

**Gusau International Journal of
Management and Social Sciences
(GIJMSS)**

Volume 6, No.1

January, 2023

© Gusau International Journal of Management and Social Sciences, 2023

ISSN (Print): 2735-9026

ISSN (Online): 2787-0383

All Rights Reserved

Apart from any fair dealing for the purpose of research, private study, criticism or review, as permitted under the Copyright, Designs and Patents Act of Nigeria, this publication may not be reproduced, stored in any form, or by means, except with the prior permission in writing of the Faculty of Management and Social Sciences, Federal University Gusau or in the case of reprographic reproduction, in accordance with the terms of licenses issued by the Copyright Licensing Agency; enquires concerning reproduction outside those terms should be sent to the following address:

Published by:

Faculty of Management and Social Sciences
Federal University Gusau
P.M.B. 1001
Gusau, Zamfara State
Nigeria

Email: gusauijmss@gmail.com, gjmss@fugusau.edu.ng

Journal Website: www.gijmss.com.ng

Printed by:

Ahmadu Bello University Press Limited, Zaria,
Kaduna State, Nigeria.
Tel: 08065949711
E-mail: abupress2013@gmail.com,
abupress2020@yahoo.com
Website: www.abupress.com.ng

About the Journal

Gusau International Journal of Management and Social sciences (GIJMSS) is a biannual (October and April) academic journal published by the Faculty of Management and Social Sciences, Federal University Gusau. The Journal welcomes contributions from the diverse fields of management and social sciences. The mission of the journal is to publish high quality papers from all over the world and make GIJMSS a high ranked journal.

GIJMSS adheres to a rigorous double-blind reviewing policy and all submissions are evaluated initially by the editorial Board and only those papers that meet the scientific and editorial standards of the journal, and fit within its aims and scope will be subjected to blind review. The Editorial Board reserves the right to modify for clarity papers adjudged acceptable for publication. Manuscripts subjected to rigorous blind peers review, and those that are accepted are published in the following issue of the journal.

Guidelines for Submission

- ❖ Contributions should be in English only.
- ❖ Manuscripts should be prepared according to American Psychological Association (APA) 7th Edition, Referencing style
- ❖ The manuscript must be typed using double space on A4 size sheets
- ❖ Manuscript should not exceed 15 pages in length
- ❖ Only original manuscripts, written in English language, are considered. In a covering letter, the author(s) should state that the manuscript is not being simultaneously submitted elsewhere and that the findings reported in the manuscript have not been published previously
- ❖ Submitted manuscripts will be subjected to plagiarism checks by the Editorial Board, and those found to be above 25% plagiarism level will not be considered for blind review and will be returned to the contributors
- ❖ Abstract should be between 100-200 words typed on a separate page
- ❖ There should be Keywords of at least five to six under the abstract
- ❖ Articles accepted become the copyright of Gusau International Journal of Management and Social Sciences
- ❖ Authors however, will be held responsible in case, copyright of others are violated
- ❖ Electronic copy of the manuscripts (in Ms Word) should be submitted as an attachment to the email address: GUSAUIJMSS@gmail.com and copy to GJMSS@fugusau.edu.ng

- ❖ Manuscripts must be accompanied with a non-refundable assessment fee of ₦ 5,000. Upon acceptance, a publication fee of ₦ 20,000 is expected. Payments are to be made to:
Account Name: **Gusau International Journal of Management and Social Sciences**
Account Number: **0065189903**
BANK: **Sterling Bank**

Editorial Board

Dr. Bashir Umar Faruk: Editor-in-Chief

Department of Economics, Federal University Gusau, Zamfara State, Nigeria

Prof. Dejo Abdulrahman: Member

Department of Sociology, Usmanu Danfodio University, Sokoto, Nigeria

Prof. Nasiru M. Yauri: Member

Department of Business Administration, Usmanu Danfodiyo University, Sokoto, Nigeria

Prof. Yahaya A. Zakari: Member

Department of Economics, Usmanu Danfodio University, Sokoto, Nigeria

Prof. Garba B. Muhammad: Member

Department of Political Science, Usmanu Danfodio University, Sokoto, Nigeria

Prof. B. B. Kasim: Member

Department of Public Administration, Usmanu Danfodio University, Sokoto, Nigeria

Prof. Musa Yelwa Abubakar: Member

Department of Accounting, Usmanu Danfodio University, Sokoto, Nigeria

Prof. Femi Rufus Tinuola: Member

Department of Sociology, Federal University Gusau, Zamfara State, Nigeria

Prof. Bawa Ahmed AbdulQadir: Member

Department of Business Administration, Federal University Gusau, Zamfara State, Nigeria

Dr. Yusuf Alhaji Hashim: Business Editor

Department of Business Administration, Federal University Gusau, Zamfara State, Nigeria

Editorial Advisory Board

Prof. R. Ayo Dunmoye

Department of Political Science, Federal University Gusau, Zamfara-Nigeria

Prof. Jimi O. Adesina

Archie Mafeje Research Institute, College of Graduate Studies, University of South Africa

Prof. K. Awotokun

Department of Public Administration, University of Ife

Prof. Ahmad Martahda Muhammad

School of Government, College of Law, Government and International Studies, Universite of Utara Malaysia

Prof. R. Onah

Department of Public Administration and Local Government, University of Nigeria Nsukka

Prof. Tukur Garba

Department of Economics, Usmanu Danfodio University Sokoto

Prof. Yusuf Adamu

Department of Geography, Bayero University, Kano, Nigeria

Associate Prof. Muhammad Imdadul Haque

Department of Economics, Aligarth Muslim University, India

Contents

Moderating Role of Inflation on How Loan and Debt Ratios Influence Profitability: A Study of Deposit Money Banks Quoted on Nigerian Exchange ¹Salihu, A. S. ²Abdullahi, S. R. & ³Siyaka, A. R.	1
International Financial Reporting Standards (IFRS) Adoption and Quality of Accounting Information of Selected Listed Manufacturing Firms in Nigeria ¹Lawrence, U. Egbadju & ²Joy, O. Odey	25
The Nigerian Capital Market-Growth Nexus: A Johansen System-VECM Approach ¹Lawrence, U. Egbadju & ²Joy, O. Odey	42
Empirical Analysis of the Impact of Service Sector on Economic Growth in Nigeria ¹Azebi, Oyeinbrakemi Innocent & ²Tamuno, Cornelious	58
Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks (A Study of United Bank for Africa) Okonji Patrick Sunday, Ph.D.	80
Store Layout: An Investigative Study on Affective Evaluation and Customer Response of Hypermarkets in Nigeria ¹Jekey, Lekue Ph.D & ²Jonah, Charles Tambari Ph.D	95
Empirical Relationship between International Trade and Economic Growth in Nigeria ¹Agbonkhese Abraham Oni, Ph.D & ²Bashiru Salihu, M.Sc.	111
Deficit Financing, Debt Servicing and Economic Development in Nigeria Ogwu, Chika Beatrice	130

Forecasting Inflation and Exchange Rates under Financial Uncertainty: New Evidence from Nigeria *Bukola ODEKUNLE¹, Eunice Oluganna² & Ebenezer Adesoji OLUBIYI³	145
Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria (1981-2020) ¹Thankgod Tonye, PhD & ²Igbinovia Beauty, PhD	164
The Nexus between the Abuja Environmental Protection Boards’ use of Communication Media and Change in Public Behaviour on Drainage Sanitation Suleiman Haruna	189
Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State ¹Igboka, A. Ngozi, ²Prof. Elkhanah Chubike Ndie & ³Agbapuonwu, Noreen	213

Moderating Role of Inflation on How Loan and Debt Ratios Influence Profitability: A Study of Deposit Money Banks Quoted on Nigerian Exchange

¹Salihu, A. S. ²Abdullahi, S. R. & ³Siyaka, A. R.

^{1,2,3}Department of Accounting, Prince Abubakar Audu University, Anyigba, Kogi State, Nigeria.

¹salihu.as@ksu.edu.ng, ²abdullahisanirufai@yahoo.com,

³rahanatuosiyaka@gmail.com

Abstract

This study aims to evaluate how non-performing loans, short term debt to total asset, debt to equity and loans to deposits ratios affect return on assets of deposit money banks quoted on the Nigerian Exchange. Furthermore, the study looks at how inflation moderates the relationship between these ratios and profitability. A sample size of eight (8) deposit money banks is selected for this study, while maintaining a ten (10) year scope of 2012 to 2021. Robust standard errors random-effects regression is used to test the hypotheses. The results are that non-performing loans ratio significantly and negatively affect return on assets (t-value = -6.05; p-value = 0.000); short term debt to total assets ratio negatively and insignificantly affect return on assets (t-value = -1.94; p-value = 0.052); debt to equity ratio significantly negatively affects return on assets (t-value = -9.33; p-value = 0.000); and loan to deposit ratio negatively and insignificantly affects return on assets (t-value = -1.21; p-value = 0.226). Meanwhile, it is established that inflation has a positive insignificant effect on return on assets (t-value = 1.77; p-value = 0.077). Inflation also moderates the relationship between the following ratios and return on assets: non-performing loan ratio (t-value = 3.93; p-value = 0.000), short term debt to total asset ratio (t-value = -4.06; p-value = 0.000) and debt to equity ratio (t-value = 2.13; p-value = 0.033). Lastly, inflation does not moderate the relationship between loans to deposit ratio and return on assets (t-value = 1.45; p-value = 0.148). The policy implication of these for deposit money banks is that loan and debt ratios can influence profit differently during periods of high inflation.

Keywords: *Inflation; return on assets; non-performing loans; short term debt; debt to equity; loans to deposit.*

1.1 Introduction

Apart from firm specific ratios that could affect financial performance, there are also external, macro-economic situations that affect financial performance. In the financial services sector for example, interest rates, unemployment, inflation, exchange rates as well as other monetary policy metrics have been known to drive financial performance (Henbest, 2006). In support of this, the Central Bank of

Nigeria in 2019 published a stress test guideline for financial institutions. The regulatory body has directed financial institutions to carry out quarterly tests to review the effect of external factors, certain risks and liquidity on financial performance (CBN, 2019). Along this line, international credit rating agencies have predicted that it would be difficult for Nigerian banks to maintain their high returns, due to high credit costs as well as macro-economic factors like inflation (Fitch, 2022). The major contribution that this study would make to existing knowledge is by filling the research gap that was created by the lack of studies on how inflation reflects on how key metrics drive profit. Also, it will contribute to existing knowledge by using a smaller sample size that had not been considered in recent studies.

The main aim of this study is to determine the role of inflation on the relationship between loan and debt ratios, and return on assets of deposit money banks quoted on the Nigerian Exchange. The objectives are to determine if non-performing loans ratio, short term debt to total assets ratio, debt to equity ratio and loans to deposits ratio have significant effects on return on assets of deposit money banks quoted on the Nigerian Exchange. While the rest of the objectives are to evaluate whether inflation moderates the relationships between the following: non-performing loans ratio and return on assets; Short term debt to total assets ratio and return on assets; debt to equity ratio and return on assets, and lastly, loans to deposits ratio and return on assets.

In view of the research problem and research objectives, the hypotheses of the study are presented as follows:

- H₀₁** Non-performing loans ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.*
- H₀₂** Short term debt to total assets ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.*
- H₀₃** Debt to equity ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.*
- H₀₄** Loans to deposit ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.*
- H₀₅** Inflation has no moderating effect on the relationship between non-performing loans ratio and return on assets of deposit money banks quoted on the Nigerian*

Exchange.

H₀₆ *Inflation has no moderating effect on the relationship between short-term debt to total assets ratio and return on assets ratio of deposit money banks quoted on the Nigerian Exchange.*

H₀₇ *Inflation has no moderating effect on the relationship between debt to equity ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.*

H₀₈ *Inflation has no moderating effect on the relationship between loans to deposits ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.*

This study covers a time period of 2012 to 2021, which is 10 years and this was chosen because of easier access to data with respect to the sampled firms, as well as the cut off period that relates to the adoption of IFRS across the Nigerian corporate reporting ecosystem. Also, the total sample for the study is 8 deposit money banks that are quoted on Nigerian Exchange. Initially, this total number was 12 banks; however, 4 companies had to be excluded from the sample because they were now classified as holding companies. Eventually, the final sample was benchmarked against the fulfillment of the specific requirements.

This paper is divided into five sections. Part one provides a general background and overview of the research topic. Part two presents conceptual, empirical and theoretical reviews, while part three evaluates and attempts to justify the methodology of the study. Part four shows the results of the quantitative analysis and explains the implications of these results. Lastly, part five consists of conclusion and recommendations based on the findings from the study.

2.1 Conceptual Review of Contemporary Thoughts on Loan and Debt Ratios, Profitability and Inflation.

The return on assets is described as a ratio that shows how a company is using its assets to generate sales and profit. The components of this ratio include the return and assets, which serve as the numerator and denominator respectively. Generally, companies aim to achieve a high return on assets as possible, because this means that they are able to use fewer resources more efficiently. It is important to note that this ratio should be compared to companies within the same sector, because various companies are known to have different asset classes which have different uses (Hayes, 2022; Hargrave, 2022).

