on the entire economy is used to show the relative impact of microfinance in both the South and the North in Nigeria. First we obtain the graphical plot of microfinance banks against rate of poverty head count on two different (primary and secondary scale) scale of measurement. This is to show how the number of microfinance banks in a State related to the rate of poverty. Similarly, a graphical plot of the number of microfinance banks by State on the primary axis and the number of branches of commercial deposit money banks (DMBs) on the secondary axis to show the pattern of distribution of both microfinance banks and commercial money banks across the country. The aim is to show whether there is comparative advantage in microfinance banks in some States over others.

A mathematical (not econometrics) model was specified, solved and simulated to discern the respective behaviour of the impact of microfinance in the South and in the North. In particular, the rate of change on output over time as a function of labour, capital per head, technology and microfinance effects were specified. It is a mathematical model because the stochastic term is not indicated as no estimation of coefficients were done. Instead, Geogebra a mathematical software was used to solve the output (not rate of change of output) as a function of time for each of the Southern and Northern regions. Using the Cobb-Dougllass production function, the study carried out a *simulation* of aggregate production (output) of the Southern and Northern States to examine the factors that can explain the differences in output between both regions with the aim of explaining the difference in level of income and then poverty in Muslim dominated North and Christian dominated South.



To achieve this we use a dynamic mathematical model indicating the rate of change of output in each of the region and the population rate over time. The change in aggregate output over time in Southern and Northern Nigeria respectively are indicated in equation (1) and (2) and the change in the country’s population is given in equation (3).

$$\frac{dr}{dt} = \frac{Af (\tau K)^\alpha}{P} L^\beta \dots\dots\dots 1$$

$$\frac{dy}{dt} = \frac{Af (\gamma L)^\beta}{P} K^\alpha \dots\dots\dots 2$$

$$\frac{dP}{dt} = \gamma L \dots\dots\dots 3$$

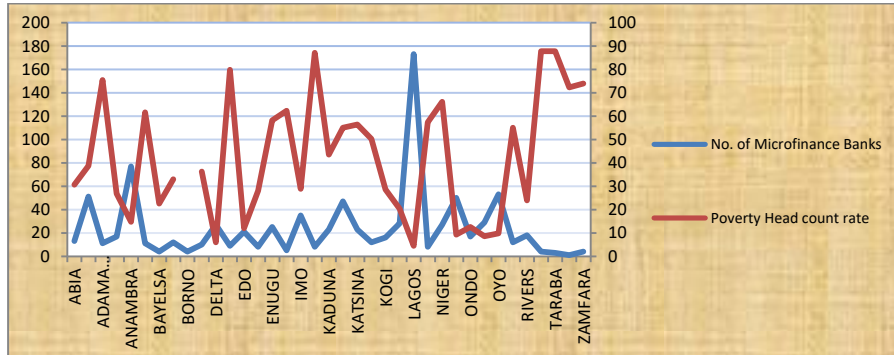
Where A,  $\alpha$ ,  $\beta$ ,  $\tau$ , and  $\gamma$  are productivity/technology, elasticity of capital, elasticity of labour, labour deepening and capital deepening effects respectively. Similarly, K, L and P are respectively state variables for capital, labour and population. L is proxied by 1 minus rate of unemployment; K by ratio of investment to GDP and P by growth rate of the population.

We started the *initial condition* of each of the state variables (capital accumulation(K),labour employed(L) and population rate (P), we use Ordinary Differential Equation with the command *NSOLVE ODE* in a mathematical software called *Geogebra* we obtain the graphs of the dynamic path of the three equations under several scenarios. Official figure of unemployment rate by National Bureau of Statistics is 30 per cent in Nigeria as at 2021 and so L is 1-30 per cent i.e. 0.7. Similarly, we used *gross fixed capital formation* data for the period 2010 to 2018 to estimate *gross fixed capital formation* as a per cent of GDP to arrive at the initial figure for capital Kstart which ranges from 0.14 - 0.2. We selected the maximum for the purpose of this study. In addition to the official sources to which references were made to above, the study learns from the results of the empirical literature of Cobb-Douglass production function in Nigeria to fix the coefficients (A,  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\tau$ , and  $\gamma$ ) and values for the state variables (K,L,P,y and r) are obtained from CBN(2019) and NBS(2020).

**4. Results**

The head count of poverty rate by State shows an indirect relationship with the number of microfinance banks in the country. The lower the number of microfinance banks by States, the higher the rate of poverty head count there is. The chart in figure 1 shows that as the blue line which indicates the number of microfinance banks trend downward, the red line indicating the rate of poverty head count trended upward and viz. visa. It should be noted that the red line on the right hand side measuring rate of poverty head count slopes upward whereas the blue line for number of microfinance banks trended upward almost at the same time say from Oyo to Zamfara.

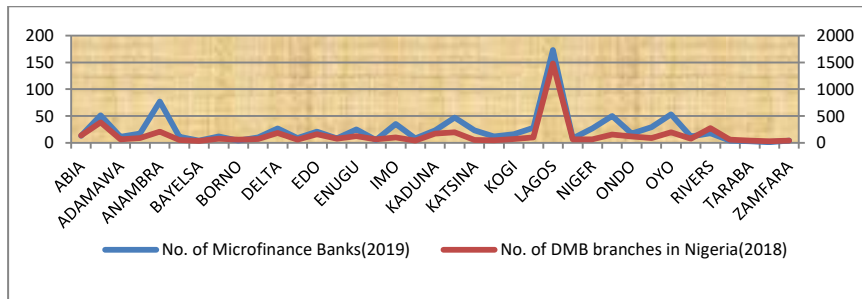
*Figure1: Graphical Plot of the Spread of Microfinance Banks and Poverty Head count by State in Nigeria*



Sources: Author’s draft using data sourced from National Bureau of Statistics (NBS, 2020) and Nigerian Deposit Insurance Corporation (NDIC, 2021).

When compared to the spread of the branches of commercial Deposit Money Banks (DMBs) in each States of the federation, the spread of microfinance banks across the country mirrors, almost exactly, the distribution of the branches of DMBs across the country. For example, Anambra recorded higher number of microfinance banks and DMBs than Adamawa to the left and Bayelsa to the right. Similarly, the pattern of movement of the spread of branches of DMBs throughout the figure is same as the number of Microfinance banks in all the States of the Federation. This is a preliminary indication that there is no State that has comparative advantage in microfinance banks over others as the number of branches of DMBs in each of the State of the federation reflects the number of microfinance banks available in each of the State. In other words, there is no State that has unique preferences for microfinance banks over others. Meanwhile the distribution of microfinance banks by State indicated in green colour takes reference from the primary axis on the left hand side of the figure above, the number of branches of DMBs by State indicated in red takes reference from the secondary axis on the right hand side of the figure.

Figure 2: Graphical Plot of the Spread of Microfinance Banks and Branches of Deposit Money Banks (DMBs) by State in Nigeria



Sources: Author’s draft using data sourced from (Nigerian Deposit Insurance Corporation(NDIC), 2021)

Scenario1.

The results of engaging capital, labour and improved financial services in the Southern part of the country indicates higher total output in the South over the North throughout the relevant period of thirty five years under investigation. This can be

seen in Figure 3. During the period also, the growth rate of the population is exponentially rising faster than the pace of output per head in both the South and the North. In particular, the rate of growth of output over time for the Southern parts of the country is twice that of the North if we assume twice as much microfinance banks in the South compared to the number in the North. In Figure 3 for example, when the rate of growth of the total output of all the Southern States was 24%; that of the entire Northern State was 12%.

#### *Scenario 2.*

The results of simulation of Scenario 2 in figure 4 is similar in all respect to scenario 1 except that technology and other endogenous factors were assumed to be higher by 57% i.e.  $A=1.1$  in this scenario. The result of the simulation shows that Southern States continue to have twice as much output compared to the Northern States. Although the magnitude of each of the region is relatively higher than scenario 1 when technology and other endogenous factors are assumed to be lower i.e  $A=0.7$ .

#### *Scenario 3*

Scenario 3 is similar to scenario 2 except that the availability of microfinance banks in the Southern State is assumed to be only one-fifth ( $f=0.2$ ) of those of the Northern States. By this, the pace of growth of output in the Northern States is four-fifth of those of the Southern States. Although slower but still an exponential growth rate, the population rate is found to be higher than output per head throughout the relevant period under investigation. Shown in figure 5, when the output per head for the Northern States grew by 8 per cent in the fifth year; that of the Southern States grew by 2%.

#### *Scenario 4*

In scenario 4, we assume the quality of labor is reduced by 50% (from 1.5 to 1) for Northern States and that of capital by 50 percent (from 1.5 to 1) for the Southern States and that all other conditions remain same like *scenario 3*. The result of the simulation shown in figure 6 shows that Northern States record relatively higher rate of output per capita than the Southern States before the quality of those factors were reduced by 50%. However, the growth rate of population remain same throughout the related period investigated.

The population of all the states in Northern Nigeria is relatively higher than those of the Southern States and as such the North has relative labour intensive advantage over the South. On the other hand the South has relative advantage in capital intensive because of its huge financial sector.

#### *Scenario 5.*

In an extreme limiting case of no microfinance sector in the Southern States, the result of this scenario shown in figure 7 shows that output in the Southern States will take up a constant value throughout the period of thirty five years under investigation while output will be lower than it is in scenario 4 but will steadily rise at an average of 4% per annum.

#### *Scenario 6.*

Like scenario 4 where the availability of microfinance in the north is higher than the south but in this case only slightly by 0.07. In other words, this is a scenario where we examine the trajectory of the output in both the North and the South when only 93 per cent of microfinance banks in the North are present in the South. The result shown in figure 7 shows that up to the first eight years the output of both regions (North and South) are same after which the output of the North increasingly get higher than that of the Southern States. This is a preliminary indication that only after a long period of more than 8 years that the difference in output between the regions show, which is as a result of slightly more microfinance banks in the North that causes a difference in output between the regions.