Loan is said to be non-performing when it goes into default, because of non-repayment over an agreed amount of time and it is a general consensus that when the default in terms of repayment goes beyond a 90 day period, it can be established to be a non-performing loan (Segal, 2022). The major cause of non-performing loans is when the debtor is faced with economic hardship. For example, a job loss or drastic change in an economic policy, may lead to adverse effects which will make the debtor go into default. Consequently, the Central Bank of Nigeria (CBN) had in recent times, mandated deposit money banks to limit their non-performing loans ratio to 5% of total customer loans (Nairametrics, 2020). However, over this period, some deposit money banks have had ratios that went below or blew over this prudential threshold. From the foregoing therefore, the non-performing loan ratio can be used as a reliable metric for measuring credit risk for deposit money banks (Brock, 2022).

When it comes to short term leverage, there are synonyms that can be applied. Another name for short term debt is current liability, and the common factor here is that these are all obligations that need to be settled within a twelve (12) month period (Ganti, 2020). One advantage of this form of finance is that it can be used as an emergency source of buffer, especially when longer term finance is not readily available. However, when it comes to this form of finance, there is significant uncertainty due to how difficult it is to predict how long such amounts can remain uncalled. Generally, this is a convenient method of finance when compared to the use of long term debt or the mobilization of equity finance.

Fernando (2022) defines the debt to equity ratio as the proportion of total debt to the total amount of shareholders' capital. Also, when the debt to equity ratio of a company is higher than that of its competitors, its shares are usually regarded as riskier. Another con of debt financing is that the creditor would be required to make payments regardless of if there is a profit or a loss. In addition to these, variable financing terms could change dramatically (Cremades, 2018). However, an advantage of debt finance is that responsibility to the creditor ends when all of the repayment terms have been completed. Also, the interest payments are tax deductible and the cost do not fluctuate as much as equity share price. What this means is that it is easy to forecast expenses when debt finance is selected (Maverick, 2022).

The loan to deposit ratio is a metric that deposit money banks use to measure liquidity (Murphy, 2020). The disadvantage of this ratio increasing is that liquidity may not be sufficient to cover operational needs. And when this ratio goes below the required threshold, it means that the earnings of the bank are reducing. There is indeed a dilemma with regards to sustaining a balance between the loans and deposits. On one hand, liquidity is important to meet operational responsibilities and unforeseen events and on the other hand, interest on loans are the largest contributor to profitability. Therefore, management needs to work together with regulatory bodies so that the policies that are formulated on their behalf are in the best interests of their diverse group of stakeholders. It is important to note that the Central Bank of Nigeria has prescribed a minimum loan to deposit threshold of 65% for deposit money banks (CBN, 2021).

Inflation is defined as a remarkable escalation of how much goods and services are sold in a way that the value of money that is owned at a particular time is eroded and is less of its value at a later date (Fernando, 2022). Furthermore, there are various views that relate to the significance of inflation on business operations. One school of thought is that inflation can be a good thing for businesses and the economy at large. For example, during inflation, people are willing to pay more for certain fixed assets. This translates to the increase in value for those who already possess these assets. Also, when a business has a fixed rate on debts, the borrower's cost of borrowing reduces when inflation exceeds this fixed rate. In addition, in some stock markets, stocks are known to benefit from inflation (Tretina, 2022).

2.2 Empirical Review

Ismael (2022) in his study on Islamic banks found that inflation increased the financial performance and this was ascribed to the use of inflation adjusted pricing, which shielded the companies from the negative effects of inflation. Likewise, Fathi *et al.*, (2022) showed that inflation increased the financial performance of the studied firms. In another study that was carried out on sampled Jordanian banks from the Amman Stock Exchange, Alzoubi (2021) showed that financial performance for the sampled companies improved from 2015 to 2018 despite the effect of some of the macroeconomic variables. Additionally, inflation was linked with higher domestic national debt (Mei & Zhiyong, 2021). However, Zein & Ångström (2016) showed that inflation had a negative relationship with debt among Swedish firms. Again, for Jan & Rafiq (2011) in their study on a sample of

companies from Pakistan, their findings showed a negative link between inflation and debt to equity ratio.

Among various geographical locations it has been determined that non-performing loan ratios have a negative and significant effect on return on assets (Nugraha *et al.*, 2021; Pham & Nguyen 2020; Akter & Roy, 2017). When it comes to how inflation interacts with non-performing loans, a few studies established that inflation increases the likelihood of non-performing loans becoming worse (Bukhard, 2022; Tham *et al.*, 2021), while some studies showed that inflation and non-performing loans were negatively associated (Ptasica, 2019; Mazreku, *et al.*, 2018). Additionally, some of the studies that showed that non-performing loans and profitability were negatively linked also showed that unemployment and non-performing loans were positively correlated.

Among the findings of Ocheng (2022) was that diversification of finance from short term sources was able to increase profitability of sampled Kenyan firms. In support of this, Harisa *et al.*, (2019) and Musah, (2018) were able to discover that increasing leverage had a significant effect on the financial performance of the sampled financial institutions. Along the same line and according to various researchers, whenever there was uncertainty with regards to monetary policies that relate to inflation, bank leverage ratios were shown to increase (Fu & Luo, 2021; Ahamed, 2021; Istiak & Serletis, 2020). Nurita (2022) showed that debt to equity ratio had a positive and significant effect on return on assets. However, Irman & Purwati (2020), in their study on Indonesian banks, established that return on assets reduced insignificantly when equity ratio increased

The studies on the effect of loans to deposits have shown that loans to deposits ratios have a positive and insignificant impact on profits (Suroso, 2022; Digdownseiso, 2021). For the inflation-deposit nexus, it was determined that inflation had a negative and significant effect on deposit mobilization (Azolibe, 2019; Orok *et al.*, 2018). In contrast, it was shown by Naz *et al.* (2018) and Putri & Purnama (2021) that inflation was positively but insignificantly connected to deposit mobilization.

2.3 Theoretical Review

This paper anchors the aim, firstly on the Modigliani-Miller Theorem, which asserts that returns do not rely on financing structure. This theory is tied to the objectives that relate to short term debt to total assets ratio, non-performing loan ratio, debt to equity ratio as well as loans to deposit ratio. In other words, it is expected that under perfectly efficient markets, the financial performance of deposit money banks would not be linked to how it finances its operations (Modigliani & Miller, 1958). The other relevant theories for this study are the time value of money theory which emphasizes that debt is beneficial for financial returns in periods of high inflation (Lusk, 2022). The last relevant theory for this study is the Phillips Curve theory which provides an explanation for why loans begin to re-perform when inflation increases (Hoover, 2022).

2.4 Gap in Literature

It can be observed that a large part of studies that have been performed were in countries other than Nigeria. Again, there were few studies that explored short term debt to total assets ratio as a metric that could be used to measure leverage. Furthermore, there is a lack of studies that attempted to look into how inflation influenced the relationship between various loan and debt risks, and profitability. In addition, for the years 2012 to 2021, there were almost no empirical material that made use of the eight (8) deposit money banks that are currently quoted on the Nigerian Exchange. Before this time period, the number of deposit money banks exceeded this amount. As some of the deposit money banks have now been restructured into holding companies, a new sample would be needed to fill the research gap.

3.1 Methodology

This study absorbed a sample from a population of the CBN approved list of 31 deposit money banks as at June 2021. Thereafter, a sample size of 8 companies was chosen through purposive sampling. Because these companies belong to the same group and the sample size is relatively small, the use of purposive sampling is justified (Battaglia, 2008). The criteria that was set for this selection was that the banks had to have a complete set of audited annual reports from 2012 to 2021 and they must be quoted on the Nigerian Exchange throughout this period. In view of this, 8 firms were used. Data originated from year-end audited financial reports of the firms and inflation data was extracted from CBN's annual statistical bulletin.

These data are discrete and continuous in nature because they exist as whole numbers as well as decimals after computation. After the financial ratios were computed with Microsoft Excel, the data was pasted into Stata 13[©] and quantitative analysis was performed after linear regression assumption tests were carried out.

3.2 Model Specification

Panel data econometric model is used in this study, because it is known to control for heterogeneity that can happen as a result of diversity in financial accounting information that is extracted from companies that have different characteristics (Torres-Reyna, 2007). This model, as adapted from Salihu and Muhammed (2022) is as follows:

$$\text{ROA}_{it} = \alpha + \beta_1\text{NPL}_{it} + \beta_2\text{STDTA}_{it} + \beta_3\text{DE}_{it} + \beta_4\text{LTDR}_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

From the model above, i is the number of individual companies; t is the time period from 2012-2021; α is the intercept; β_1 to β_4 stands for coefficient of independent model; ε represents error term. Furthermore, ROA represents return on assets; NPL stands for non-performing loan ratio; STDTA is the Short term debt to total assets ratio; DE stands for debt to equity ratio, and LTDR represents loans to deposits ratio.

$$\text{ROA}_{it} = \alpha + \beta_1\text{NPL}_{it} + \beta_2\text{STDTA}_{it} + \beta_3\text{DE}_{it} + \beta_4\text{LTDR}_{it} + \beta_4\text{AVINF}_{it} + \beta_5\text{AVINF}*\text{NPL}_{it} + \beta_6\text{AVINF}*\text{STDTA}_{it} + \beta_7\text{AVINF}*\text{DE}_{it} + \beta_8\text{AVINF}*\text{LTDR}_{it} + \varepsilon_{it} \dots \dots \dots (2)$$

Where AVINF is average year-on-year inflation rate and β_1 to β_8 are the coefficients of the model.

3.3 Variables and their Measurements

Table 1: Variable Measurement

Variables	Type	Measurement and Justification
Return on Assets (ROA)	Dependent	Measured as profit before interest and tax divided by average total assets (Salihu & Adediran, 2021)
Non-performing (NPL)	Loans Independent	Measured as total customer loans that have not been paid for more than 90 days, divided by total customer loans granted (Nwosu, <i>et al.</i> , 2020).
Short Term Debt to Total Assets (STDTA)	Independent	Measured as total non-current liabilities divided by total assets (Salim, & Yadav 2012)
Loan to Deposit Ratio (LTDR)	Independent	Measured as total customer loans divided by total customer deposits (Hunjra <i>et al.</i> , 2020)
Debt to Equity Ratio (DE)	Independent	Measured as the total liability divided by total equity (Bunea <i>et.al.</i> , 2019)
Average Inflation (AVINF)	Moderating Variable	Measured as Nigeria's average year-on-year inflation (Ishfaq & Khan, 2015)

Source: Researchers' compilation (2022)

4.1 Data Analysis

Table 2: Descriptive Statistics

VARIABLES	OBS	MEAN	STD.DEV	MIN	MAX
ROA	80	1.144875	1.714636	-9.53	4.7
NPL	80	4.705	6.155464	0	33.58
STDTA	80	68.00538	16.29026	31.13	161.21
DE	80	9.09725	20.75963	-2.98	190.21
LTDR	80	66.045	21.78115	3.55	138
AVINF	80	12.366	3.115791	8.05	16.95

Source: Researchers' computation (2022) with Stata 13.0[©]

Table 2 shows that for return on assets (ROA) the standard deviation is 1.714636 and higher than the mean, indicating that there was a relatively fast growth of return on assets for the companies during the period. With regards to the non-performing ratio (NPL), the mean is 4.705 which is below the most recent CBN benchmark. When it comes to the short term debt ratio (STDTA) the mean is 68.00538, while the standard deviation is 16.29026. This is an indication that on aggregate, the 8 quoted deposit money banks for the period 2012 to 2021 have seen a slowdown of their reliance on short term finance as a percentage of total assets.

With respect to the debt to equity ratio (DE), the minimum value is -2.98, which belongs to Unity Bank Nigeria Plc., a deposit money bank that has been challenged by negative equity for a couple of years. When it comes to loan to deposit ratio (LTDR), there appears to be a more aggressive growth of deposits as well as deposit mobilization efforts due to the value of the standard deviation of 21.78115, exceeding the mean value of 66.045. Finally, it can also be observed that the standard deviation for average year-on-year inflation (AVINF) is 3.115791, which

is lower than the mean value of 12.266. What this means is that average year-on-year inflation for the period did not experience a fast growth as expected.

4.2 Correlation Matrix

Table 3: Correlation Matrix

	ROA	NPL	STDTA	DE	LTDR	AVINF
ROA	1.0000					
NPL	-0.2159	1.0000				
STDTA	-0.4445	-0.2239	1.0000			
DE	-0.2008	0.1594	0.0278	1.0000		
LTDR	0.1912	0.1637	-0.6627	-0.1200	1.0000	
AVINF	-0.1181	-0.0531	-0.0488	0.0004	0.1441	1.0000

Source: Researchers' computation (2022) with Stata 13.0[©]

The correlation matrix shown in table 3 shows that ROA is weakly negatively correlated with non-performing loan by 21.59%. This means there is an inverse relationship between the two variables. ROA is moderately negatively correlated with short term loan by 44.45%. In other words, this means when short term loan increases, ROA decreases. Debt to equity ratio has very weak negative correlation with ROA to the sum of 20%, and loan to deposit ratio has a very weak but positive correlation with ROA by 19%, indicating a positive relationship with the dependent variable. Also, Average inflation has a very weak negative correlation with ROA by 11%. It can be established that there is no presence of multicollinearity within the independent variables as all the values lie below 80% (Gujarati, 2022).

After the correlation analysis, it is important to determine the inferential nature of the panel data model. Therefore, and in consideration of the heteroskedastic nature of the variance of the residuals, robust standard errors, random-effects GLS regression is employed.