#### *Discussion of findings*

The results of all the scenarios and interactions of this study is in line with the financial repression hypothesis and finance and growth theory respectively by McKinnon(1989), and King and Levine (1993). These sets of thoughts put emphasis on availability of market for financial services to influence economic growth. Several other researches in Nigeria have documented similar results in Nigeria.

#### **5. Conclusions and Recommendations**

The summary of findings is that the results of the simulations and analysis give a preliminary indications that the difference in the number of microfinance banks between the Southern and Northern region can explain the difference in the poverty level between the two regions. This is because the geographical distributions of branches of DMBs and microfinance banks is same in Nigeria, rate of poverty that is skewed against the North negatively correlate with the number of microfinance banks in each region which account for the difference in output. It is therefore recommended that the country's monetary authority (i.e. the CBN) gives priority to the setting up of more microfinance banks in the Northern States. This can be achieved by licencing non-interest microfinance banks especially since majority of people in the Northern States are Muslims who will not patronize interest-based microfinance banks.

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APPENDIX

Figure 3: Graphical Plot of Scenario 1

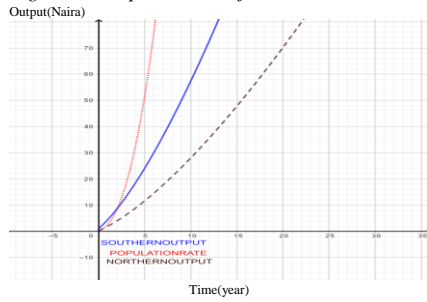


Figure 4: Graphical Plot of Scenario 2

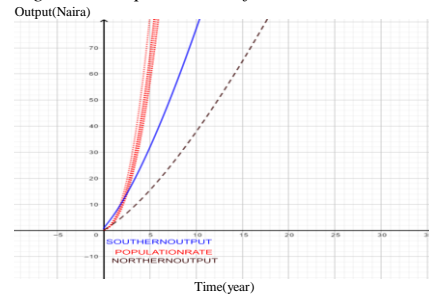


Figure 5: Graphical Plot of Scenario 3

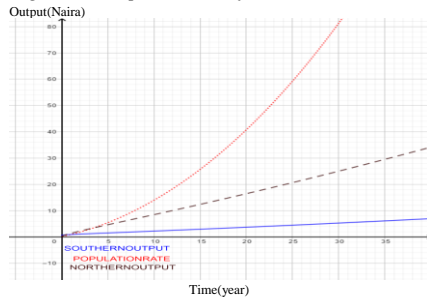


Figure 6: Graphical Plot of Scenario 4

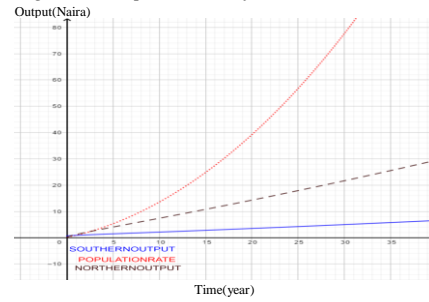
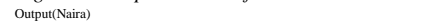
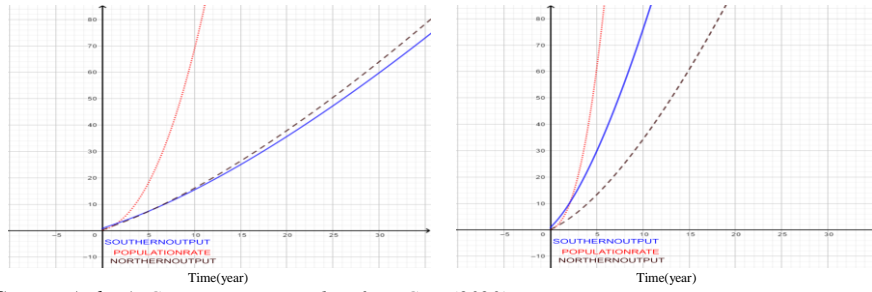


Figure 7: Graphical Plot of Scenario 5



Figure 8: Graphical Plot of Scenario 6





Source: Author's Computation using data from CBN (2020)

## Assessing the Level of Skills Mismatch in Selected Public Organizations in FCT

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DOI: 10.5281/zenodo.6349216

### Abstract

*The study assesses the level of skill mismatch in the selected public organizations in Abuja. Survey research design was adopted, and a structured questionnaire was used as the research instrument with a sample size of 63 respondents. The analysis was conducted using descriptive statistics which revealed that nearly all the listed set of skills displayed by employees were considered very poor or poor by the employers of the selected MDAs and that the adequacy of skills of sampled employees was significantly low with wide margin of mismatch. The study concludes that for all the set of employees' skills except for communication skill, it was apparent that they were poorly displayed and grossly inadequate resulting to varying levels of mismatch among individual skill sets. Some recommendations were made, among which is the need for the various higher institutions of learning such as universities, polytechnics etc to synchronize their curriculum with the labour market demand so as to minimize the level of skill mismatch and this can be done through emphasizing practical work, industrial attachment for all discipline, and real life simulations more than theory in the curriculum of the higher institution where these employees are trained; and that the respective MDAs should periodically assess and identify the level of adequacy of individual skill of individual employees and organize periodic training/workshops/seminars so as to bridge the skills gap responsible for the mismatch.*

**Keywords:** Mismatch, Organization, Public, Skills

**JEL Classification:** L23

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### 1. Introduction

Over the years, researches have long established that education and human capital are associated with skills acquisition and to an extent, competence that will increase earnings like wages, salaries, etc. Evidence also indicates that similar levels of education can yield quite diverse earning outcomes within narrowly defined occupational classes (Devroye & Freeman 2002). As a result, recent researches have paid attention to the idea of a job-skill mismatch (OECD 2001; WoBmann 2003; Gibbons & Waldman 2004). Skill is the ability to perform a task to a predefined level of competence. Skills are often divided into two types: transferable or generic skills



which can be used across large numbers of different occupations. Furthermore, some skills are vocational (these are specific occupational or technical skills needed to work within an occupation or occupational group). Skill mismatch is generally understood as various types of gaps or imbalances referring to skills, knowledge or competencies that may be of a quantitative or qualitative nature (Proctor & Dutta, 1995). It is the difference between the competence of the graduate and employers' expected competence needs.

With the recent changes in the business landscape shaped by the forces of globalization and technology, the various skills (generic skills) that employers now demand for in addition to academic skills have expanded to include; analytical, critical thinking, communication, entrepreneurial, decision making, IT (information technology), interpersonal, problem-solving, self-directed and numeracy skills (Greenhill, 2010). Brown, Halsey, Lauder, and Wells (1997) noted that employers now emphasize the need for employees who have good personal social skills, together with any technical know-how that may be required. At least, among core workers, there is an expectation that they will be able to work in a rapidly changing environment, engage in "rule making" rather than "rule following" behavior, work in project teams and share the same "personal chemistry" as others in the organization (Atkinson, 1985). Brown et al. (1997) further stressed the fact that academic qualifications now tell employers less about what they need to know about potential recruits, given that they convey information about the individual's ability and motivation to jump through the appropriate test and examination hoops, rather than students potential to work in teams or about their social and personal skills. Boateng and Ofori-Sarpong (2002) and Akerele and Opatola (2004) in their respective studies on the labor market for tertiary graduates in Ghana and Nigeria, found out that apart from the qualifications that graduates may possess, there are other attributes (non-academic skill requirements) which employers emphasize, such as good personal and social skills, analytical skills, good communication skills, technical and managerial skills, etc. Employers want workers who are already made to perform, because markets are becoming more competitive and because cost of on-the-job training is becoming prohibitive. They found out that about 50% of all jobs requiring university education and 30% of all jobs requiring that at least, polytechnic diploma also require computing and analytical skills. Due to insidious nature of the problem of skills mismatch especially in the public service and its accompanying consequences, this provides the motivation for this conference paper to assess the level of skills mismatch of employees' in some selected public organizations in Abuja.

According to Dabalén, Oni, and Adekola (2000), most of the tertiary institution graduates are poorly trained and unproductive on the job, shortcomings are particularly severe in oral and written communication, and in applied technical skills. They believe that academic standards have fallen considerably over the past decade and that a university degree or any tertiary institution certificate is no longer a guarantee for communication skills or technical competence. Although many employers confirm that the graduates possess a broad and respectable understanding of the knowledge base in technical disciplines, they expressed disappointment with the preparation of graduates in those applied technical skills necessary for solving

problems and enhancing business productivity. Even the experienced workers are facing the challenges of the dynamic nature of new tasks that need to be performed with new set of skills that is different from their current ones creating skill mismatch among the experienced employees. In addition, in spite of the huge sums of funds spent on training, most employees of the Nigerian public service are still showing some manifest symptoms of skill mismatch which is drastically affecting the overall national productivity of the service (Adedeji, 2012). The gap identified between demand and supply of skills has been found to have several impacts and implications on companies and organizations. At the firms or organization level, how endemic is the level of skill mismatch in the Nigerian public service? What are those specific skills that are inadequate or those being underutilized in the Nigerian public service?

From the foregoing, there is the need for a proper study to assess the level of skill mismatch, identify those relevant skill lacking or being underutilized among many others, hence the motivation for the study. The main objective of this study is to assess the level of skills mismatch in the Nigerian public service. The specific objectives are to: (i) determine the overall basis the adequacy level of skills and the level of the skills mismatch gap in the Nigerian public service; (ii) identify those specific skills that are inadequate or those being underutilized in the Nigerian public service.

## 2. Literature Review

### *Concept of Skills Mismatch*

Skill mismatch is usually defined either in terms of excess (over) or deficient (under) qualifications or skills possessed by individuals relative to job requirements. In the view of Proctor et al (1995), Skills mismatch is generally understood as various types of gaps or imbalances referring to skills, knowledge or competencies that may be of a quantitative or qualitative nature. It is the difference between the competence of the graduate and employers' expected competence needs. Still, literature on skill mismatch is rather limited mainly due to the lack of quality data and difficulty of identifying good measures of skills. Determining which skills should be measured is a complex and difficult task. Many scholars are concerned with the diversity of human skills and determined so-called core competencies or key competencies (Rychen & Salganik, 2003). Nevertheless, it is clear that core competencies form a general skills background only and that in every occupation there are also other specific skills that one needs to acquire in order to make up the professional domain of particular occupation. There are typically three alternative categories of skills mismatches that can be distinguished. Over-skilling (or skill surplus or skill underutilization) is the situation when worker's skills exceed those required by his/her job; under-skilling (or skill deficit) is the situation whereby the worker's skills are inadequate to the requirements of his/her job and the required-skilled workers are the ones with adequate skills for the job.

Furthermore, the skill mismatch literature has evolved in two main directions. One emphasises on measurement issues and, in particular, the estimation of required education, against which actual education levels can be benchmarked. One technique for deriving such an estimate is the *objective method*, involving professional

assessments of the minimum years of training required to perform key tasks in a particular occupation. Other approaches include the *statistical method* that defines required education as the mean or median of the observed distribution of years of education in a particular occupation, and worker *self-reported estimates* of the years of education required to perform their job. The objective method seems conceptually superior but it is rarely available on a continuous basis. The statistical method rests on a symmetry in the distribution of required education. Self-reported methods avoid the symmetry assumption but rely on subjective assessments (Linsley 2005; Kler 2005).

The second direction observed in the literature examines the role new technologies play in the emergence of skill mismatch. One interpretation is what Voon and Miller (2005) refer to as *technological change theory*, which highlights changes in the skill composition of a job due to technological change. New graduates are equipped with skills that are better aligned with emerging technology but firms are slow to adjust to new technology. As result, these new workers are overeducated. Conversely, as firms adapt to new technologies, existing workers become undereducated. Principal advocates of technological change theory, e.g. de Oliveira *et al.* (2000), explain this mismatch in terms of adjustment costs and assume that the overeducated are well equipped to meet the demands of new technology.

#### *Causes of Skills Mismatch*

It is a broadly accepted fact that mismatch arises from the situation where there is heterogeneity both at the supply - experience, skills, and the diverse qualifications offered by individuals to potential employers - and demand side of the labour market - skills, experiences and the qualifications required to perform job tasks properly (Allen, Levels & van der Velden, 2013). There are numbers of hypotheses why mismatch occurs. In general, the existence of mismatches can be explained by imperfections of the labour market caused by information asymmetry between employers and employees, incomplete information in the labour market, differences between people and transactions costs. Generally, the causes of mismatches exist at the individual level and as well as at the macro level (Montt, 2015).

There are numbers of theories that can help us to understand the labour market imperfections (Pettinger, 2017). At the *individual level*, educational mismatch can be explained through a fact that certain individuals may have low ability for their level of education in comparison with their peers. This result in a situation where they will not be able to obtain a job commensurate with their education. Obviously, such an example is the case of overeducation. On the other hand, overeducation may also appear, when some individuals choose to accept a job for which they are overeducated because it offers them compensating advantages, such as less stress, or less commute to work, work time flexibility etc. Another possibility is that employers actually prefer overeducated employees, because they are more productive and learn more quickly. For firms operating in rapidly changing markets, hiring overeducated or overskilled workers may be a strategy to avoid future expenditures and may serve as an insurance policy. Some studies (Crompton, 2002, Dekker et al, 2002) have also found that young people are more likely to be overeducated because at the beginning of their career they are willing to accept jobs that do not reflect their qualifications.

According to this theory, overeducation can be explained as temporary phenomena which should correct itself as the young people find the jobs that suit their skills better. Over a lifetime overeducation should thus decline with age. Skill mismatch may also appear when employers do not possess well developed hiring practices and hire workers with different skills than they require. At the *aggregate level*, overeducation is linked with the expansion of tertiary education which is growing faster than the share of highly qualified jobs (Machin & McNally, 2007). The economic or technological changes on the labour market cannot be reflected immediately in the changes of educational system. This situation can lead to both undereducation and overeducation since educational system produces qualifications that are inadequate to those required on labour market.

Undereducation is most often connected with the technological development. Technological progress upgrades requirements on the qualifications and mainly older workers may not fulfill those new requirements and thus are classified as undereducated. But this situation does not mean that they have to be under-skilled. It is necessary to take non-formal education and skill development activities acquired by individuals since they have been hired into account. The rate of mismatch is also strongly related to economic cycle. During economic recession it can be more difficult to find an appropriate job and people may accept a job which does not suit their education or skills (The Investopedia Team, 2021). Especially since the rate of over-education and over-skill is increasing which could mainly be due to a combination of low vacancies and pressure on the supply side.

Causes of mismatches mentioned above do not represent a complete list of causes but are presented as an example of how different sources can cause the mismatch on the labour market. Some of the causes are described in more detail in separate theories, such as Human capital theory (Schultz, 1961, Becker, 1964), Technological change theory (Romer, 1990), Career mobility theory (Sicherman and Galor, 1991), Search theory, Signaling theory, Job competition theory or Labour market segmentation theory (see Desjardins, Rubenson, 2011).

#### *Theoretical Frameworks*

There exists no accepted unified theory of skill mismatch, although some authors have attempted to conceptualise and explain the problem within the framework of semi-formal economic models (Freeman 1976; McMillen et al., 1999). Nevertheless, a large part of the literature on overeducation considers the phenomenon within the context of existing views of the labour market, and quite a few studies have conducted empirically tests to ascertain which theoretical perspective is most consistent with the observed facts (Duncan & Hoffman, 1981; Rumberger, 1987; Hartog & Oosterbrook, 1988; Groot, 1996; Sloane et al., 1999; Battu et al., 2000; Dolton & Vignoles, 2000). Sloane (2003) even argues that the major contribution of the overeducation literature has been to widen the debate on the importance of job characteristics in determining wages, thus broadening the human capital framework. This section offers a broad overview of the three main labour market perspectives, and assesses the consistency of each view given the present rate of over-education in the labour market.

*Human Capital Theory*

The dominant explanation of the distribution of earnings in developed economies arises from Becker's (1964) monograph *Human Capital*. Becker (1964) assume that workers will always be paid their marginal product. Thus, firms will adapt their production processes to reflect changes in the relative supply of labour. Wages match the individual worker's marginal product, which is determined by the level of human capital acquired through initial formal training and on-the-job training. By assuming so, the HCT affirms that employers will fully utilise the skills of their employees. Both over-education (worker under-utilisation) and wage rates that are below the marginal product are inconsistent with this approach to the labour market.

Nevertheless, many economists continue to argue that HCT remains fully consistent with the empirical evidence regarding overeducation. They state that it is possible that workers will be overeducated in the short run, while they are looking for a more appropriate job or while firms adapt their production processes to fully utilise the individual's human capital. HCT is therefore consistent with the existence of *short-term* mismatches.

Mincer (1974) develops an earning regression based on years of schooling, in which less formal measures of human capital, such as on-the-job training, are ignored. Individuals with more formal schooling may be compensating for a lack of work-related human capital, and the apparent lower earnings of these overeducated individuals may be due to an omitted variable problems (e.g., lack of control for less formal forms of human capital accumulation). Mincer's framework is presented as another explanation for overeducation consistent with the neoclassical view (McGuinness, 2006).

The HCT approach offers a third explanation for overeducation by considering the possibility that overeducated workers have less abilities compared with workers whose jobs are appropriately matched to their qualifications. In this explanation, lower wages are a reflection of lower productivity. If evidence of such skill differences is found, the bias in the estimated wage effect of overeducation would be picked up by the empirical framework.

*Job Competition Model*

The job competition model suggests that job characteristics may be the only factor determining earnings. Based on Lester C. Thurow's *Generating Inequality* (1975), the model has attracted considerable attention within the overeducation literature. Thurow's model characterises a labour market as competition for job opportunities based on individuals relative training costs, in contrast to labour market competition based on the wages individuals are willing to accept given their human capital.

This model emphasizes the importance of a person's relative position compared to other workers competing for jobs. Thurow (1975) postulates that when an individual observes his neighbour participating in education, he would be less likely to participate in education: in the HCT framework supply would be higher and the return less. However, under the Job Competition Model, the same individual would now be *more* likely to participate, for education becomes a "defensive necessity" to

protect one's place in the job queue. The larger the numbers of educated persons in the economy, the more imperative it becomes for an individual to invest in education.

The Job Competition Model provides a clear explanation for educational overinvestment, and consequently for over education.

#### *Assignment Models*

The assignment literature offers a middle ground between the two extreme perspectives outlined previously. Despite some differences amongst them, all assignment models specify jobs or sectors available to workers, the relevant differences between workers, the technology relating job and worker characteristics to output, and the mechanisms that assign workers to jobs. Within this framework, the earning function no longer constitutes a directly observable relationship, but instead represents the equilibrium outcome to the solution of the assignment problem. Sattinger (1993) points out that relative wages have changed over time with earnings becoming more unequal. He argues that these changes are hard to explain in the standard neoclassical framework in which productivity and earnings are exclusively linked to education and experience, and thus independent of the availability and quality of jobs in the economy.

The general predictions of assignment models concerning the allocation of workers to jobs, and their subsequent earnings, are more important in the context of overeducation. Assignment models differ significantly from the job competition perspective by stressing that choice of job or sector creates an intermediate step between an individuals' characteristics and their earnings. The job allocation process is not merely a lottery; instead, income maximisation motivates workers to choose particular jobs over others. Higher wages for workers with particular characteristics therefore play an allocative role in the economy rather than being mere rewards for the possession of characteristics.