4.3 Hierarchical Multiple Regression Results

Table 4: Robust Standard Errors Random-Effects GLS Regression

	MODEL 1		MODEL 2	
	Z	P-VALUE	Z	P-VALUE
NPL	-6.05	0.000	-5.79	0.000
STDTA	-1.94	0.052	3.84	0.000
DE	-9.33	0.000	-2.17	0.030
LTDR	-1.21	0.226	1.27	0.203
AVINF			1.77	0.077
AVINF*NPL			3.93	0.000
AVINF*STDTA			-4.06	0.000
AVINF*DE			2.13	0.033
AVINF*LTDR			-1.45	0.148
-CONS	2.32	0.020	-1.47	0.143
N	8		8	
OBS	80		80	
R-SQUARE	0.3295		0.6516	
WALD-CHI2(4)	663.82			
PROB>CHI2	0.0000			

Dependent variable: ROA

Source: Researchers' computation (2022) with Stata 13.0[©]

This study has complied with several criteria for applying a moderator to a model. Firstly, by establishing through empirical justification, that there is a link between the moderator variable and the dependent variable and that there is also a relationship between the moderator variable and the individual independent variables. Another criterion for moderation is that the second step which displays the moderation must show a significant increase in the R^2 . Thirdly, the effect of this moderation must be significant (Baron & Kenny, 1986; Aiken *et al*, 1991). Consequent to the application of the test for heteroskedasticity and Hausman test, table 6 shows the robust standard error, random-effects GLS regression of the two (2) models of the study.

Starting with model 1, non-performing loans ratio (NPL) has a negative significant effect on the return on assets (t-value = -6.05; p-value = 0.000). Additionally, for every unit increase in non-performing loans ratio, return on assets will decrease by -.0530602. Also, short term debt to total assets ratio (STDTA) has a negative insignificant effect on return on assets of deposit money banks (t-value = -1.94; p-value = 0.052). Furthermore, for every unit increase in short term debt to total asset ratio, return on assets will decrease by -0.720389. The regression results also show that debt to equity ratio (DE) has a negative significant effect on return on assets of deposit money banks (t-value = -9.33; p-value = 0.000). In addition, for every unit of increase in debt to equity ratio, return on assets decreases by -0.0146964. Along the same line, loans to deposit ratio (LTDR) has a negative insignificant effect on return on assets of deposit money banks (t value = -1.21; p-value = 0.226). Along the same line, it can be determined that a unit increase in loans to deposit ratio decreases return on assets by -0.0172382.

Model 2 in table 6 shows that inflation (AVINF) has a positive insignificant effect on return on assets (t-value = 1.77; p-value = 0.077). There is also an implication that when a unit of average year on year inflation increases, return on assets also increases by 1.111429. Also, inflation positively moderated the relationship between non-performing loans ratio and return on assets (t-value = 3.93; p-value = 0.000). Moreover, Inflation negatively moderated the relationship between short term debt ratio and return on assets (t-value = -4.06; p-value = 0.000). The relationship between debt to equity ratio was positively moderated by inflation (t-value = 2.13; p-value = 0.033), and lastly, inflation did not moderate the relationship between loans to deposit ratio and return to assets (t-value = 1.45; p-value = 0.148).

4.4 Test of Hypotheses

***H₀₁** Non-performing loans ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.*

The GLS regression for model 1 shows that non-performing loans ratio (NPL) has a negative significant effect on the return on assets of deposit money banks quoted on the Nigerian Exchange. Consequently, this study rejects the null hypothesis that states that non-performing loans ratio has no significant effect on return on assets.

***H₀₂** Short term debt to total assets ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.*

The GLS regression for model 1 shows that short term debt to total assets ratio has a negative insignificant effect on return on assets of deposit money banks quoted on the Nigerian Exchange. Therefore, this study fails to reject the null hypothesis that states that short term debt to total asset ratio has no significant effect on return on assets.

H₀₃ Debt to equity ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.

The GLS regression for model 1 shows that debt to equity ratio has a negative significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange. In view of this, this study rejects the null hypothesis that debt to equity ratio has no significant effect on return on assets.

H₀₄ Loans to deposit ratio has no significant effect on return on assets of deposit money banks quoted on the Nigerian Exchange.

The GLS regression for model 1 shows that loans to deposit ratio has a negative insignificant effect on return on assets of deposit money banks quoted on the Nigerian Exchange. Therefore, this study fails to reject the null hypothesis that loans to deposit ratio has no significant effect on return on assets of deposit money banks listed on the Nigerian Exchange.

H₀₅ Inflation has no moderating effect on the relationship between non-performing loans ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.

The GLS regression for model 2 shows that inflation with high non-performing loans ratio have significant positive effects on return on assets of deposit money banks quoted on the Nigerian Exchange. Consequently, this study rejects the null hypothesis that inflation has no moderating effect on the relationship between non-performing loans ratio and return on assets.

H₀₆ Inflation has no moderating effect on the relationship between short-term debt to total assets ratio and return on assets ratio of deposit money banks quoted on the Nigerian Exchange.

The GLS regression for model 2 shows that inflation with short term debt to total asset ratio have significant negative effects on return on assets of deposit money banks quoted on the Nigerian Exchange. In consideration of these, this study rejects the null hypothesis that average year-on-year inflation has no moderating effect on the relationship between short term debt to total asset ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.

Ho7 *Inflation has no moderating effect on the relationship between debt to equity ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.*

The GLS regression for model 2 shows that inflation with debt to equity ratio have significant positive effects on return on assets of deposit money banks quoted on the Nigerian Exchange. In consideration of these, this study rejects the null hypothesis that average year-on-year inflation has no moderating effect on the relationship between debt to equity ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.

Ho8 *Inflation has no moderating effect on the relationship between loans to deposit ratio and return on assets of deposit money banks quoted on the Nigerian Exchange.*

The GLS regression for model 2 shows that inflation and loans to deposit ratio increase, return on assets will decrease. Therefore, this study fails to reject the null hypothesis that average year-on-year inflation has no moderating effect on the relationship between loans to deposit ratio and return on assets.

4.5 Discussion of Findings

From the literature review and statistical analysis that were performed, in terms of non-performing loans ratio, it was determined that it has a significant negative effect on return of assets of deposit money banks quoted on the Nigerian Exchange. This result is in line with previous studies (Nugraha *et al.*, 2021; Pham & Nguyen, 2021; Akter & Roy, 2017). However, it defies the premise behind the Modigliani-Miller Theory.

In addition, previous studies such as those done by Musah, (2018) and Harisa *et al.*, (2019) support the results from this study which confirm that short term debt to total asset ratio has a negative insignificant effect of return on assets of deposit

money banks quoted on the Nigerian Exchange. This however is not line with the time value of money which stipulates that higher debt could lead to higher returns.

With regards to the effect of debt equity ratio on return on assets, the outcome of analysis done was not in line with previous studies (Irman & Purwati, 2020; Nurita, 2022). Again, the result was not in alignment with the Modigliani-Miller Theory. In other words, it can be established that when it comes to deposit money banks quoted on the Nigerian Exchange, higher debt will not translate to higher profits.

This paper also sought to investigate if loans to deposits ratio has any significant effect on the return on assets of deposit money banks quoted on the Nigerian Exchange. Consequently, the results from the test of hypothesis showed that loans to deposit ratio has a negative insignificant effect on return on assets. This is not in line with previous studies like Suroso (2022); Digidowiseiso (2021) and is also not consistent with the Modigliani-Miller Theory.

Additionally, this study showed that inflation moderates the relationship between non-performing loans ratio and return of assets. In essence, it holds that when inflation increases, it completely reverses the negative effect that non-performing loans have on financial performance. This is in agreement with previous studies like Mazkreku *et al.*, (2018), who rationalized this by stating that employment was positively correlated to non-performing loans. It was also in line with the study carried out by Ptasica (2019). Again, this supports the Phillips Curve theory which explained that when there is high inflation as well as an economic boom, creditors would find it easier to fulfil their credit terms.

Along the same line, this study showed that when there was high inflation, companies that relied on short term debt as a percentage of total assets performed worse. This goes along with previous studies (Evers *et al.*, 2020; Fu & Luo, 2021; Istiak & Serletis, 2020). Again, the results do not hold true for the time value of money theory. What this translates to is that, inflation did not offset the negative effect of short term debt had on return on assets.

With regards to the role of inflation on how debt interacts with financial performance, this study showed that inflation completely reverses the negative effect that debt had on profitability in deposit money banks quoted on the Nigerian Exchange. This means results from previous studies (Jan & Rafiq, 2011; Zein &

Angstrom, 2016) can be relied on. However, this does not agree with Mei & Zhiyong (2021). Overall, this strongly supports the premise behind the time value of money theory which states that borrowers usually benefit from inflation, than lenders.

The results for the final hypothesis showed that inflation slightly worsened the relationship between a high loan to deposit ratio and financial performance. In other words, when inflation increased, a high loan to deposit ratio presented even lower profits than when there was no inflation. This result does not support the results from other studies (Putri & Purnama, 2021; Naz *et al.*, 2018). Again, with regards to the Modigliani-Miller theorem, this goes further to show that when it comes to liquidity risk, the mix of loans to deposit would not likely take away from the profits of deposit money banks, when there is a period of higher inflation.

5.1 Conclusion and Recommendations

The overall aim of this study was to evaluate the effect of debt and loan ratios on the return of assets of deposit money banks listed on the Nigerian Exchange. Consequently, two (2) models were specified to test the objectives of the study. After basic assumption testing was conducted, regression results showed that non-performing loans ratio had a significant negative effect on return on assets; short term debt ratio had an insignificant effect on return on assets, debt to equity ratio had a significant negative effect on return on assets, loans to deposits ratio had an insignificant negative effect on return on assets; inflation positively moderates the relationship between non-performing loans and debt to equity ratios and return on assets. Also, inflation negatively moderates the relationship between short term debt ratio and return on assets, but inflation did not successfully moderate the relationship between loans to deposit ratio and return on assets. The study therefore recommends the following:

1. Because the results show that in the absence of inflation, non-performing loans significantly reduce profits, this study recommends that CBN find more innovative ways to penalize banks that do not comply NPL limits. A good deterrence measure would be to set a more prudent limit for directors who take loans from the banks they manage.
2. As the analysis shows that over-reliance on short term debt negatively affects profits, banking sector regulators should consider setting a

benchmark for banks on how much short term finance they can use to run their operations.

3. Management of the sampled banks switch on to equity for their financial needs, instead of debt when the rate of inflation is not increasing significantly. This is because the analyses show that a higher debt to equity ratio significantly reduces profits.
4. The results also show that loan to deposit ratio insignificantly negatively affects return on assets. Thus it is recommended that management find innovative ways to prioritize customer deposits over loans to customers.
5. From the results of the regression, higher non-performing loans significantly increase profits during a period of high inflation. Therefore, during periods of increasing inflation and economic boom, it is recommended that the CBN give more room for deposit money banks to increase their non-performing loan threshold to a less prudential percentage. This would serve as an incentive for management to relax credit terms, lend more money and earn more interest income from customers.
6. Management and finance directors of deposit money banks need to limit their reliance on short term finance during periods of high inflation, as going for this method of finance would negatively impact the financial performance of the deposit money banks.
7. With regards to debt, it is almost universal knowledge that borrowers are known to benefit more during periods of high inflation. In weighing the options between taking on more debt or equity, management of deposit money banks should select the debt route. This is beneficial especially when the owners of the companies are concerned about equity costs like dilution of earnings and voting rights.

References

- Ahamed, F. (2021). Determinants of Liquidity Risk in the Commercial Banks in Bangladesh. *European Journal of Business and Management Research*, 6(1), 164-169.
- Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

- Akter, R., & Roy, J. K. (2017). The impacts of non-performing loan on profitability: An empirical study on banking sector of Dhaka stock exchange. *International Journal of Economics and Finance*, 9(3), 126-132.
- Alzoubi, H. M. (2021). The effect of inflation on performance: an empirical investigation on the banking sector in Jordan. *The Journal of Asian Finance, Economics and Business*, 8(6), 97-102.
- Azolibe, C. B. (2019). Macroeconomic dynamics, bank-specific factors and deposit mobilization of the Nigerian banking sector. *Asian Journal of Economics, Business and Accounting*, 12(2), 1-16.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Brock, T. (2022). *Credit Risk: Definition, Role of Ratings, and Examples*. Investopedia. <https://www.investopedia.com/terms/c/creditrisk.asp>
- Battaglia, M. P. (2008). *Encyclopedia of Survey Research Methods*. Sage Publications, Inc., <https://dx.doi.org/10.4135/9781412963947>
- Bunea, O. I., Corbos, R. A., & Popescu, R. I. (2019). Influence of some financial indicators on return on equity ratio in the Romanian energy sector-A competitive approach using a DuPont-based analysis. *Energy*, 189, 116251.
- CBN. (2021). *Bullion*. CBN. <https://www.cbn.gov.ng/out/2021/ccd/bullion%20first%20quarter%202021.pdf>
- CBN. (2019) *Guideline on stress testing for Nigerian banks*. CBN. <https://www.cbn.gov.ng/out/2019/bsd/guideline%20on%20stress%20testing%20for%20nigerian%20banks.pdf>.
- Chen, Y., Sensini, L., & Vazquez, M. (2021). Determinants of leverage in emerging markets: empirical evidence. *International Journal of Economics and Financial Issues*, 11(2), 40.
- Cremades, A. (2018). *Debt vs. equity financing: pros and cons for entrepreneurs*. Forbes. <https://www.forbes.com/sites/alejandrocremades/2018/08/19/debt-vs-equity-financing-pros-and-cons-for-entrepreneurs/?sh=4337b6416900>
- Digdowiseiso, K. (2021). The Effects of Capital Adequacy Ratio, Non-Performing Loan, Loan to Deposit Ratio, and Return on Assets on Stock Prices in Banking Sector over the Period 2015–2019. *Budapest International*

Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences, 4(4), 11286-11293.