The distribution of workers is not random but based on their own choices and aimed at maximising income or utility. The central prediction from the assignment literature is that an adequate explanation of changes in the distribution of earnings implies considering both individual characteristics and job characteristics. Thus, overeducation is entirely consistent with an assignment interpretation by suggesting that marginal product and earnings will depend on both the individual and the job. In addition, these models imply that there is no reason to expect wage rates either to be wholly related to acquired schooling or other individual attributes (HCT), or to be wholly related to the nature of the job (Job Competition Model).

### **3. Methodology**

The area of this study is the Federal Capital Territory because to hosts the seat of the Nigerian and government as well as the major ministries, departments and agencies that are dominated by public servants and public services. The surveyed public organizations are selected using convenience sample based on the criteria of accessibility and suitability. On the Overall, 72 government agencies were purposively selected cutting cross various Ministries, Departments and Agencies

(MDAs) within the Three Arms Zone and this was adopted as the sample size. Structured questionnaire was distributed to each of the selected MDAs. The study employed the descriptive statistical techniques in order to effectively assess and explain the level of skills mismatch in selected public organizations in FCT. Additionally, the range of scaling in descending order from 5-1 in the following order Very Good (5); Good (4); Average (3); Poor (2); and Very Poor (1) was employed in order of significance or relevance for effective assessments.

#### 4. Results

Of the 72 questionnaires that were administered to selected MDAs, 63 were retrieved, constituting 87.5% response rate which was used for the analysis.

Table 1: How good is the level of skills displayed by employees of your organization?

Skills	V. Good	Good	Average	Poor	V. Poor	Total	Mean	Stdev
Analytical/Conceptual	4.0	9.0	13.0	16.0	21.0	63	3.01	1.96
	6.3	14.3	20.6	25.4	33.3	100		
Technical	2.0	6.0	11.0	19.0	25.0	63	3.08	1.53
	3.2	9.5	17.5	30.2	39.7	100		
Numerical	6.0	8.0	13.0	16.0	20.0	63	3.02	1.41
	9.5	12.7	20.6	25.4	31.7	100		
Communication	8.0	18.0	20.0	11.0	6.0	63	3.11	2.09
	12.7	28.6	31.7	17.5	9.5	100		
Decision-making	6.0	7.0	12.0	16.0	22.0	63	2.89	1.02
	9.5	11.1	19.0	25.4	34.9	100		
ICT	2.0	9.0	11.0	15.0	26.0	63	2.76	1.16
	3.2	14.3	17.5	23.8	41.3	100		
Interpersonal	7.0	8.0	12.0	17.0	19.0	63	3.09	1.56
	11.1	12.7	19.0	27.0	30.2	100		
Problem-solving	2.0	6.0	11.0	19.0	25.0	63	3.08	1.53
	3.2	9.5	17.5	30.2	39.7	100		

Source: Field Survey, 2021

From Table1, 7 out of the listed set of skills displayed by employees were considered very poor or poor by the employers of the selected MDAs. These include analytical/conceptual skills (mean = 3.01,  $SD = 1.96$ ) which was deemed as very poor and technical skills (mean = 3.08,  $SD = 1.53$ ), numerical skills (mean = 3.02,  $SD = 1.41$ ), communication skills (mean = 3.11  $SD = 2.09$ ), decision-making skills (mean = 2.89,  $SD = 1.02$ ) and ICT skills (mean = 2.76,  $SD = 1.16$ ) were also poorly displayed by the employees. Others include interpersonal skills (mean = 3.09,  $SD = 1.56$ ) problem solving (mean = 3.08,  $SD = 1.53$ ). The weighted average of 3.01 for all the set of skills listed clearly indicates that all the listed skills except for communication skill were poorly displayed by the sampled employees leading us to conclude that the overall displayed skills level is grossly low.

Table 2: Adequacy or mismatch of the various set of skills among employees of the sampled MDAs.

Skills	V. High	High	Average	Low	V. Low	Total	Mean	Stdev
Analytical/Conceptual	3.0	8.0	12.0	17.0	23.0	63	1.67	0.96
	4.8	12.7	19.0	27.0	36.5	100		
Technical	3.0	9.0	15.0	16.0	20.0	63	1.38	0.53
	4.8	14.3	23.8	25.4	31.7	100		

Numerical	2.0	5.0	13.0	20.0	23.0	63	1.72	0.61
	3.2	7.9	20.6	31.7	36.5	100		
Communication	11.0	13.0	18.0	12.0	9.0	63	3.01	1.09
	17.5	20.6	28.6	19.0	14.3	100		
Decision-making	2.0	7.0	13.0	19.0	22.0	63	2.89	1.02
	3.2	11.1	20.6	30.2	34.9	100		
ICT	5.0	6.0	14.0	17.0	21.0	63	1.76	0.66
	7.9	9.5	22.2	27.0	33.3	100		
Interpersonal	1.0	11.0	19.0	19.0	13.0	63	1.49	0.51
	1.6	17.5	30.2	30.2	20.6	100		
Problem-solving	4.0	7.0	15.0	16.0	21.0	63	1.53	0.73
	6.3	11.1	23.8	25.4	33.3	100		

Source: Field Survey, 2021

Table 2 showed that the adequacy skill of sampled employees was significantly low with wide margin of mismatch, and they were scored inadequate and low in every skill listed except for communication skill which shows a positive rating and some positive degree of adequacy. For analytical/conceptual skills, graduates displayed a mean score of 1.67 and  $SD = 0.96$ ), technical skills (mean = 1.38,  $SD = 0.53$ ), numerical skills (mean = 1.72,  $SD = 0.61$ ) communication skills (mean = 3.01,  $SD = 1.09$ ), decision making skills (mean = 2.89,  $SD = 1.02$ ), ICT skills (mean = 1.76,  $SD = 0.66$ ), interpersonal skills (mean = 1.49,  $SD = 0.51$ ), and problem solving skills (mean = 1.53,  $SD = 0.73$ ). On the whole, the weighted average of 1.59 is significantly low and generally poor indicating gross mismatch of each of the various set of skills with exception of communication skills which is adequate.

From the analysis, and in line with the objective of the study, the following findings are unearth: Nearly all the listed set of skills displayed by employees were considered very poor or poor by the employers of the selected MDAs. The adequacy of skills of sampled employees was significantly low with wide margin of mismatch, and similar to the above findings, the employees were scored inadequate and low in every skill listed except for communication skill which shows a positive rating and some positive degree of adequacy. Analytical/conceptual skills are the most poorly displayed by the sampled employees and the most with highest degree of mismatch. From the results of the analysis of objective two the employees of MDAs displayed inadequately, the skills listed. The weighted average of 1.59 revealed that the general performance of the sampled employees in terms of their possessed skills is not high enough, in fact, poor, even the low-rated skill by the employer. These findings are in tandem with several earlier findings; for example, NUC (National Universities Commission) (2004) reported that recent graduates from almost all disciplines have weaknesses in ICT, entrepreneurial skill, communication skill and managerial skills; and Adedeji (2012) who found out that there were varying degrees of mismatch between the various workplace tasks and required skills possessed by university graduates in Nigeria.

## 5. Conclusion and Recommendations

Based on the results and findings from the analysis, the study concludes that all the adopted set of employee skills except for the communication skill were poorly displayed and grossly inadequate resulting in varying levels of mismatch among individual skill sets, hence, the need for the following recommendations.



Base on the findings and conclusion as well as bearing the objectives of the study in mind, the study made the following recommendations: There is the need for the various higher institutions of learning such a universities, polytechnics etc to synchronize their curriculum with the labour market demand so as to minimize the level of skill mismatch and this can be done through emphasizing practical work, industrial attachment for all discipline, and real life simulations more than theory in the curriculum of the higher institution where these employees were trained. The respective MDAs should periodically assess and identify the level of adequacy of individual skill of their employees and organize periodic training/workshops/seminars so as to bridge the skills gap responsible for the mismatch. Finally, there is also the need for intermittent job rotation among employee to enable them learn other skills on the job as this will go a long way in reducing monotony and improve individual employee skills diversity

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## **Influence of Accounting Knowledge on Accounting System Effectiveness: The Experience of Smes Owners in Sokoto, Nigeria**

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DOI: 10.5281/zenodo.6349226

### **Abstract**

*The broad objective of this study is to examine the influence of accounting knowledge on Accounting Information System (AIS) Effectiveness in the specific context of SMEs in Sokoto State. The technology diffusion and resource-based theory formed the bases for the conceptual model. The study used descriptive survey research design. Multiple regressions were adopted in analyzing the data. The results showed that managers accounting knowledge and the effectiveness of vendors and accounting firms significantly contributed to AIS effectiveness. The study complements previous studies by having supported this association within a Sokoto state of Nigeria context. Hence, it recommends the need for managers of SMEs to acquire sufficient accounting knowledge as well as engage accounting firms and qualified AIS vendors who have experience and understand unique characteristics of SMEs.*

**Keywords:** Accounting, Knowledge; Information System; Effectiveness; SMEs

**JEL Classification:** M41

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### **1. Introduction**

The globalization of products, services, markets, and competition has increased the need for flexibility, quality, cost effectiveness, and timeliness. A key resource for attaining these requirements is effective information systems, particularly accounting information systems (AIS) (Mitchell et al., 2000; Hunter et al., 2002; de Guinea et al., 2005). The reason is that accounting information can help SMEs manage short-term problems in the areas such as costs, expenditure and cash flow, by providing information to support monitoring and control. AIS can also help SMEs to operate in a dynamic and competitive environment in order to integrate operational considerations within long-term strategic plans. Most SMEs do not prepare financial reports and the few that did only do so for statutory purpose, and as such fail to use it (Arriyo 2011). SMEs owners/managers either lack the technique for using financial

statements (Byron and Friedlob 1984); or are simply unaware that they can use them to support financial decisions. Poorly prepared accounting information renders most SMEs unable to evaluate their own financial situation, or to demonstrate viability, and or to facilitate loan financing. This situation causes improper financial decisions and ends up with low performance and high failure rate.

The research tradition in the AIS field, concentrating on, for example, transaction processing, data structure modeling, computer fraud and security as well as system development methodologies, seems not to have produced a useful understanding of the interplay between modern AIS and accounting knowledge (Grandlund and Mouritsen, 2003). Interestingly, there are no recent studies on relationship between accounting knowledge and accounting system effectiveness. The closest to this area of study were studies investigating relationship between technology and accounting information system such as Al-Okaily, et al. (2020), Jasim & Raewf (2020 and Soudani, 2012). These studies (Al-Okaily, A., *et al.* (2020); Jasim & Raewf, (2020); Soudani, 2012) dwelt on accounting information system effectiveness from an organizational perspective, Information Technology's Impact on the Accounting System, The Usefulness of an Accounting Information System for Effective Organizational Performance. However, a close look at these areas of study would reveal that they do not explain effect of accounting knowledge on accounting system effectiveness. This aroused the interest for this study given that accounting is the fulcrum of Accounting Information System (AIS) and not technology. This is because accounting plays a vital role in running a business because it helps businesses to track income and expenditures, ensure statutory compliance, and provide investors, management, and government with quantitative financial information which can be used in making business decisions. Thus, the broad objective of this study is to examine influence of accounting knowledge on accounting system effectiveness in the specific context of SMEs in Sokoto State of Nigeria. The study attempts to provide answers to the level of managers' accounting knowledge among SMEs in Sokoto State; and also the level of managers' participation in AIS implementation among SMEs in Sokoto State, as well as the effectiveness of external accounting expertise on AIS effectiveness.

## **2. Literature Review**

Accounting has been defined "as the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are in part at least of a financial character and interpreting the results thereof"(American Institute of Certified Public Accountants, quoted in Anao 1995). Accounting can also be said to be a process that collects, collates, records, analyses, interprets and communicates financial information to end users in the form/format that they will understand (Investment Accountants, 2011). It is obvious from the above definitions that accounting involves two main elements and activities; an information process that identifies, classifies and summarizes the financial events that take place within an organization; and a reporting system that communicates relevant financial information to interested persons which allows them to assess performance, make decisions and/or control the economic resources in the organization.

One important point to make here is that accounting is not an end in itself. Accounting is a means to an end i.e., it provides the most relevant and reliable information possible to allow for the real work to be done-the making of the best possible decisions. Accounting information is the compilation of a company's financial transactions. It provides vital insight into a company's current financial position and is a valuable indicator into how a firm will perform in the future. It signals decisions that are needed, and provide information useful to making decisions(Gibson 1963 quoted in Thomas and Evanson 1987).AIS is used to assess the profitability of alternative courses of action, measure performance, and evaluate the position of enterprises in terms of profitability, liquidity, activity and leverage(Ismail and King 2007).

#### *Qualitative Characteristics of Accounting Information*

Companies present accounting information to internal and external business stakeholders for making decisions. Most companies must present AIS according to national accounting standards. In Nigeria, Generally Accepted Accounting principles (GAAP) represent the most authoritative accounting standards. GAAP requires AIS to include qualitative characteristics on which business stakeholders can rely.

Accounting information often has quantitative and qualitative characteristics. Quantitative characteristics refer to the calculation of financial transactions. Qualitative characteristics include the business owner's perceived importance of financial information. Business owners often require financial information when making business decisions. Incorrect or inappropriate information can hamper decision-making or cause business owners to make incorrect assessment about their companies. According to Anao (1995), the qualitative characteristics are:

*Understandable:* Accounting information must be understandable. This is an important qualitative characteristic for small business owners. Many small business owners do not have a strong accounting background. Financial information that is too technical or cannot be understood by a layman can be ineffective for business owners. Small business owners often use professional accountants to complete various accounting functions. Business owners should choose an accountant who can prepare information in an easily understandable manner.

*Useful:* Business owners need accounting information that is applicable to the business decision at hand. They can request financial statements, accounting schedules, reconciliations or cost-benefit analysis. For example, cost allocation reports may not provide sufficient information for business owners who must make a decision on hire employees .Cost allocation usually refers to applying business costs to goods or services produced by the company, which has very little to do human resources. Business owners should carefully request and review accounting information to ensure that it provides the most useful information for decision making process.

*Relevance:* Accounting information should relate to a specific time period or contain information regarding individual business functions. Business owners often conduct a trend analysis when reviewing financial information. The trend analysis compares historical financial Information to the company's current accounting period

information. Irrelevant historical information can severely distort the trend analysis process. For example, reviewing the production process for chairs requires relevant information on the cost of materials for chairs. Cost information on the materials to produce cups would be irrelevant.

*Reliability:* Accounting information must be reliable, so that business owners can be reasonably assured that it presents an accurate picture of the company's financial health. Business owners often use accounting information to secure external financing for their business. Information that is not reliable or accurate may cause lenders and investors to question the business owner's management ability. Business owners may also struggle to secure external financing with poor accounting information.

*Comparable:* Comparability allows business owners to review their companies' Accounting information against that of a competitor. Business owners use comparison to gauge how well their companies operate under certain market conditions. Owners often use the leading company of an industry for the comparison process. These companies usually have the most efficient and effective business operations. Non-comparable information can make this a difficult process. For example, business owners should consider preparing financial statements according to standard accounting principles. The statements can then be compared to other companies' financial statement prepared in a similar manner.

*Consistent:* Consistency refers to how business owners and accountants record financial information in a company's general ledger. Business owners need to ensure financial transactions are handled the same way. Inventory purchases should be recorded the same way as yesterday, today and tomorrow. This helps companies create accurate historical records and limit the amount of financial accounts or journal entries including their general ledgers.

#### *Theoretical Framework*

The theory of technology diffusion (Attawell, 1992) and the resource-based theory of the firm (Wernerfelt, 1995) have been adopted by previous researchers. They were used as theoretical foundation to investigate the roles of managerial commitment and external AIS experts to overcome the lack of knowledge and resources that SMEs face in the implementation of accounting information system (Thong *et al.*, 1996; Thong, 1999, 2001; de Guinea *et al.*, 2005).

Therefore, taking technology diffusion and resource-based theory into consideration, the conceptual model in this study theorizes that managerial commitment and external expertise are factors alleviating the knowledge barrier and resource poverty that SMEs face in their use and implementation of AIS. These theories acted as guide to this work by identifying managers' commitment and external experts' effectiveness as the two key factors influencing AIS effectiveness.

### **3. Methodology**

The study made use of survey design. To achieve this, a questionnaire survey was carried out from October to December 2021 to gather the data. The Sokoto State Business Directory provides a total of 188 addresses of SMEs as defined in this study.

Thus, the study population is 188 SMEs that were found in the Sokoto state business directory. AIS effectiveness in this study was assessed using DeLone and McLean’s (1992) model which was validated as a summated measure for AIS effectiveness by Al-Mushayt’s (2000). According to Krejcie and Morgan (1970) sample size determination criteria, as cited in Ismail and King (2007) a sample of 306 is appropriate for a population of 1500. It will be difficult to access all the SMEs across the length and breadth of Sokoto state that constitute the target population. This is due to constraints of time and resources available to the study, Therefore, the study relied on SMEs located in the Sokoto metropolis that are listed in Sokoto State Business Directory. The directory grouped the SMEs into five industries as represented in Table 3.1.

Table 1: SMEs in Sokoto State

Industries	Number of SMEs	Sample Selected
Provision Stores, supermarkets and Distributors	80	21
Business Centres and General Consultancy Services	39	10
Hotels and Guest Inns	25	7
Motor Cycles, Motor Vehicles and General Consultancy	15	4
Private Educational Institutions	29	8
Total	188	50

*Source: Field Survey*

However, it was discovered that the SMEs in each of the group possess similar features. Hence, coupled with the limited time available for this study and the need to select a sample that will give a fair representation of all the industries, the researcher randomly selected 50 SMEs from all five sectors by sharing the sample proportionately. Thus, only 50 SMEs were selected to give the total sample size.

Based on the necessity of selecting SMEs that will represent the various industries, the study adopted purposive sampling in selecting the SMEs. More so, the managers of the selected SMEs automatically become the respondents. Therefore, the study adopted a purposive sampling technique for generating the primary data.

The collected data was analyzed using the Statistical Package for Social Scientists (SPSS). The correlation analysis was used to establish the nature and strength of the relationship between the variables while the regression analysis was used to determine the variance in usage of accounting information system that is explained by system quality, information quality, information use, user satisfaction, individual impact and organizational impact.

To test the hypotheses, the research model shown in Table 1 is represented in the following regression equation in line with similar studies conducted by Al-Mushayt (2000), DeLone and McLean’s (1992):

$$Y = \alpha + \beta X_1 + \beta X_2 + \beta X_3 + \epsilon_t \dots\dots\dots 1$$

Where Y = Accounting information system effectiveness;  $X_1$  = Managers' accounting knowledge;  $X_2$  = Managers' participation in AIS implementation;  $X_3$  = external experts effectiveness;  $\alpha$  = intercept or constant;  $\epsilon_t$  = error term

**4. Results**

The inferential statistics presents summary of the correlation and regression results respectively. The correlation result is used in establishing the nature and strength of the relationship between the research variables, while the regression result is used in examining the variance in the effectiveness of accounting information system (AIS) that is explained by the joint variations in Manager accounting knowledge, and Managers AIS knowledge and Effectiveness of external expertise.