Evers, M., Niemann, S., & Schiffbauer, M. (2020). Inflation, liquidity and innovation. *European Economic Review*, 128, 103506.

<https://doi.org/10.1016/j.euroecorev.2020.103506>

Fathi, A., Isiksal, A., & Ismaeel, A. (2022). The Effect of Inflation on Financial and Accounting Data's Ability to Reflect Profitable Gains Reported by Financial Statements. In *2022 International Conference on Sustainable Islamic Business and Finance (SIBF)* (pp. 241-245). IEEE.

Fernando, J. (2022). *What you need to know about the purchasing power of money and how it changes*. Investopedia.

<https://www.investopedia.com/terms/i/inflation.asp>

Fernando, J. (2022). *Debt-to-equity (D/E) ratio formula and how to interpret it*. Investopedia.

<https://www.investopedia.com/terms/d/debtequityratio.asp>

Fitch Ratings (2022). *Nigerian banks face risks despite oil boost*. (Fitch Ratings).

<https://www.fitchratings.com/research/banks/nigerian-banks-face-risks-despite-oil-boost>

Fu, B., & Luo, D. (2021). Monetary policy uncertainty and bank leverage: Evidence from China. *Economics Letters*, 203, 109866.

<https://doi.org/10.1016/j.econlet.2021.109866>

Ganti, A. (2020). *Short-term debt (current liabilities): what it is, how it works*. Investopedia.

Gujarati, D. M. (2022). *Gujarati: Basic Econometrics*. McGraw-hill.

Hargrave, M. (2022). *ROA formula and 'good' ROA defined*. Investopedia.

Harisa, E., Mohamad, A., & Meutia, I. (2019). Effect of Quality of Good Corporate Governance Disclosure, Leverage and Firm Size on Profitability of Islamic Commercial Banks. *International Journal of Economics and Financial Issues*, 9(4), 189.

<https://doi.org/10.32479/ijefi.8157>

Hayes, A. (2022). *What is financial leverage, and why is it important?* Investopedia.

Hayes, A. (2022). *Profitability ratios: what they are, common types, and how businesses use them*. Investopedia.

<https://www.investopedia.com/terms/p/profitabilityratios.asp>

- Henbest, J. (2006). *Stress testing: credit risk*. IMF.
<https://www.imf.org/external/np/seminars/eng/2006/stress/pdf/jh.pdf>
- Hoover, K. D. (2022). *Phillips curve*. Econlib.
<https://www.econlib.org/library/Enc/PhillipsCurve.html>
- Hunjra, A. I., Mehmood, A., Nguyen, H. P., & Tayachi, T. (2020). Do firm-specific risks affect bank performance? *International Journal of Emerging Markets*.
<https://doi/10.1108/IJOEM-04-2020-0329/full/html>
- Irman, M., & Purwati, A. A. (2020). Analysis on the influence of current ratio, debt to equity ratio and total asset turnover toward return on assets on the locomotive and component company that has been registered in Indonesia Stock Exchange within 2011-2017. *International Journal of Economics Development Research (IJEDR)*, 1(1), 36-44.
<https://doi.org/10.37385/ijedr.v1i1.26>
- Ishfaq, M. J., & Khan, N. U. (2015). Bank profitability, inflation and cost efficiency—a case of Pakistani banks. *International Journal of Business and Management Review*, 3(1), 41-53.
- Ismael, A. A. (2022). *The effect of inflation on financial and accounting data's ability to reflect profitable gains reported by financial statements*. Near East University. <http://docs.neu.edu.tr/library/9438584232.pdf>
- Istiak, K., & Serletis, A. (2020). Risk, uncertainty, and leverage. *Economic modelling*, 91, 257-273. <https://doi.org/10.1016/j.econmod.2020.06.010>
- Jan, S. U., & Rafiq, M. (2011). Effect of Macroeconomic Factors on Capital Structure Decisions of Firm-Evidence from a Developing Country. *Journal of Business and Economic Review*, 3(1).
- Kenton, W. (2022). *Financial performance: definition, how it works and example*. Investopedia.
<https://www.investopedia.com/terms/f/financialperformance.asp>
- Kovaz, D., (2022). *Hierarchical linear modeling vs. hierarchical regression*. Statistics Solutions. <https://www.statisticssolutions.com/hierarchical-linear-modeling-vs-hierarchical-regression/>
- Lavie, D., Curry, B. (2022). *How to calculate inflation: PCE & CPI*. Forbes.
<https://www.forbes.com/advisor/investing/how-to-calculate-inflation/>
- Maverick, J. B. (2022). What are benefits for a company using equity financing vs. debt. Investopedia.
- Lusk, V. (2022). *Time value of money: The guiding principle for virtually every financial and investing decision*. Business Insider.

<https://www.businessinsider.com/personal-finance/time-value-of-money?r=US&IR=T>

- Mazreku, I., Morina, F., Misiri, V., Spiteri, J. V., & Grima, S. (2018). Determinants of the level of non-performing loans in commercial banks of transition countries. *European Research Studies Journal*, 21(3), 3-13.
- Mei, Y., & Zhiyong, L. (2021) Inflation, Portfolio Selection and Household Leverage. *Management Review*, 33(1), 13-22.
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, 48(3), 261-297.
- Murphy, C. B. (2020). *Loan-to-deposit ratio (LDR)*. Investopedia. <https://www.investopedia.com/terms/l/loan-to-deposit-ratio.asp>
- Musah, A. (2018). The impact of capital structure on profitability of commercial banks in Ghana. *Asian Journal of Economic Modelling*, 6(1), 21-36. <https://doi.org/10.18488/journal.8.2018.61.21.36>
- Nairametrics (2020). *Nigerian Banks non-performing loan ratio blows past CBN regulatory limits*. Nairametrics.
- Naz, M. F., Ahmad, B., & Majid, M. J. (2018). Impact of Monetary Policy on Islamic Banks' Deposits: Evidence from Pakistan. *International Journal of Research Scholars*, 2(2), 1-8.
- Nugraha, N. M., Yahya, A., Nariswari, T. N., Salsabila, F., & Octaviantika, I. Y. (2021). Impact of Non-Performing Loans, Loan to Deposit Ratio and Education Diverstiy on Firm Performance of Indonesia Banking Sectors. *Review of International Geographical Education Online*, 11(3), 85-96. <https://Doi:10.48047/rigeo.11.3.10>
- Nugraha, N. M., Ramadhanti, A. A., & Amaliawiati, L. (2021). Inflation, Leverage, and Company Size and Their Effect on Profitability. *Journal of Applied Accounting and Taxation*, 6(1), 63-70. <https://doi.org/10.30871/jaat.v6i1.2854>
- Nurita, E. (2022). The Effect of Current Ratio and Debt to Equity Ratio on Return on Assets at PT Aneka Tambang Tbk Period 2011-2020. *Journal of Research in Business, Economics, and Education*, 4(3), 51-59. <https://doi.org/10.55683/jrbee.v4i3.391>
- Nwosu, C. P., Okedigba, D. O., & Anih, D. O. (2020). Non-Performing Loans and Profitability of the Nigerian Commercial Banks. *Economic and Financial Review*, 58(3), 35-58.

- Ochenge, R. (2022). *The effect of revenue diversification on bank profitability and stability during the COVID-19 Pandemic: Evidence from Kenya* (No. 59). KBA Centre for Research on Financial Markets and Policy Working Paper Series.
<https://www.econstor.eu/handle/10419/249559>
- Orok, A. B., Okoi, I. O., & Essien, A. (2018). Inflation and Deposit Mobilization in Deposit Money Banks: The Nigerian Perspective. *International Journal of Public Administration and Management Research*, 4(4), 109-121.
<http://www.rcmss.com/index.php/ijpamr>
- Pham, P. T., & Nguyen, T. H. M. (2020). The Impact of Non-performing Loans on Profitability of Vietnamese Commercial Banks. *UEB conference papers*. 86-94.
https://repository.vnu.edu.vn/handle/VNU_123/136654
- Ptasica, T. (2019). Modeling the influence of inflation on the level of non-performing loans in Cyprus commercial banks. *Технологический аудит и резервы производства*, 1(5 (45)), 36-38. <https://doi:10.15587/2312-8372.2019.163288>
- Putri, V. Y., & Purnama, D. F. (2021). How the inflation affect the commercial bank deposit funds in Indonesia (2016–2018). In *International Conference on Applied Science and Technology on Social Science (ICAST-SS 2020)*. 556-560. Atlantis Press.
<https://doi:10.2991/assehr.k.210424.109>
- Salihu, A. S., & Adediran, S. A. (2021). Effect of firm specific and micro-economic factors on profitability of quoted oil and gas companies in Nigeria. In *The Institute of Chartered Accountants of Nigeria: 6th Annual International Academic Conference on Accounting and Finance*. 267-284. ICAN.
- Salihu, A. S. & Muhammed, A. A. (2022). Impact of financial information on fraud likelihood of quoted consumer goods companies in Nigeria. *Journal of Leadership, Accounting Development and Investigation Research (JLADIR)*, 6(1), 154-162.
- Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-Social and Behavioral Sciences*, 65, 156-166.
- Segal, T. (2022). *Nonperforming loan (NPL) definitions, types, causes, consequences*. Investopedia.
<https://www.investopedia.com/terms/n/nonperformingloan.asp>
- Sudrajat, P. (2015). What loan to deposit ratio (LDR) want to tell us? LinkedIn.

- <https://www.linkedin.com/pulse/what-loan-deposit-ratio-ldr-want-tell-us-pardi-sudradjat/>
- Suroso, S. (2022). Analysis of the Effect of Capital Adequacy Ratio (CAR) and Loan to Deposit Ratio (LDR) on the Profits of Go Public Banks in the Indonesia Stock Exchange (IDX) Period 2016 – 2021. *Economist Journal: Scientific Journal of Accountancy, Management and Finance*, 2(1), 45-53. <https://doi.org/10.33258/economit.v2i1.610>
- Tham, K. W., Said, R., & Adnan, Y. (2021). The Dynamic Relationship between Inflation and Non-performing Property Loans in Malaysia. *Journal of Surveying, Construction and Property*, 12(1), 36-44.
- Torres-Reyna, O. (2007). *Panel Data Analysis Fixed and Random Effects using Stata*. Princeton.edu. <https://www.princeton.edu/~otorres/Panel101.pdf>
- Tretina, K. (2022). *Is inflation good or bad?* Forbes. <https://www.forbes.com/advisor/investing/is-inflation-good-or-bad/>
- Vanguard. (2021). *Shareholders task CBN on insider-related credit policies*. Vanguard Nigeria. <https://www.vanguardngr.com/2021/04/shareholders-task-cbn-on-insider-related-credit-policies/>
- Wei, S. (2021). *Testing the assumptions of linear regression*. Medium. <https://towardsdatascience.com/testing-the-assumptions-of-linear-regression-f38857abc08a>
- Zein, A. (2016). *Can Macroeconomic Factors Explain The Choice Of Capital Structure? A Study of Listed Non-Financial Firms in Sweden, Department of Business Studies* (Doctoral dissertation, Master Thesis, Uppsala University, Sweden). <https://www.diva-portal.org/smash/get/diva2:968839/FULLTEXT01.pdf>

International Financial Reporting Standards (IFRS) Adoption and Quality of Accounting Information of Selected Listed Manufacturing Firms in Nigeria

¹Lawrence, U. Egbadju & ²Joy, O. Odey

^{1,2}Department of Accounting, Federal University Otuoke, Yenagoa, Bayelsa State, Nigeria

Abstract

This study investigates if the adoption of IFRS has improved the quality of accounting numbers provided in the financial statements of firms in Nigeria. The essence is to confirm the results of previous studies as well as the introduction of new variables. The study uses secondary balanced panel data obtained from the Nigerian Exchange Group on 27 selected manufacturing firms over the periods 2006-2011 for pre-IFRS and from 2012-2017 for post-IFRS. The dependent variable is market share price (MPS), and the independent variables are BVPS, EPS, CFPS and PE, while LEV and SIZE are the control variables. The regression results of the Estimated Generalized Least Squares (EGLS) indicate that for pre-IFRS periods, while three variables are positively significant, four of the variables of interest are positively significant in post-IFRS periods. The overall results of the hypotheses tests show that there is a higher quality of accounting information after the adoption of IFRS for the periods under review. The results give signals to investors that post-IFRS information has higher value relevance than pre-IFRS. The study recommends among others that manufacturing firms should continue to adopt IFRS in order to maximize its influence on their stock prices.