**Table 2: Summary of Correlation Result**

Variables	AIS Effectiveness	Manager Accounting Knowledge	Manager participation in AIS implementation	Effectiveness of External Expertise
AIS Effectiveness	1.00			
Manager Accounting Knowledge	0.881***	1.00		
Manager Participation in AIS Implementation	0.822***	0.909***	1.00	
Effectiveness of External Expertise	0.892***	0.654***	0.768***	1.00

*Note: (\*\*\*) indicates significant at 1% level of significance (2 – tailed).*

The Table 2 presents the summary of correlation analysis result between independent variables and the dependent variable at 2 - tailed. The result showed the existence of significant correlation between AIS effectiveness and Manager accounting knowledge (+ 0.881) at 1% level of significance. A highly significant correlation relationship (+ 0.909) exists between AIS effectiveness and Manager AIS knowledge at 1% significance level. Again, there is also significant positive correlation in the relationship between AIS effectiveness and effectiveness of external expertise with correlation coefficients of + 0.654, and + 0.861 respectively at 1% level of significance. Based on these correlations in the Table 2, there are positive relationships among AIS effectiveness, Manager accounting knowledge, Manager Participation in AIS implementation and Effectiveness of external expertise. This is in line with the findings of Duxbury, Decady and Tse (2002); Ismail and King (2006); Ismail and King (2007).

Table 3 presents summary of regression result. The result show that the coefficient of determination ( $R^2$ ) is 0.81, indicating that approximately 81% variation in AIS effectiveness is explained by the joint variations in the independent variables. While the F – statistics is 63.086 and significant at 1% level of significant. This shows that the model is significant and adequate in explaining AIS effectiveness of Sokoto State's SMEs. From Table 3, the estimated coefficient of the constant is positive and significant at 1% level of significance. This shows that AIS



Table 3: Summary of Regression Result

Dependent variable: AIS Effectiveness		
Variables	Coefficient	Probability
Constant	0.360 (0.092)	0.000***
AIS Effectiveness	0.261 (0.091)	0.006***
Manager Accounting Knowledge	0.370 (0.057)	0.000***
Manager Participation in AIS Implementation	0.154 (0.056)	0.008***
External Experts Effectiveness	0.127 (0.086)	0.145
R <sup>2</sup> = 0.81		
F – statistics = 63.086		
Prob.(F – statistics) = 0.000***		

Note: (\*\*\*) indicates significant at 1% level of significance.

effectiveness will increase by 36% if all the independent variables remain the same. More so, the estimated coefficient of Managers accounting knowledge is also positive and significant at 1% level of significance. This indicates that percentage increase in Managers' accounting knowledge will increase AIS effectiveness by 26% all other variables remaining constant. Furthermore, the estimated coefficient for manager participation in AIS implementation is also positively significant at 1% level, indicating that percentage change in managers' participation in AIS implementation changes AIS effectiveness by 15%, all other independent variables remain the same. However, only the estimated coefficient of external expertise effectiveness is positive but insignificant. This shows that external expertise effectiveness is not a necessary requirement for AIS effectiveness in SMEs in Sokoto State of Nigeria. This finding varies with that of Ismail and King (2006) and Ismail and King (2007). However, it is supported by the findings of Apulu and Latham (2009).

This study first explored the level of AIS effectiveness, managers' accounting knowledge, managers' participation in AIS implementation and effectiveness of external experts among SMEs in Sokoto state of Nigeria. Then, it examined the relationships between AIS effectiveness and three potential influence factors: managers' accounting knowledge, managers' participation in AIS implementation and effectiveness of external experts in terms of AIS effectiveness, most respondent firms used computer mainly for administrative and operational tasks. The adoption of analytical-based applications for strategic decision-making is still minimal. These findings are in tandem with those of previous studies such as Hussin et al. (2002), Breen et al. (2004) and Ismail and King (2007). It is also interesting to note that managers accounting knowledge appeared to have a significant impact on the effectiveness of AIS implementation among SMEs. This evidence suggests that, while gaining advices from external experts such as accounting firms and vendors could be important to SMEs, manager's accounting knowledge is crucial for the firms to implement effective AIS. Furthermore, since most SMEs adopted accounting-based applications, accounting knowledge is becoming more necessary for managers of SMEs. These findings imply that manager's accounting knowledge, probably with

the help of effective external experts, plays a crucial role for SMEs to achieve better AIS effectiveness.

Finally, this study found support for (H<sub>4</sub>), which postulated a negative relationship between external expertise effectiveness and AIS effectiveness. These rather unexpected findings could be a reflection of the firms not seeking direct expert advice from vendors and accounting firms. The availability of powerful but user-friendly packages might also explain these findings. Furthermore, engagement of technical personnel to handle IT implementation and administration might be sufficient for the firms. As Zarowin (1998) argued, the simple business structure of SMEs may also facilitate the tasks of identifying and tailoring AIS to the firm's strategy and information needs. Thinking in the context of SMEs, these advantages may increase their understanding of business information requirements and accessibility to sophisticated AIS and eventually leads to more effective AIS.

### 5. Conclusion and Recommendations

From the findings, the evidence suggests that the major factors that influenced AIS effectiveness among the sampled firms were Managers' accounting knowledge and Managers' participation in AIS implementation. Thus, this study has made an important contribution by increasing current understanding of AIS implementation and its influence on SMEs. External expertise effectiveness however, appeared to have insignificant relationship with AIS effectiveness. These unexpected findings indicate the need for further research into the processes associated with the effectiveness of AIS implementation in SMEs by including other potential phenomena, such as AIS maturity in SMEs, nature of business activities and size of firms, which may affect the results. It is evident that AIS among SMEs in Sokoto state cannot be said to be very effective, which leads to poor financial and investment decision making. For both practice and research, the study therefore recommended that; managers of SMEs need to acquire sufficient accounting knowledge as accounting is the most important component of modern AIS within SMEs. Engaging external experts such as vendors would not guarantee future AIS success without a proper transfer of knowledge to the firms.

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## Nonreactive Research: An Alternative Measurement to Social Phenomenological Approach

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DOI: 10.5281/zenodo.6349235

### Abstract

Every research aims to identify or provide a solution to a predefined problem. This is often done through systematic investigation of a problem in question. The central theme of this paper is to critically examine the intellectual contributions to the significance of nonreactive research in the social phenomenological approach. The work reviews some works of literature on measurements or instruments of data collection for research purposes. It argues that reactive measurements such as questionnaires and interviews played a domineering role in phenomenological studies. However, the weakness associated with such measures in an understanding phenomenon often affects the reliability and validity of the research owing to the manners in which the research participant practically react to the measures. The application of nonreactive measurements became imperative in complementing these reactive or obtrusive measures as it did not only create room for more reliable data but ensures that behaviours of research subjects do not change in the course of an investigation or when gathering data. The work, therefore, concludes that theoretical underpinning suggesting nonreactive or unobtrusive measures in pragmatically understanding people's perception about an event is not to completely jettison the reactive measurements but served as a remedy associated with methodological weakness of reactive measures in comprehending social phenomenon.

**Keywords:** Nonreactive Research, Measurement, Phenomenological Approach.

**JEL Classification:** C8

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### 1. Introduction

The most dominant and prominent methodological approaches to social sciences research are interviews, questionnaires, focus-group discussions and in most cases personal observations. These are instruments of data collection that often inspired the participants in a research endeavour to react or manipulate information in the process of data collection by a researcher. In phenomenological social research where the researcher seeks to answer his research questions by examining the perception of a phenomenon in question, interview, focus group discussion and personal observation played a domineering role in the process of data collection. However, nonreactive research or unobtrusive measurement has become prominent

to understand a social phenomena without interfering with the subject of the research. As observed by Jennifer (2002), qualitative research is both excitingly celebrated and faces a lot of challenges where the debates arouse as to whether be qualitative researchers have strong capability to establish truth and reality in the social World. The skepticism that generated this debate might not be unconnected to the methodological approach in social sciences that might sound limited to the positivist approach in research.

Though reliability on orthodox data collection instruments in social sciences research such as interviews and questionnaires continued to gain momentum, the lightening limitation of these instruments cannot be underestimated. Lee (2000), admitted this continued dominancy and massive use of these instruments by social sciences researchers but out-rightly queried the over-reliance and dependent on these instruments in gathering data for research purposes. The weaknesses of the interview and questionnaire identified by scholars and researchers in the field of social sciences are not to completely undermine or erode the known instruments of gathering data but to supplement it with virtuous alternatives that guarantee reliabilities and validities of the data collected by the researchers. Oppenheim (1992), admitted that a questionnaire is the most objective tool of data gathering in generalizing research results owing to the large number of target respondents. However, he fiercely exposed the limitation associated with such instruments such as the design of faulty questionnaires, unreliability on the part of respondents, biases, ignorance and misunderstanding of questionnaires wordings, coding error and most significantly the wrong interpretation of results. This point is buttressed by Bryman (2008) who argued that over-reliance on a questionnaire as the instrument of data collection has created unnecessary disconnection from everyday life and with some measurements that have some degree of accuracy.

Similarly, an interview which is the most popular used instrument of data collection in phenomenological social sciences research often creates room for research participants to perceive phenomenon from their social, religious, political and cultural perspectives. This usually makes data generated from the field using interview method with credibility dubiousness and validity suspiciousness. In defaming the overemphasis on an interview by social phenomenological researchers, Mathew (2001), averred that researchers seeking the right perception about a phenomenon only relied on the honesty of respondents to narrate their specific live experience, circumstances, opinions, thought and behaviour. This honesty no doubt might be attributed to emotion on the part of respondents which might be difficult for a researcher to detach the truth from reality. Esterberg (2002), have captured with some measurable degree the significance of nonreactive research in comprehending people's perception toward a particular phenomenon. To him, if you want to know actually what people do, rather than what they utter or said they do, observation is probably the best instead of interview (Esterberg, 2002).