Keywords: *Quality, Accounting Information, IFRS, Market Price Per Share.*

1.0. Introduction

For over ten (10) decades before 2005 when the International Financial Reporting Standards (IFRS) was first adopted in the European Union, every nation has had its own local or national standards that guide the preparation and presentation of financial reports or accounting information for the use of economic and business resources. Through the use of these resources, firms, all over the world, seek to generate enough revenue by making quick decisions that are based on timely and accurate accounting information. Since financial statements are summary of all business transactions as well as other events, it is expected therefore that the accounting information therein should greatly assist all stakeholders in making informed business decisions in an effective, economic and efficient manner. Thus,

there is the need that such information truly represents the actual operating results and financial position of the firm. According to International Accounting Standard Board (IASB, 2008)-the body overseeing the issuance of International Financial Reporting Standards (IFRSs)-“the objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling or holding equity and debt instruments, and providing or settling loans and other forms of credit”. For the main goal of these standards is to ensure that firms are provided with useful accounting information that would help investors to make good investment decisions, minimize information asymmetry between the investors and firms and to ensure that investors have a thorough knowledge of the risk levels of those firms which would guarantee a more rational investment decisions (Zhai & Wang, 2016). Ibanichuka and Asukwo (2018) opined that IFRSs appear to be investors’ last hope for the provision of globally reliable and comparable financial information. It is argued that continuous use of different accounting standards even if the same set of data is used may result to differences in both financial reporting and its quality. According to APOCHI and MUSTAPHA (2022), in order to ensure the users of financial report are protected in making rational investments decision, it is of utmost importance to provide superior financial reporting quality which guarantee improved market efficiency. The value and pervasiveness of accounting numbers in decision making process cannot be overemphasized and how well it meets stakeholders’ needs is determined by a host of other factors of which accounting standards are the most important (Olowe & Shehu, 2021).

Today’s globalized economies depend heavily on cross-border transactions with an ever growing flow of international capital and other foreign operations. Tarca (2012) reported that it was the first time in history we are having a large numbers of firms which are domiciled in different countries using a set of single standards and this makes it easier to collect evidence on the benefits in capital markets. Post-IFRS research evidences as documented by Tarca (2012) include: improvement in market liquidity, reduction in cost of capital, improvement in information content of earnings announcements, that is, reduction in reporting lag, increase in trading activity from foreign firms, cross border holdings has increased, institutional ownership of equity has increased, forecast accuracy has improved, improvement

in precision of information by financial analysts and this has helped them to be able to incorporate firm-industry information in share prices, et cetera.

Recall that the turn of this century witnessed many corporate misdeeds resulting from false accounting numbers which undermine the quality of accounting information meant for various users of financial statements. Notable historical corporate scandals, all involving billions of US dollars (\$billions) were: Xerox (2000), Enron (2001), Tyco (2002), WorldCom (2002), Freddie Mac (2003), HealthSouth (2003), Royal Ahold and Parmalat (2003), American International Group (AIG) (2005), Lehman Brothers (2008), Satyam(2009), to mention but a few. The foregoing calls for a financial reporting that would be of high quality, less subjectivity to preparers' judgements and manipulations, which is also less information asymmetry. This is in spite of Lee *et al.* (2008) claim that both practitioners and academics remain divided and unconsented as to the economic benefits of IFRS adoptions. Therefore, the main objective of this study is to investigate if the adoption of IFRS in Nigeria has had any improvement in the accounting numbers as reported in the financial statement in Nigeria. The specific objectives aimed to be achieved include ascertaining the extent to which book value per share, earnings per share, cash flow per share and price earnings ratio impacted on the quality of accounting information of selected listed manufacturing firms in Nigeria.

2.0. Review of Related Literature

2.1 Empirical Literature

Olowe and Shehu (2021) undertook a research to determine the extent to which IFRS adoption influenced the value relevance of accounting information in Nigeria. *The study uses* secondary balanced panel data obtained from 7 out of 14 deposit money banks (DMBs) listed on the Nigeria Stock Exchange spanning the period 2008 to 2015, divided into four years from 2008-2011 for pre-IFRS and four years from 2012-2015 for post-IFRS. The dependent variable was share price (SP), while the independent variables were book value per share (BVPS), earnings per share (EPS) and change in earning per share (CEPS). The regression results of the General Least Squares (GLS) indicated that while EPS pre-IFRS periods had a positively significant value better than post-IFRS; BVPS and CEPS were not significant at all for both periods. Sun *et al.* (2021) researched on the extent to which IFRS adoption influenced the value relevance of accounting information in

Indonesia. *The study uses* secondary unbalanced panel data obtained from twenty two banks listed on the Indonesia Stock Exchange (IDX) spanning the period 2008 – 2013, divided into two years from 2008-2009 for pre-IFRS and four years from 2010-2014 for post-IFRS. The dependent variable was share price (P), while the independent variables were book value per share (BVPS), earnings per share (EPS) and firm size (SIZE). The regression results of the OLS indicated that EPS post-IFRS periods had a positively significant change than pre-IFRS; BVPS pre-IFRS periods had a positively significant value than post-IFRS, while SIZE was insignificant in the two periods. Alomair *et al.* (2021) empirically examined the value relevance of International Financial Reporting Standards (IFRS) adoption on the quality of accounting information in Saudi Arabia. *The study uses* secondary balanced panel data obtained from selected listed firms on the floor of the Saudi stock market over the periods 2015-2016 for pre-IFRS and from 2017-2018 for post-IFRS. The dependent variable was earnings, while the independent variable was book value of equity (BVE). The regression results of the Ordinary Least Squares (OLS) indicated that post-IFRS periods had a positively significant change than pre-IFRS. This means that there is a higher quality of accounting information after the adoption of IFRS for the periods under review. Suwardi (2020) carried out a research study so as to assess how the concept of the value relevance of accounting measures has evolved in Indonesia. Secondary data of one hundred and nine-four (194) listed firms in the Indonesia Stock Exchange was used for the unbalanced panel regression model, while that of two hundred and twenty-three (223) was used for the cross-sectional regression model. The period of study was from 2002-2018 divided into six years of pre-IFRS (2002 -2007) and eleven years of post-IFRS (2008-2018). While share price (EV) was the dependent variable, the independent variables were earnings per share (EPS) and book value of equity (BV). The yearly cross-sectional price regressions revealed that the BV and the EPS are value relevant, as their coefficients were statistically and positively significant with EV. However, the results of the Ordinary Least Squares (OLS) regression with robust standards errors revealed a continuous post-IFRS (2010 to 2014) reduction in the value relevance, due to a lower combined explanatory power of the BV and the EPS after a continuous increase for the pre-IFRS (2002-2008). Salisu and Yusha'u (2020) carried out an empirical assessment on the quality of financial reporting following the adoption of IFRS in Nigeria. *The panel data used in this study was obtained from nine (9) industrial goods firms listed on the Nigerian Stock*

Exchange (NSE); from Cash Craft database and Capital Asset database divided into six years from 2006-2011 for pre-IFRS and six years from 2012-2017 for post-IFRS were used. The dependent variable was share price (P), while the independent variables were book value per share (BVPS) and earnings per share (EPS). The regression results of the OLS indicated that while EPS pre-IFRS periods had a positively significant value better than post-IFRS; BVPS was not significant at all for both periods. Yasas and Perera (2019) initiated a research study to confirm whether IFRS adoption really had any impact on accounting information quality in Sri Lanka. Unbalanced panel secondary sources of data used were obtained from 29 manufacturing firm listed in Colombo Stock Exchange spanning the period 2009 to 2015, divided into three years from 2009-2011 for pre-IFRS and four years from 2012-2015 for post-IFRS. The dependent variable was share price (SP), while the independent variables were book value per share (BVPS), earnings per share (EPS) and net operating cash flow per (OCF) with leverage (LEV) to control. The regression results of the panel EGLS regression with cross section indicated that EPS pre-IFRS periods had a positively significant value better than post-IFRS; BVPS post-IFRS had a positively significant value better than pre-IFRS, while OCF and LEV were not significant at all for both periods. Ki *et al.* (2019) set out a study to confirm whether there was a change in the value relevance of accounting information after South Korea adopted IFRS. Balanced panel secondary sources of data used were obtained from 14,260 firm-year observations of firms listed in the two Korean Stock Exchanges (KSE and KOSDAQ) spanning the period 2006 to 2015, divided into five years from 2006-2010 for pre-IFRS and five years from 2011-2015 for post-IFRS. The dependent variable was share price (SP), while the independent variables were book value per share (BVPS) and earnings per share (EPS). The OLS regression results revealed that for KOSDAQ both EPS pre-IFRS and BVPS pre-IFRS had a positively significant value better than post-IFRS. For KSE, while BVPS post-IFRS had a positively significant value better than pre-IFRS; EPS pre-IFRS had a positively significant value better than post-IFRS.

Alade (2018) carried out an empirical assessment on the relevance of accounting information following the adoption of IFRS in Nigeria. Secondarily sourced balanced panel data obtained from 128 firms listed on the Nigerian Stock Exchange (NSE) spanning the period 2008 – 2015, divided into four years from 2008-2011 for pre-IFRS and four years from 2012-2015 for post-IFRS were used. The dependent variable was share price (SP) while the independent variables were book value per share (BVPS), earnings per share (EPS) and cash flow per share (CFOPS).

The regression results of the OLS indicated that EPS post-IFRS and BVPS post-IFRS periods had a positively significant value better than pre-IFRS, while CFOPS was not significant at all for both periods. Ahmed *et al.* (2018) studied how value relevant is accounting information in Nigeria after the adoption of IFRS. The researchers used secondary panel data of eight of the fifteen sampled oil and gas firms covering the period 2009 – 2014, divided into three years from 2009-2011 for pre-IFRS and three years from 2012-2014 for post-IFRS. The dependent variable was share price (SP), while the independent variables were book value per share (BVPS) and earnings per share (EPS). The regression results of the OLS indicated that EPS post-IFRS and BVPS post-IFRS periods had a positively significant value better than their pre-IFRS results. Temile (2018) studied the value relevance of accounting information in Nigeria after the adoption of IFRS. The researchers used secondary balanced panel data of eight seven sampled firms listed on the floor of the Nigeria Stock Exchange covering the period 2007 – 2016, divided into five years from 2007-2011 for pre-IFRS and five years from 2012-2014 for post-IFRS. The dependent variable was share price (SP), while the independent variables were book value per share (BVPS), earnings per share (EPS), cash flow per share (CFOPS), net income per share (NIPS) and net asset (NA). The regression results of the OLS indicated that BVPS post-IFRS and NIPS post-IFRS periods had a positively significant value better than their pre-IFRS results; EPS pre-IFRS and CFOPS pre-IFRS periods had a positively significant value better than their post-IFRS results, while NA was not significant at all for the two periods. Alnodel (2018) studied whether there has been any increase in the value relevance of accounting information since the adoption of IFRS in Saudi Arabia. *The study uses secondarily sourced balanced panel data obtained from twenty one (21) listed firms on the floor of the Saudi stock market comparing the periods 2008 for pre-IFRS and from 2010 for post-IFRS.* The dependent variable was market value per share (MVPS), while the independent variables were book value of equity (BVE) and earnings per share (EPS) with ROA and SIZE being control variables. The regression results of the Ordinary Least Squares (OLS) indicated that BE was less value relevance after the IFRS adoption, while EPS was more relevant post-IFRS periods. Adeyemo *et al.* (2017) aimed at investigating the relationship, if any, that exists between the value relevance of accounting information and IFRS adoption. Secondary balanced panel data of 13 listed of deposit money banks (DMBs) in Nigeria Stock Exchange over the periods 2008-2011(4 years pre-IFRS) and 2012-

2015 (4 years post-IFRS) was used in this study. The dependent variable was market stock price (MV), while the independent variables were book value per share (BVPS) and earnings per share (EPS). The regression results of the OLS indicated that EPS post-IFRS and BVPS post-IFRS periods had a positively significant value better than pre-IFRS. Okafor *et al.* (2017) in a research work, attempted to justify the value relevance of accounting information in Nigeria after the adoption of IFRS. The researchers used secondary panel data of twelve sampled consumer firms obtained from the Nigerian Stock Exchange and Capital Assets covering the period 2008 – 2015, divided into four years from 2008-2011 for pre-IFRS and four years from 2012-2015 for post-IFRS. The dependent variable was market share price (MSP), while the independent variables were book value per share (BV), earnings per share (EPS) and cash flow per share (CF). The regression results of the OLS indicated that BVPS post-IFRS, EPS post-IFRS and CF post-IFRS periods had a positively significant value better than their pre-IFRS results.

2.2. Theoretical Framework

Agency Theory

Jensen and Merkling (1976) defined an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. They noted that since the principal and the agent are utility maximizers, it is very likely that the agent will not always act to protect the best interests of the principal. The principal then tries to minimize this conflict of interest or divergences from his best interest through the establishment of an appropriate incentives scheme so as to encourage the agent and also by incurring monitoring costs to checkmate the limit of the agent's aberrant activities.

Jensen and Meckling (1976) noted that their theory will help to explain, among others, why:

- i) Accounting reports must be mandatorily or voluntarily provided to existing and potential investors, lenders and other creditors.
- ii) Shareholders engage independent auditors to certify as to the truth and fairness view of the reports.

Holthausen (1990) also noted a relationship between managers' opportunistic behavior (agency costs) and accounting quality and that managers' choice of a particular type of accounting procedure is either to efficiently maximize the firms'

value or to make themselves better off. Barth *et al.* (2008) reported that post-IFRS evidence showed less earnings management, higher accounting information value relevance and more timely loss recognition in twenty one (21) countries. Thus, the adoption of IFRS with its attendant benefits over the various local standards, as empirical evidences documented by Tarca (2012) have shown, would greatly mitigate the agency theory conflict.