The intellectual exercise by the social scientists to emphasizes the richness of nonreactive research in a social phenomenological study is not to debase the interview and other reactive or intrusive instruments of data collection in phenomenological approach but to show epistemological evidence that nonreactive

or unobtrusive research could tremendously serve as alternatives and remedies to the manipulation of data in the reactive research process. More so, time, expenses and technicalities involved in transcription and interpretation of interview data make nonreactive measurements the fundamental alternative to interview in phenomenological social sciences research.

## **2. Phenomenological Approach: Origin and Conceptual Clarification**

The fact that the phenomenological approach in social sciences has created an intellectual space for social scientists to assimilate social phenomenon from a broader perspective is incontrovertible. It is a philosophical doctrine in social sciences intended to observe and understand human experience and their perception toward a given event. Historically, Thomas (2004), traces the foundation or the origin of phenomenology to Emmanuel Kant and Frederick Hegel. However, contemporary usage of phenomenology in research enterprise could be traceable to German philosopher and mathematician Edmund Husserl who live between 1859 to 1938 (Vandenberg, 1997). Husserl's philosophical enterprise was later propagated by other scholars such as Merleau-Ponty, Heidegger and Sartre (Spiegelberg, 1982). Phenomenology is multidimensional as its usage cuts across disciplines, especially in social sciences and health sciences. For instance, the approach enjoined usage in nursing and the health sciences (Oiler, 1986), psychology (Giorgi, 1985; Polkinghorne, 1989), education (Tesch, 1990; van Manen, 1990) and sociology (Borgatta & Borgatta, 1992).

Experimenting with the historical account of the phenomenological approach in social sciences, Eagleton (1983) cited in Thomas (2004), argued that Husserl as the contemporary proponent of the phenomenological approach employed the approach to unravel and understand the post First World War (1914 – 1918) events. The European continent was said to be in ruin with dwindling economy owing to the horror of war that follow afterwards. Husserl, therefore, embarked on a philosophical approach by adopting a phenomenological style in understanding the perception and experiences that shaped the post-war events.

Conceptually, the phenomenological approach is a popular social science enquiry that tends to examine and understand the live experience of complex events in our social World. The leading exponent of the phenomenological approach, Husserl, strongly believed that people are often connected to social events and for such events to be meaningful, the experience and perception of individuals involved must be shared. This is the reason why Husserl is often described as a descriptive phenomenological scholar (Reiners, 2012). While Creswell (2007) conceived of phenomenological approach as a research endeavour in which several individuals participating in research share their live experience about the scene or event. A Phenomenological approach is occupied by methodological tradition that is associated with qualitative research mechanisms. This is probably why Vagle (2014), argued that phenomenology is both inductive and reflective. The approach is ferociously involved in gathering insight into people's past and lived experiences as they recollect them (Vagle, 2014).

Two major scholars in the field of phenomenology have identified two approaches to phenomenological studies. Van Manen (1990), identified hermeneutic phenomenology while Moustakas (1994), identified empirical or psychological phenomenology. According to Van Manen, hermeneutic phenomenology is an interpretation of text as a live experience about people and events. He emphasized in his hermeneutic that the phenomenology approach is not only to observe and examine people's thoughts, emotions, and perceptions about the phenomenon but the researcher's ability to interpret them to generate meaning about actions (Van Manen, 1990).

Moustakas's empirical or psychological phenomenological approach on the other hand has given premium to researcher perceptions about study phenomenon and then follows by a description of participant's behaviour about an event (Moustakas, 1994). To avoid researcher bias, Moustakas has followed Husserl's deployment of *epoche* or bracketing in the phenomenological method. The aim of this is for the researchers to set aside their perception about the studying event and to settle for new insight discovered in the course of the investigation (Moustakas, 1994). Moustakas though believed in the researcher's perception about the event or phenomenon to be investigated, however was conscious of the reliability of the result which might be the reason why he remained the apologist of bracketing in the process of description and interpretation of result by a researcher.

Thus, it is categorically clear that the phenomenological approach is the most convenient and most reliable approach to understand the social, economic, political and cultural phenomena. Social and political intricacies such as crimes of various categories, juvenile delinquency, ethnic cum religious conflicts, civil wars etc are best understood in our social World using the parameter of social phenomenological approach. Similarly, health science also found the phenomenological approach prominent in explaining the values, perceptions and ethical issues in the field of nursing and other paramedical lines.

#### *Nonreactive Research*

The reliability and validity of research findings largely depend on the instruments used in the process of data collection and interpretation. This is the reason why a researcher is always conscious of the instrument that would best suit his or her research endeavour. Nonreactive research is a research instrument through which a researcher gathers information about a specific problem without involving any participant in the process. Webb et al. (1966), see nonreactive research as a research endeavour in which the researcher directly elicit information from the subject of research. Neuman (2014), conceived nonreactive research as unobtrusive measurements in which the subject of the research are not aware they are being studied but the researcher traces some of their behaviour or social actions. The major characteristic of this research is that the process does not influence the people being studied as obtainable in reactive research instruments such as interview and questionnaire. This enables researchers to be independent in both data collection and interpretation. This might be the reason why Webb and his colleague advocated and advanced that the reason why the nonreactive instrument is significant in research is



that it enormously gives room for the avoidance of problems caused by researchers (Webb et al, 1966).

In their book, *Unobtrusive Measures: nonreactive research in the social sciences*, Webb and his colleague did not only coined the concept of nonreactive research or unobtrusive measurements but identified three (3) types of this measurement in research. The three typologies are physical trace measurement, archival information and simple observation.

*Physical Trace Measurement:* according to Webb et al (1966), physical trace measurement in nonreactive research entails sourcing of data by a researcher through tracing the physical environment of the research subjects. They buttressed further that people's attitude, experience, thought, feeling and belief are best understood if physical shreds of evidence about their words and actions are traced. Physical trace measurement is further typified into two (2) types by Web et al (1966), as follows;

*Erosion Measure:* This is the type of physical trace measurement in which the measure is the extent of selective wear (Web et al 1966). In this type of physical trace measurement, a researcher physically visits the research scene and take account of events and happenings regarding his research questions. For instance, a researcher investigated the alleged maltreatment of internally displaced persons (IDPs) in their camps. The allegation was that IDPs have no access to toilets, water and other sanitary. On reaching the camp as a researcher involved in erosion measures, he noticed that there are over Three Thousand IDPs in the camp with only one toilet and one bathroom and rarely functional tape water. This physical evidence by a researcher is enough to confirm the allegation that IDPs are actually maltreated with respect to their hygiene in the study camp. Many social scientists have used this measurement in explaining and interpreting social events from different perspectives. For instance, Duncan (1966), used the erosion measure in the Museum of Science and Industry in Chicago to examine the replacement of vinyl tiles' exhibition. With the erosion method, the popular exhibit was deduced by Duncan. Similarly, Mann et al. (1990), applied the erosion measure in determining the period of death using the parameter of insect activity, body weight, body trauma and body decomposition in the cemetery.

*Accretion Measure:* This is the type of physical trace measure in nonreactive research where a researcher justified his research findings by the evidence of what research subjects left behind. Neumna (2014) argued that accretion measure is not only the residue of the activity of people or what they leave behind but suggested that accumulation of physical evidence justified people's behaviour. The researcher involved in accretion measure, therefore, is interested in the deposit of the materials left by the research subjects that will serve as evidence in justifying his research findings. For example, a researcher embarked on alleged sexual abuse in a refugee's camp which led to the closure of the camp by the authority. On visiting the camp using the accretion measure, a researcher found a multitude of condoms not only in girls' and boys' apartments at the camp but even in the apartments of camp officials. The deposit of numerous condoms found in the closed camp by a researcher is a strong justification that the camp was actually habited by sexual abuses. Gray (2009)

categorized accretion into natural and controlled accretion. Natural accretion to him includes fingerprint, objects at home and other things that accumulate. While control accretion measure is when the researcher intervenes or control the measure (Gray, 2009).

*Archival Information:* This is the type of nonreactive research where a researcher accesses the stored historical artefact for the purpose of generating data to answer his research questions. According to Palys and Atchison (2014), archival measure enables the researcher to record or hardcopy documents which includes; tape-recorded material, diaries, books, magazine, letters photograph and newspaper. They also opined that in addition to written materials, webpages could also be seen as a source of archival measure which may include files, audio, video and images. In his contribution to the meaning of archival measure in social research, Lee (2000), identified two types of archival measures which are running records and episodic records. Lee explicates that running records are those records that are continually generated and are often used for research purposes. Examples of such records are marriages, deaths and births rate from hospitals. While episodic records are those records generated by a researcher from a bureaucratic institution such as records of criteria for police arrest, criteria for conviction of individuals by the court (Lee, 2000).

*Simple Observation:* This is referred to as a type of nonreactive research in which a researcher or investigator personally observe a phenomenon thereby deducing the meaning about the people's action that could be used to answer his research questions. Since there are different types of observation in social research such as naturalistic observation, participant observation and structured observation, the observation used in nonreactive research is naturalistic as is the type that is unobtrusive where the research subjects are not aware they are been observed. Lee (2000) identified five categories of simple observation which includes; time-related behaviour, expressive movement, in situ conversation and exterior physical signs. This categorization was corroborated by Neuman (2014), a tripartite simple observations which are external appearance, count behaviour and time duration. In external appearance, the observer takes notes of the physical attributes of research subjects while in count behaviour and time duration, the researcher takes notes of the number of people involved in an event and time respectively.

### **3. Literature Review on Measurements**

Measuring data in a research process to ascertain the reliability and validity of gathered data remains the core value of any scientific research. The desirable characteristics of measurement are reliability and validity. Both are significant for the conclusions about the sincerity of good research (Waltz et al., 2004). From the perspective of Prasanth (2020), measurement in research methodology is the process of assigning a numerical value to a phenomenon while describing its property. Michell (1997) conceived measurement as the estimation or the discovery of the ratio of some magnitude of a quantitative attribute to a unit of the same attribute" (Michell, 1997). In simplifying the concept of measurement in the research process, Trochim (2020) conceptualized measurement in research methodology as the process which involved observing and recording the observation that is gathered as part of a

research effort. Measurement is no doubt the core attribute that makes research valuable. Measurement therefore could not only be seen as quantification of a phenomenon but make a researcher be conscious as to whether data generated in the research field is reliable by considering their consistencies.

Obviously measuring data for research purposes is not only peculiar to quantitative data or data that are subjected to numerical manipulation. While natural and applied scientists measure physical objects in the research process, social scientists measure abstract objects such as poverty, height, population, conflict, peace, migration, income and development. To measure these abstract phenomena, consistency is rarely achieved because of the multidimensional opinion and personal attachment of most respondents. Neuman has vividly encapsulated this phenomenon as thus;

*Our everyday measures of the nonphysical world are usually less exact. We are measuring when we say that a restaurant has excellent food, that Pablo is really smart, that Karen has a negative attitude toward life, that Johnson is really prejudiced, or that last night's movie contained lots of violence. Such everyday judgments as "really prejudiced" or "lots of violence" are sloppy and imprecise (Neuman, 2014 p. 203).*

This has captured the difficulties in the inexactness of measurements in the nonphysical world. Such measurements in the nonphysical world are always easily amenable to manipulation due to human nature. Buttressing this, Kimberlin & Winterstein, (2008), averred that measurement of reliability and validity of the research remained the key indicator of quality measures. Measurement does not only create an avenue for the researcher's distinctiveness but according to Prasanth (2020), give varieties of information about theoretical concept under investigation. Similarly, Neuman (2014), argued that we need measurement not only to evaluate, hypothesize but to provide empirically the support for theory. In furtherance of this analysis, Blalock (1970) also emphasized the positive impact of measurement in theory building. He advocates that measurement consideration regularly widen the researcher's mind to clarify theoretical thinking thereby creating room for the suggestion of new variables to be considered.

One of the fundamental usefulness of measurements in a research process is that it unequivocally reduces errors in data collection. This is an indication that error cannot be completely eradicated in social science research measurement but could be drastically reduced using the doctrine of good measurement. American Psychologist Stanley Smith Stevens have identified Four (4) levels or scales of measurement. These are nominal, ordinal, interval, and ratio scales (Stanley, 1946). Though Stanley's measurements typology was criticized by other scholars, it remained among the popular and dominantly used level of measurements in methodological scholarship. A nominal scale is the level of measurement in which variables are labelled or simply named with no specific order. John et al. (2007), exemplified the nominal scale in measurement to include marital status, gender, employment status, religion, race etc. Conversely, ordinal scale is referred to as the level of measurement where variables are named in a specific order. A typical example of an ordinal scale

is when a researcher asks respondents about job opportunities and industry's brand as 'good', 'poor', 'moderate', or excellent (John, et al. 2007). The Interval scale on the other hand is a measurement level that creates an interval between each of its variable options beyond labelling them in order. The price index in which the number of the base is always set to be 100 is according to the John et al. (2007) an example of an interval scale. While ratio scale as the level of measurement is attributable with all the characteristics of interval scale but additionally accommodate on any of its variables the value of "zero" (Stanley, 1946). The absoluteness in zero in ratio scale measurement represents a point on the scale where there is the nonappearance of the particular attribute. Money, age and weight are typical examples of ratio scale measurement because they have interval properties and absolute zero (John, et al. 2007).

For any measurement to be accurate and justifiable to support the development of theory and answering of research questions, it must be armed with essential characteristics that make it unquestionable. This exactness is not only imperative but remained essential, fundamental and a core value of research credibility. It is on this note that measurement in research is characterized into three (3) major or key attributes which are reliability, validity and practicability.

*Reliability:* This is the characteristic of measurement that create an avenue for researchers to evaluate the consistency of data collected from different sources using the same measure. Reliability, therefore, is an essential ingredient of measurement which tremendously support positive research output. According to Nunally (1967), reliability is the repeatability of measurements by the same individual using divergent measures of the same attribute or by divergent individuals using the same measure of an attribute. On his own part, Blumberg et al. (2005) see reliability as a measurement that provides consistency of result with the same standard of value. While Chakrabarty (2013), defined reliability as a characteristic of measurement that measures trustworthiness, precision, repeatability, and consistency. The credibility of research thus immensely depends on the degree of consistency of measurement used in garnering data.

*Validity:* This is referred to as the capacity of measuring tool to coherently measure what it proposes or expect to measure. It can also be viewed as the extent to which an instrument measures what it declare or affirm to measure (Blumberg, et al. 2005). In a similar definition, Robson (2011), conceived validity as a degree to which the instrument measures what it is intended to measure. More elaborately, Pallant (2011), sees validity as the degree of truthfulness of result. He buttresses further that this requires the research instrument such as a questionnaire to appropriately measure the thoughts under the investigation. The central theme of validity in research, therefore, is the capability of a researcher to validly measure what he intends to measure without considering his personal opinion, sentiment or belief. It fiercely justifies the absence of bias of the researcher in measuring data.

*Practicability:* this is the characteristic of measurement that entails that measures used in assessing people or events must be practicably obtainable. Kunwar (2021), conceptualized practicability in measurement as a practice of measuring instrument

in which measure established to measure people's attitude must be applied in practice. In other words, the measure must functional, useful, pragmatic capable of transforming the research into realities. Ideally, practicability as a characteristic of good measurement in research according to Kunwar (2021), is armed with three (3) qualities; economic, convenience and interpretability. Economic practicability in measurement assumed that researcher's budget is correspondent to the measure chosen to collect data from the field. Convenience practicability in measurement entails that the researcher makes it convenient for his respondents to provide answers to his questions. For instance, a researcher can construct questionnaire language in simple terms for easy assimilation by the respondents. While interpretability is concerned with the extent to which researchers provide room for interpretation of results with evidence of their reliability and most importantly evidence of the relationship of the text to other measures used (Kunwar, 2021).

#### **4. Nonreactive Research: Underpinning the Reactive Measurements in Phenomenological Approach**

In their own contribution to the methodological weakness of questionnaire and interview in social science research, Webb et al. argues thus;

*Interviews and questionnaires intrude as a foreign element into the social setting they would describe, they create as well as measure attitudes, they elicit atypical role and response, they are limited to those who are accessible and who will cooperate, and the responses obtained are produced in part by dimensions of individual differences irrelevant to the topic at hand (Webb et al. 1966: 1).*

One of the major albatross bedevilling the social phenomenological approach is an instrument used in measuring data. Reactive measurement, dominantly interview is often used by researchers to conduct phenomenological studies. As opined by Webb et al. above, the instrument is not only weak but the accessibility of respondents largely depends on their cooperation. In addition to this weakness, the researchers face the risk of encountering persons of low or completely no knowledge of issues under the investigation and might provide themselves to participate in the research. For instance, in their survey of voting behaviour, Presser and Traugott (1992) averred that some of the participants in the survey who claimed to have voted have not actually voted. Coupled with this risk of facing unknowledgeable respondents, some participants on many occasions in a phenomenological interviews often tried to be emotional by either looking different or indifferent to their interviewer. Lee (2000) captured this phenomenon when he opined that interviewees always create a scene in part by commonly trying to manage their impression to maintain their standing in the eyes of a researcher.

Another fundamental common threat to reactive measurements in a phenomenological approach is the degree of measuring reliability and validity of the instrument. The data collection using nonreactive measurement is collected in the social context which is amenable to manipulation. The manipulative tendency might be a human factor and or environmental factor. Mohajan (2017), for instance, argued

that multiple factors impeded the reliability and validity of research findings. To him, one of these factors that hampered research findings is an error. In identifying error that affects research validity and reliability, Lillis (2006), infers that errors could be obtained through the carelessness of a researcher, the research participants and most significantly the method of data collection and analysis. This is a mere testimony and justification that studying social phenomena using the reactive instruments is bedevilled by lots of anomalies which can only be normalized with the employment of nonreactive measurements to supplement the possible overreaction or under-reaction of respondents in reactive measurements.

In his critique of Husserl's phenomenological approach, Heidegger (1962), established a more comprehensive phenomenological approach where he argued that our social engagement with the world was indeed intentional and that people cannot be detached meaningfully from their social context because a world is occupied by an object, people, culture and language. The fact that people are socially, linguistically and culturally linked to this physical world as argued by Heidegger laid credence to the fact that reactive measure in phenomenological approach faced a higher risk of manipulation of the instrument to suits the societal, linguistic and cultural values of research participants. In addition to the societal attachment to respondents' attitudes in reactive phenomenological approach, Langdridge (2007), opined subject of research hardly suspend their prior assumptions completely in order to ascertain *epoche* which is essentially setting aside personal opinion in favour of objective thought about the topic under the investigation.

Complimentarily, the nonreactive measurements in the social science phenomenological approach such as physical trace, archival information and simple observation have assumed a centre stage for the researcher to gather data about his research question without necessarily obstructing or influencing the behaviour of others. Theoretically, this measurement is not designed to completely replace the reactive measurement such as interview and questionnaire but serve as a necessary alternative to methodological weaknesses that are often associated with reactive measurements.

### **5. Conclusion**

This paper discusses the methodological deficiencies of reactive measures in the social phenomenological approach. It acknowledges the fact that reactive measures such as interview and questionnaire dominated the phenomenological studies but vividly argues that many factors have hampered these measurements thereby necessitating the employment of nonreactive measures to supplement and blatantly eradicate its deficiencies. With the employment of nonreactive measures, a researcher independently controls the instrument of data collection without involving the participants. In most cases, the people being studied are not aware they are part of research in this measurement which guaranteed validity and reliability of the instrument as opposed to the error and manipulation of data by research participants obtainable in reactive measurements.

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