2.3 Research Gap. Many research studies on IFRS adoption and quality of accounting information have been carried out both in developed and developing economies. The highest number of years ever used in the research work was 17 years (2002-2018) by Suwardi (2020) in Indonesia.

This work differs from others in that it used data for twelve (12) years from 2006 to 2017 which to the best of our knowledge no one has used in Nigeria. This study introduced the Price-Earnings (PE) ratio which has never been used in previous studies. Also, none of the above authors used Estimated Generalized Least Squares (EGLS with Period SUR) method as we did. Note that panel data models do have heteroskedascity and correlation between the error terms (autocorrelation), EGLS is used to correct for these problems and give a better regression output.

3.0 Methodology

The study uses the ex-post facto research design, otherwise called the descriptive or correlational research design, to investigate the relationship, if any, between the adoption of IFRS and accounting information quality in Nigeria. The population of this research comprises selected firms of the manufacturing industry listed on the floor of the Nigerian Stock Exchange (NSE). Secondly sourced data obtained from 27 of those companies' annual reports over the period 2006 to 2017, making a total number of 324 observations, is used in this study. This period is further divided into the pre-IFRS era (2006-2011) and post-IFRS era (2012-2017).

3.2 Measurement and Definitions of Variables.

Table 1

S/N	Variables Names	Definitions	Types	Measurements
1	MPS	Market Price Per Share	Dependent	Accounting Information Quality
2	BVPS	Book Value Per Share	Independent	Equity Value / Number of shares
3	EPS	Earnings Per Share	Independent	Net Income / Number of shares
4	CFPS	Cash Flows Per Share	Independent	Operating Cash Flows / Number of shares
5	PE	Price-Earnings Ratio	Independent	MPS/EPS
6	LEV	Leverage	Control	Total Debts/ Total Assets
7	SIZE	Company Size	Control	Logarithms of the total assets of the company

3.3 Model Specification

The functional equation of value relevance model which represents accounting information quality is stated as:

$$MPS = f(BVPS, EPS, CFPS, PE, LEV, SIZE)$$

(1) The functional testable model will be derived as:

$$MPS = \beta_0 + \beta_1 BVPS + \beta_2 EPS + \beta_3 CFPS + \beta_4 PE + \beta_5 LEV + \beta_6 SIZE + \epsilon_1$$

(2).

Where the definitions are as stated in Table 1 above.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the beta coefficients of the independent variables. From this study, we expect β_1 to β_6 to be greater than zero.

ε_1 = Error term

Since we are using panel data, the model is specified in the form of the three commonly used methods which are:

$$MPS_{it} = \beta_0 + \beta_1 BVPS_{it} + \beta_2 EPS_{it} + \beta_3 CFPS_{it} + \beta_4 PE_{it} + \beta_5 LEV_{it} + \beta_6 SIZE_{it} + \varepsilon_{1i} \quad (3)$$

4.0 Method of Data Analysis

Data collected are analyzed using EViews 10+ in the following order: Unit root test, Estimation of the regression models and performance of some diagnostics tests.

4.1 Unit Root Test

Table 2: Panel data unit root test

Variables	Phillips Perron(PP) Fisher	Im, Pesaran & Shin	Levin, Lin & Chu	ADF Fisher	Decision
MPS	0.0009	0.0000	0.0000	0.0000	I(0) stationary
BVPS	0.0000	0.0023	0.0000	0.0092	I(0) stationary
EPS	0.0000	0.0001	0.0000	0.0002	I(0) stationary
CFPS	0.0000	0.0023	0.0000	0.1583	I(0) stationary
PE	0.0000	0.0064	0.0000	0.0063	I(0) stationary
LEV	0.0000	0.0000	0.0000	0.0078	I(0) stationary
SIZE	0.0248	0.0000	0.0000	0.0000	I(0) stationary

The above unit root test results in Table 2 showed that all the variables of interest are I(0), that is, stationary at levels. Their p-values are less than 5% except CFPS of the ADF Fisher. When variables are not stationary, it means that they can drift apart in the long run and the regression results obtained can be spurious or nonsensical.

4.2 Regression Models Estimation

Table 3. Multivariate Analysis of IFRS Adoption and Quality of Accounting Information

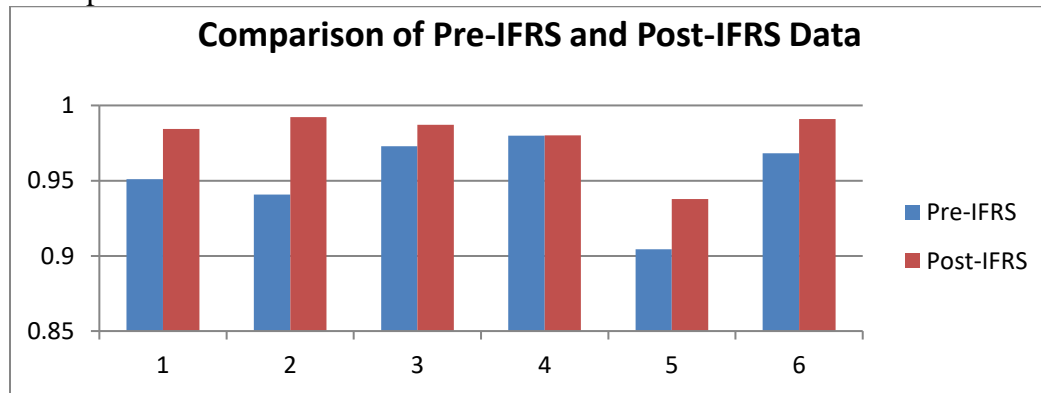
Panel Estimated Generalized Least Squares (EGLS) (Period SUR)									
Post-IFRS Adoption Results					Pre-IFRS Adoption Results				
	Coefficient	Std. Error	t-Stat	Prob	Coefficient	Std. Error	t-Stat	Prob	
(Constant)	-13.271	5.530	-2.399	0.0176	4.641	1.895	2.449	0.015	
Dependent Variable: MPS									
Independent Variables:									
EPS	3.855	0.127	30.25	0.0000	6.051	0.187	32.28	0.0000	
BVPS	0.085	0.091	0.93	0.3494	0.208	0.054	3.84	0.0002	
CFPS	1.643	0.108	15.15	0.0000	1.482	0.066	22.57	0.0000	
PER	0.104	0.048	2.14	0.0332	0.002	0.009	0.25	0.8003	
LEV	0.030	0.018	1.63	0.1040	0.003	0.002	1.10	0.2717	
SIZE	1.930	0.332	5.80	0.0000	0.142	.124	1.13	0.2560	
R^2	0.925859				0.912104				
Adjusted R^2	0.922989				0.908702				
F-Change	322.6021				268.075				
Sig. F change	0.000000				0.0000				
Durbin-Watson	1.911948				2.082664				
Number of observations	162				162				

Source: Author's Compilations from E-Views Output

Table3c: Yearly Cross Sectional Regression Results and Graphs

Years	Pre-IFRS	Years	Post-IFRS	Incremental Power of Adj R ²
2006	0.950857	2012	0.984258	0.033401
2007	0.94076	2013	0.992247	0.051487
2008	0.972865	2014	0.987159	0.014294
2009	0.979922	2015	0.9802	0.000278
2010	0.904389	2016	0.93772	0.033331
2011	0.968275	2017	0.991038	0.022763

Graph3ci



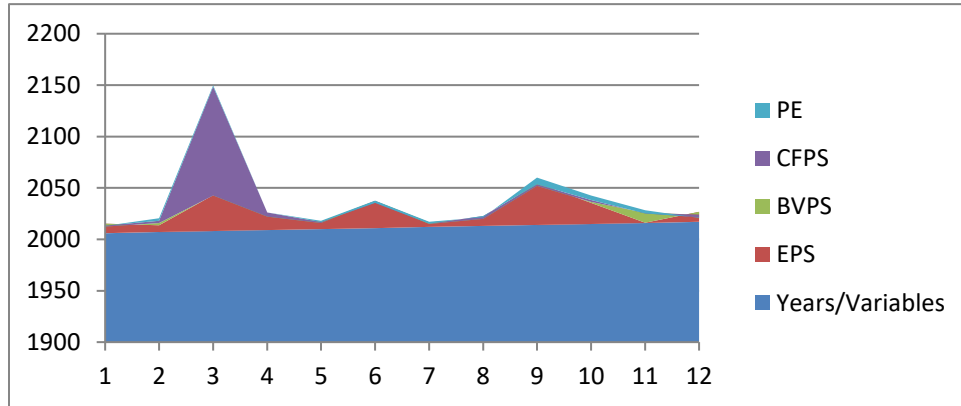
Sources: Author's Graphing of Table 3c using Microsoft Excel.

Table3d: Variables t-Statistics Cross Sectional Regression Results and Graphs

Years/Variables	EPS	BVPS	CFPS	PER
2006	9.159555	-2.763787	0.999858	-0.325768
2007	6.796309	2.038623	2.085242	2.699872
2008	35.06126	-0.517494	106.0322	1.225701
2009	14.56943	-1.363338	4.037929	0.005467
2010	7.089278	-1.289112	0.92773	1.3123
2011	26.46402	-0.146161	-1.96026	2.136126
2012	4.445725	-1.453641	0.301743	1.719844
2013	7.611315	-0.763027	2.798093	-1.189374
2014	40.65978	-2.754052	1.459743	6.676857
2015	20.40493	0.852955	1.949522	4.571529
2016	0.273941	9.628562	-0.713748	3.142955
2017	9.785773	-2.921895	-2.438995	-0.711441

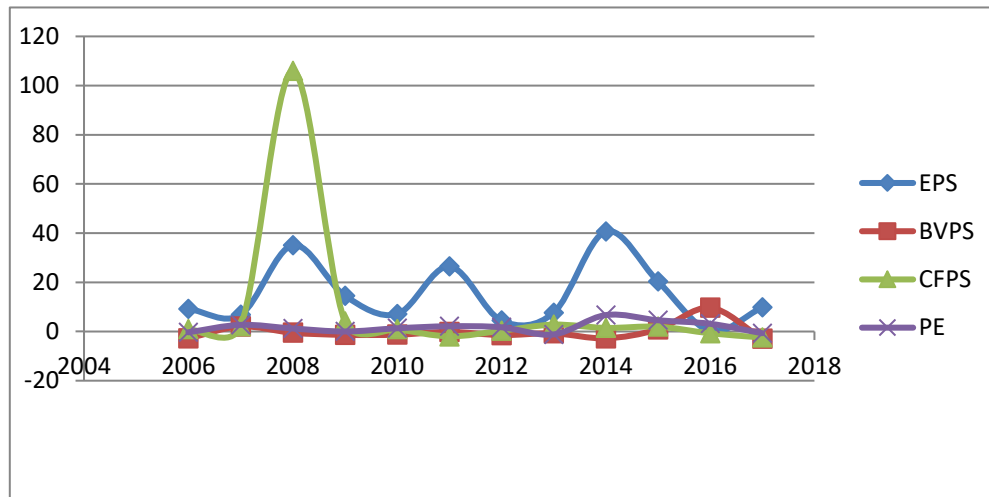
Sources: Author's Computations using EViews 10+

Graph3di



Sources: Author’s graphing of table 3d using Microsoft Excel

Graph 3dii



Sources: Author’s graphing of table 3d using Microsoft Excel

4.3 Discussion of the Regression Results

The regression results in Table 3 which covers the pre-IFRS periods, three of the six variables- EPS, BVPS and CFPS- are positively significant, while the other three- PE, LEV and SIZE- are positively insignificant. In the same Table 3 which covers the post-IFRS periods, four of the six variables- EPS, CFPS, PER and SIZE-

are positively significant while the other two-BVPS and LEV-are positively insignificant. Thus, we have more positively significant variables in post-IFRS than in pre-IFRS periods. This goes to confirm what the literature is saying that: 'although there is not yet a consensus reached in the literature, most empirical results show that IFRS adoption improves the quality of financial information, which becomes more correlated with market variables. Specifically, EPS pre-IFRS periods had a positively significant t-Statistics value (32.27) higher than post-IFRS (30.25). This result is in line with those of Olowe and Shehu (2021); Salisu and Yusha'u (2020); Yasas and Perera (2019); Ki *et al.* (2019); Temile (2018), but it is contrary to those of Sun *et al.* (2021); Alade (2018); Ahmed *et al.* (2018); Adeyemo *et al.* (2017); Okafor *et al.* (2017). BVPS pre-IFRS periods had a positively significant t-Statistics value (3.85) higher than post-IFRS (0.94). This result is in line with those of Sun *et al.* (2021) and Alnodel (2018), but it is contrary to those of Alomair *et al.* (2021); Yasas and Perera (2019); Ki *et al.* (2019); Alade (2018); Ahmed *et al.* (2018). CFPS pre-IFRS periods had a positively significant t-Statistics value (22.6) higher than post-IFRS (15.2). This result is in line with that of Temile (2018), but it is contrary to that of Okafor *et al.* (2017).

The above results can also be confirmed by the values of the Adjusted R-squared. While pre-IFRS is 90.87%, that of post-IFRS is 92.3%, this shows that post-IFRS model is a better fitted one than that of pre-IFRS with a combined incremental power of Adjusted R-squared by 1.43%, that is, 92.3% minus 90.87%. Again, the yearly cross-sectional regression results in Table 3c and accompanying graph 3ci showed the value relevance of post-IFRS superiority over that of pre-IFRS. See Appendices A & B for details. Again, the regression results for individual variables in Table 3d and the accompanying graphs di and dii above show that EPS exhibit more consistent accounting information for investors. Apart from the year 2016 where it was positively insignificant, it is very consistent in explaining share prices for the other years.

5.0 Conclusion and Recommendations

In this study, we investigate if the adoption of IFRS has improved the quality of accounting numbers provided in the financial statements of firms *in Nigeria*. *The study uses data which covers the period of 2006-2011(pre-IFRS) and 2012-2017 (post-IFRS) analyzed with the Estimated Generalized Least Squares (EGLS)*

regression. The overall results of the regression and other additional analysis show that there is a higher quality of accounting information after the adoption of IFRS for the periods under review. The study, therefore, recommends that:

1. Manufacturing firms should fully implement international financial reporting standards (IFRS) in order to maximize its influence on their stock prices.
2. Manufacturing firms should take close cognizance of their cash flow as its relative impact on stock prices cannot be undermined due to illiquidity trap.
3. Manufacturing firms should also monitor the movement of their earnings per share to ensure its consistent effect on stock prices as shown in the results above.
4. They should pay close attention to P/E ratio since it shows what the market is willing to pay today for a stock whether undervalued or overvalued based on its past or future earnings.

References

- Adeyemo, K. A., Solabomi, O. A., Uwalomwa, U. & Uwuigbe, O. R. (2017). Mandatory adoption of international financial reporting standards (IFRS) by Nigerian listed banks: Any implication for value relevance? *International Journal of Accounting Research (IJAR)*, 3 (7), 21-33
- Ahmed, A. D., Ilu, A. S. & Bahamman, S. M. (2018). Effect of the adoption of international financial reporting standards (IFRSs) on value relevance of accounting information of Nigerian quoted oil and gas companies. *Journal of Accounting and Financial Management*, 4 (6), 9-19.
- Alade, M. E. (2018). *Effect of international financial reporting standards adoption on value relevance of accounting information of Nigerian listed firms*. (Doctoral thesis, Jomo Kenyatta University of Agriculture and Technology Repository, Kenya, Open Access)
- Alnodel, A. A. (2018). The impact of IFRS adoption on the value relevance of accounting information: Evidence from the insurance sector. *International Journal of Business and Management*; 13 (4), 138-148.
- Alomair, A., Farley, A. & Yang, H. H. (2021). The impact of IFRS adoption on value relevance of accounting information in Saudi Arabia. *Accounting & Finance/Early View*. <http://onlinelibrary.wiley.com>
- Apochi, J. G. & Mustapha, L. O. (2022). IFRS adoption and financial reporting quality in Nigeria: A conceptual approach, *European Journal of Accounting, Auditing and Finance Research*, 10 (6), 9-18.

- Barth, E., Landsman, R. & Lang, M. (2008). International accounting standards and accounting quality. *Journal of Accounting Research*, 46(3), 467-498”
- Holthausen, R. W. (1990). Accounting method choice: Opportunistic behavior, efficient contracting and information perspectives. *Journal of Accounting and Economics*, 12, 207-218.
- IASB (2008). *Exposure Draft on an improved Conceptual Framework for Financial Reporting: The Objective of Financial Reporting and Qualitative Characteristics of Decision-useful Financial Reporting Information*. London.
- Ibanichuka, E. A. L. & Asukwo, I. S. (2018) Adoption of International Financial Reporting Standards and financial performance of petroleum marketing entities in Nigeria. *International Journal of Advanced Academic Research / Accounting & Economic Development*, 4(2), 1-15
- Jensen, M.C. & Meckling, W.H.: (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3, 306-360.
- Ki, D. H., Leem, W. B. & Yuk, J. H. (2019). The effect of IFRS adoption on the value relevance of accounting information: Evidence from South Korea. *Investment Management and Financial Innovations*, 16(2), 78-88.
- Lee, E., Walker, M. & Christensen, H. B. (2008). Mandating IFRS: its impact on the cost of equity capital in Europe, *No. RR105, ACCA, Manchester*
- Okafor, T. G., Alphonso, O. & Nwanneka, O. A. (2017). IFRS adoption and the value relevance of accounting information in Nigeria: An empirical study. *Journal of Modern Accounting and Auditing*, 13 (10), 421-434
- Salisu, M. & Yusha'u, K. S. (2020). IFRS adoption and financial reporting quality: Evidence from the listed industrial goods firms in Nigeria. *International Journal of Advanced Studies in Economics and Public Sector Management | IJASEPSM*. 8 (1), 165-179
- Sun, Y., Sari, N. & Havidz, S. A. H. (2021). The impact of IFRS adoption on value relevance accounting information: Evidence from Indonesia. *IOP Conference Series: Earth and Environmental Science*, 1-11
- Olowe, I. O. & Shehu, U. H. (2021). IFRS adoption and value relevance of financial information of listed deposit money banks in Nigeria. *International Journal of Economics and Financial Issues*, 2(1-2), 1-21

- Suwardi, E. (2020). *The evolution in the value relevance of accounting measures in Indonesia. Gadjah Mada International Journal of Business*, 22(1), 49-73
- Tarca, A. (2012). The case for global accounting standards: Arguments and evidence. *Academic Fellow - Research, IFRS Foundation*.68-84
- Temile, S. O. (2018). *An analysis of the effect of IFRS adoption in Nigeria on the quality of published financial information* (Doctoral thesis, Salford Business School. University of Salford, Manchester, United Kingdom. Open Access.)
- Yasas, T. & Perera, H. (2019). The impact of IFRS adoption on quality of accounting information: Evidence from Sri Lanka; *Kelaniya Journal of Management*, 8(1), 21-36
- Zhai, J. and Wang, Y. (2016). Accounting information quality, governance efficiency and capital investment choice. *China journal of Accounting Research*. 9, 251-266.

The Nigerian Capital Market-Growth Nexus: A Johansen System-VECM Approach

¹Lawrence, U. Egbadju & ²Joy, O. Odey

¹Department of Accounting, Federal University Otuoke, Yenagoa, Bayelsa State, Nigeria

Abstract

This study investigates the impact which capital market has on economic growth in Nigeria. The period which the study covers is from 1985 to 2018. The dependent variable is economic growth proxied by Real Gross Domestic Product (RGDP), while the independent variables are stock market turnover ratio (SMTOR), market capitalization (MCAP), financial deepening index-M2/GDP-FINDEEP and all-share index(ASI). The results of the VECM indicated that all the independent variables of interest (SMTOR, MCAP, FINDEEP, ASI) and their lags, in the short run, are not statistically significant with relation to economic growth in Nigeria for the period under study. In the long run, however, all the independent variables are statistically significant. SMTOR and MCAP have a t-statistics value of 7.25267 and 2.45105, which are positively significant. In the same vein, FINDEEP and ASI have t-statistics value of -8.24 and -9.05 which are negatively but statistically significant. ECM indicated that takes a 13.64% speed of adjusting or converging to bounce back to equilibrium in the long run in a situation of shock. The paper concludes that capital market has greatly helped in the growth of the Nigerian economy for the period under review. The study therefore recommends that regulators should ensure that investors' confidence are restored and sustained.

Keywords: Capital market, economic growth, VECM.

1.0.Introduction

It is the objective of every government, developed or developing, to prioritize the well-being of its citizenry for a sustainable level of economic development as a matter of urgent national policy. In this growth process, accumulation of capital is an undeniable factor of which, finance is unarguably, a pivot, a core in generating this economic development. A sustainable economic development of any nation is assured, where a well-functioning financial system, of which the capital market is one, is in place. This is achieved through the development of the appropriate institutions and financial instruments considered as main drivers of the financial sector. Accordingly, Omankhanlen *et al.* (2022) noted that for any government to really reduce poverty in the economy, it needs massive investments in financial

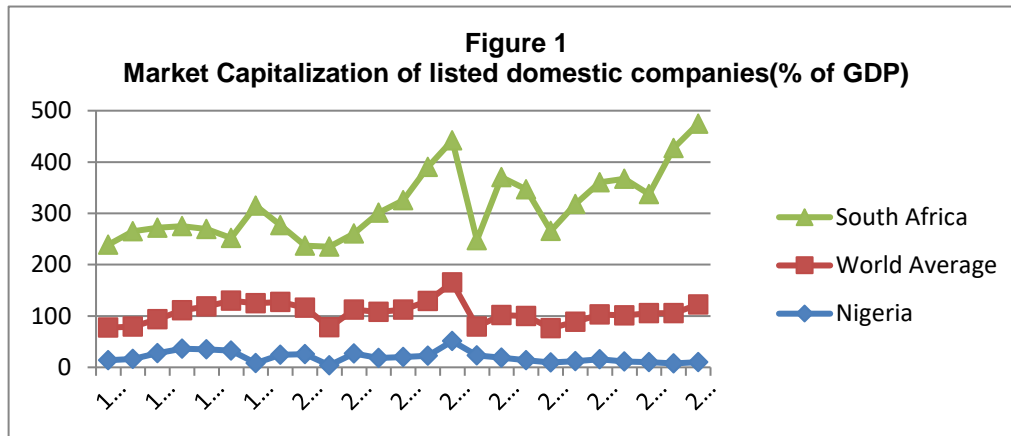
development which facilitates the efficient allocation of resources through better knowledge of future productive investments.

Attention on financial market of which capital market is one have been considerably given by contemporary finance and economic literature, due to the role it plays in providing equity capital for companies which helped them in achieving efficient debt-to-equity mix and thus mobilize resources for national growth (Ibekwe & Ogomegbunam, 2022). In their study, Omimakinde and Otite (2022) noted that one major goal of national policy in any type of economy is economic development through capital accumulation, but this can be greatly hindered by shortage of productive factors of which finance is central.

Levine (2004) stated succinctly that if our research makes us to understand the role which finance plays in economic growth, then it will have implications for policy formulation and thereby shape the future of policy-oriented research and this ultimately will influence the priority which advisors and policy makers attach in financial sector policies reforms. According to Alenoghena (2014), it is evidenced that capital market provides liquidity, reduces transaction costs, reduces information cost, makes resources available to investors, facilitates risk transfer, facilitate foreign financial inflow to the domestic economy, assists in price discovery, to mention but a few. In Nigeria, empirical evidence from Ibekwe and Ogomegbunam (2022); Omimakinde and Otite (2022); Ighoroje and Eloho (2022); Omankhanlen *et al.* (2022); Ashamu and Soyabo (2020); Ubesie and Ude (2019) among others, confirmed the finance-led growth hypothesis.

Since its inception in 1959 to the commencement of operations in 1961, the Nigerian capital market has undergone many reforms aimed at transforming it to global standard. Although the market has grown in leaps and bounds, it has not been able to muster the much needed capital formation of long -term fund for sustainable growth. Ighoroje and Eloho (2022) observed that a well-developed capital market is globally seen as a major catalyst for economic growth and its deepness smoothens the intermediation processes which ensure that the economic lending process boosts economic growth. They noted furthermore that the Nigerian capital market is confronted with high corruption index, lack of adequate skilled manpower, low capital base, cost ineffectiveness, and delay in payment of securities, operational inefficiency. According to Omimakinde and Otite (2022), a host of studies have identified various factors as barriers to the overall wellness of the Nigerian capital market such as: divestment by various foreign investors, high

production costs, lack of infrastructure, negative impacts of commercial banks, inability of the federal government to plot a bailout option, avalanche of private placements offers, regulating inconsistencies, pronouncements and pressure from banks, to mention but a few. The aftermath of the above negativities is shown in overall market capitalization by the Nigerian capital market as depicted in Figure1 below:



Source: World Bank’s World Development Index (WDI) metadata.

Thus, this paper seeks to validate the results so far obtained from the Nigerian researchers by objectively investigating the relationship between capital market development and economic growth. Following this introductory section are: the theoretical framework; empirical literature; methodology; data analysis and discussion of results; residual diagnostics tests as well as conclusions and recommendations

2.1. Empirical literature

Ibekwe and Ogomegbunam (2022) carried out an empirical assessment on how financial market and monetary policy impacted on the Nigerian economy. Annual secondary data over the period spanning 2002 to 2020 collected from the CBN Statistical Bulletin was used. The dependent variable was Gross Domestic Products (GDP), while the independent variables were money supply (M2), market

capitalization (MCAP) and interest rate (IR). The Ordinary Least Squares (OLS) regression results showed that both MCAP and M2 were positively significant with GDP. Omimakinde and Otite (2022) *empirically carried out a study to establish if any relationship exists between capital market reform and the performance of the Nigerian economy*. Annual secondary data over the period spanning 1981 to 2017 collected from the CBN Statistical Bulletin and also from the World Development Index (WDI) were used in this study. While, the dependent variable was Gross Domestic Product (GDP), the independent variables were market capitalization (MCA), value of transaction (VOT), all share index (ASI), number of deals (NOD), number of listed companies (NLS), interest rate (INT) and inflation rate (INF). The results of the OLS model showed that MCA and INT impact on GDP were positively significant, while NLS was negatively significant. Ighoroje and Eloho (2022) investigated the extent to which financial market operations have helped in the development of the Nigerian economy. Annual time series data from 2008 to 2020 collected from the CBN Statistical Bulletin was used in this research study. While the dependent variable was real gross domestic product (RGDP), the independent variables were market capitalization (MCA), turnover ratio (TUR), all share index (ASI), commercial paper (COP), bankers' acceptance (BAA) and Treasury Bills (TBL). The OLS regression results indicated that MCA and TBL are positively and statistically significant with RGDP, while ASI was negatively significant. Omankhanlen *et al.* (2022) empirically tested the impact which financial development has on the growth of the Nigerian economy. The study made use of secondarily sourced annual data collected from the CBN Statistical Bulletin between the years 1990 to 2019. The dependent variable was real gross domestic product (RGDP), while the independent variables were ratio of money supply to GDP (M2GDP) otherwise known as financial deepening, ratio of credit to private sector to GDP (CPSGDP) and market capitalization (MKT CAP). The results of the Autoregressive Distributed Lag (ARDL) regression analysis indicated that all shares index had a positive and significant relationship with GDP in Nigeria for the periods considered, numbers of deals and market capitalization relationship were positively insignificant, while volume of trade relationship was negatively insignificant.

Udo *et al.* (2021) empirically tested the impact which the development of the Nigerian capital markets has on the growth of the economy. The study made use of secondarily sourced annual time series data collected from the Central Bank of Nigeria (CBN) Statistical Bulletin between the years 1983 to 2016. The dependent variable was real gross domestic product (RGDP), while the independent variables

were number of companies listed (NCE), all share index (ASI), numbers of listed securities (NLS), number of companies (NCE) and market capitalization (MCAP). The regression results of the Autoregressive Distributed Lag (ARDL) model indicated that ASI and NLS had a negative and significant relationship with GDP in Nigeria for the periods considered.

Adoms *et al.* (2020) empirically carried out a study to verify the relationship, if any, that exists between capital market and the development of three Sub-Saharan African economies of Nigeria, South Africa and Kenya. Annual secondary data over the period spanning 1990 to 2018 collected from the CBN Statistical Bulletin and also from World Development Indicators (WDI). The dependent variable was human development index (HDI), while the independent variables were stock market capitalization (SMC), stock market turnover ratio (TR) and value of stock traded (VST). The results of the ARDL model showed that for SMC, VST and TR were statistically significant with HDI for Nigeria, South Africa and Kenya. Esian and Ebipre (2020) embarked on a research study to confirm if there is any relationship between capital market on economic growth in Nigeria. Secondary data obtained from Central Bank of Nigeria (CBN) Statistical Bulletin covering the period 1980 to 2016 was used. Real gross domestic product (RGDP) was dependent variable, while the independent variables were volume of shares traded (VST), market capitalization (MCAP), government capital expenditure on education (GCEE) and government expenditure on health (GCEH). The results of the Error Correction Model showed that MCAP and GECH positively and significantly affected economic growth in Nigeria, while VST negatively and significantly affected economic growth. Ashamu and Soyabo (2020) empirically tested the impact which the activities of the Nigerian stock markets have on the growth of the economy. The study made use of secondarily sourced annual data collected from the CBN Statistical Bulletin and also from the Fact books of the Nigerian Stock Exchange between the years 1985 to 2017. The dependent variable was gross domestic product (GDP), while the independent variables were all share index, volume of trade, numbers of deals and market capitalization. The results of the Error Correction Model (ECM) of regression analysis indicated that all shares index had a positive and significant relationship with GDP in Nigeria for the periods considered, numbers of deals and market capitalization relationship were positively insignificant, while volume of trade relationship was negatively insignificant.

Ubesie and Ude (2019) in their study looked at how the capital market responds to the output of Nigerian manufacturing sector. Secondly sourced annual time series data collected from the 2016 CBN Statistical Bulletin was used. The dependent variable was output of manufacturing firms, while the independent variables were all share index, total listed equities and market capitalization. The results of the Autoregressive Distributed Lag (ARDL) bounds testing model indicated that while market capitalization had a positive and significant relationship with output of manufacturing firms in Nigeria for the periods considered, all share index and total listed equities relationship were negatively insignificant. Eze *et al.* (2019) empirically carried out a study to establish if any relationship exists between stock market liquidity and the performance of the Nigerian manufacturing sector. Annual secondary data over the period spanning 1981 to 2017 collected from the CBN Statistical Bulletin and also from the Fact books of the Nigerian Stock Exchange. The dependent variable was manufacturing sector output, while the independent variables were market capitalization (stock market liquidity), all shares index, exchange rate, and interest rate. The results of the Autoregressive Distributed Lag (ARDL) model showed that market capitalization impact on manufacturing sector performance was positively insignificant, all shares index was positively significant, but interest rate and exchange rate were negatively insignificant.

Agu (2018) empirically appraised the relation between capital market development and economic growth in Nigeria. Using time series data over the period from 1995 to 2016 which was analyzed with the OLS regression method, the result revealed that neither market capitalization, total new shares nor value of transaction impacted on Real Gross Domestic Product (GDP) in Nigeria. Obubu *et al.* (2018) investigated how all share index, number of equities and market capitalization impacted on gross domestic product of the Nigerian economy. Annual time series secondary data covering the periods from 1961 to 2017 was used in the study. The regression results indicated that while the all share index (ASI) and market capitalization (MC) were positively significant with GDP, the total number of listed equities (TNL) was negatively significant with GDP. Araoye *et al.* (2018) investigated the extent to which stock market development in Nigeria impacted on the growth of the economy. Using annual time series data from 1985 to 2014 which was analyzed with Vector Error Correction Model (VECM) of regression technique, the results indicated that none of the independent variables (real gross domestic product, market capitalization, market turnover, labour and capital) was significant and so the impact of stock market development on economic growth was insignificant.

2.2 Theoretical Framework:

The study is anchored on Efficient Market Hypothesis (EMH) which was first coined by the French mathematician, Louis Bachelier, in his 1900 dissertation titled "The Theory of Speculation". The theory states that all necessary and relevant information are already reflected in the prices of financial instruments and even where there is new information it is automatically reflected in the securities prices. As a result of the fact that any new information that will affect securities prices are immediately captured, no one market participant can outperform the market. The market is regarded as efficient because information which is costless is available to all participants in a random walk such that any one making extra profit than other rational profit maximizing investors is just by luck.

2.3. Research Gap.

Many research studies on capital market and economic growth have been carried out both in developed and developing economies as revealed by the extant literature. This work differs from others in that it used M2/GDP as a measure of financial deepening which scholars hardly use except Omankhanlen *et al.* (2022) who used M2/GDP as well as Ibekwe and Ogamegbunam (2022) who used M2. The result of this variable is contrary to these two previous authors' findings meaning there is room for other researchers to use this variable.

3.0 Methodology

The study carried out an empirical examination to verify if there is any relationship between the dependent variable, real gross domestic products (RGDP) and each of the independent variables, market capitalization (MCAP), stock market turnover ratio (SMTOR), all-share index (ASI) and financial deepening index (FINDEEP). Firstly, we discussed our data and then carried out some preliminary analyses like unit root and cointegration tests. Secondly we estimated the model along with diagnostic and robustness tests of the model. The study used annual time series secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin as well as from the World Development Index (WDI) covering the period between 1985 and 2018.

3.1.1 Model specification.

A VAR system is made up of n variables, each one expressed as a linear function of p lags of itself as well as that of the other $n-1$ variables, plus an error term. Thus, using our variables of interest, our VAR model can be specified as below:

$$\begin{aligned} \text{LogRGDP}_t = & \beta_0 + \sum_{i=1}^q \pi_i \text{logRGDP}_{t-i} + \sum_{j=1}^q \pi_j \text{logMCAP}_{t-j} + \\ & \sum_{k=1}^q \pi_k \text{logSMTOR}_{t-k} + \sum_{l=1}^q \pi_l \text{logASI}_{t-l} + \sum_{m=1}^q \pi_m \text{logFINDEEP}_{t-m} + \mu_t \end{aligned} \quad (1)$$

As stated earlier, one can observe that the dependent variable (RGDP), is a function of its lagged value and those of MCAP, SMTOR, ASI and FINDEEP with all the variables having equal or the same number of lags, q .

Where β_0 is the constant; $\pi_i, \pi_j, \pi_k, \pi_l$ and π_m are the short-run dynamic coefficients of the regressors. p is the optimum lag order of the independent variables and they are all equal in value. μ_t is the white noise error term or the stochastic disturbance term which is serially uncorrelated disturbance with zero means and constant variance-covariance (Pesaran, 1995); t is the index of time.

The VAR equation above can be transformed to form a VECM specification as stated in equation 2 below:

$$\begin{aligned} \Delta \text{LogRGDP}_t = & \beta_0 + \sum_{i=1}^{q-1} \pi_i \Delta \text{logRGDP}_{t-i} + \sum_{j=1}^{q-1} \pi_j \Delta \text{logMCAP}_{t-j} + \\ & \sum_{k=1}^{q-1} \pi_k \Delta \text{logSMTOR}_{t-k} + \sum_{l=1}^{q-1} \pi_l \Delta \text{logASI}_{t-l} + \sum_{m=1}^{q-1} \pi_m \Delta \text{logFINDEEP}_{t-m} \\ & + \gamma \text{ECT}_{t-1} + \mu_t \end{aligned} \quad (2)$$

Where Δ is the first order difference operator; $q-1$ is the optimum lag length of the VEC model which is the optimum lag of the VAR model minus 1 since VECM is a first differenced VAR. γ is the speed of adjustment parameter which is always negative in most cases but could be zero. At -1 , γ signifies an instantaneous and perfect convergence to equilibrium while at 0 means that there is no convergence to equilibrium after the process had a shock. ECT_{t-1} is the error correction term/ equilibrium correction term which is the extracted residuals from the regression of the long-run model. From equations 1 and 2 above, one can notice that the VAR model is specified in levels, while the VEC model is specified at first difference. Specifying VAR in difference will lead to model misspecification.

4.0 Data Analysis and Discussion of Results.

4.1 Unit Roots Tests. It is a necessary condition for pre-testing for stationarity of the variables to be integrated of the same order of I(1) before the application of the VECM. Table 1 below shows the results of the tests statistics and their p-values in brackets. Both the Augmented Dickey Fuller (ADF) unit root tests and the Phillips Perron (PP) unit root tests indicated that RGDP, the dependent variable, as well as MCAP, SMTOR, ASI AND FINDEEP, the independent variables, are all I(1) stationary, that is, stationary after first differencing and this is very common with most finance and economics variables. Since most time series data in macroeconomics have unit roots and, therefore, are nonstationary, the trouble with such nonstationary data is that one can easily arrive at incorrect conclusions, if the standard ordinary least squares (OLS) regression procedures is applied (Binh, 2013)

Unit Roots Tests (5% is the preferred benchmark for significance level compared to 1% or 10%)

Phillips Perron (PP) Trend and Intercept				Augmented Dickey Fuller (ADF) Trend and Intercept			
Variables / Models	Level	First Difference	Order of Integration I(d)	Variables/ Models	First Difference	Order of Integration I(d)	Final Decision I(d)
RGDP	0.500865 (0.9989)	-4.535724 (0.0053)	I(1)	0.500865 (0.9989)	-4.541321 (0.0052)	I(1)	I(1)
MCAP	-0.934877 (0.9396)	-4.586716 (0.0047)	I(1)	-0.688588 (0.9657)	-4.620969 (0.0043)	I(1)	I(1)
SMTOR	-2.093444 (0.5303)	5.709989 (0.0003)	I(1)	2.485899 (0.3319)	1.873059 (0.6414)	I(1)	I(1)
ASI	0.642934 (0.9693)	4.987568 (0.0017)	I(1)	-0.818718 (0.9535)	-5.101123 (0.0021)	I(1)	I(1)
FINDEEP	-2.775891 (0.2155)	5.786236 (0.0002)	I(1)	2.908901 (0.1731)	5.470515 (0.0005)	I(1)	I(1)

Source: Author's Computation Using Eviews 10+

4.2 Lag Length Selection.

According to Salisu (2012), selecting an optimal lag length that will result in white noise residuals is a very important stage before estimating the cointegrating vectors, since lag length significantly influences the outcome of our estimation. All the information criteria selected 3 lags except Schwarz-Bayesian Information Criterion (SBIC) which selected 1 lag. We, therefore, settle for 3 lags which the study used both for Johansen cointegration test and for our regression model (VECM).

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1172.800	NA	6.89e+26	75.98712	76.21840	76.06251
1	-1028.376	232.9430	3.18e+23	68.28230	69.67003*	68.73467
2	-987.6350	52.56853	1.32e+23	67.26678	69.81095	68.09611
3	-948.6329	37.74399*	7.90e+22*	66.36341*	70.06403	67.56972*

* indicates lag order selected by the criterion

4.3 Cointegration Test

A cointegration test tells us that there exists a long run relationship between or among the variables and that they will not wander far apart away even though on the short run they exhibit random walk behaviour. Simply put, a cointegration is any linear combination of non-stationary time series that make them to be I(0) or stationary. Table 3 below show the two types of test statistics, the trace and the maximum eigenvalue statistics, which indicate that there are five(5) cointegrating equations each. We can now move on and estimate our vector error correction regression model.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.838417	146.3264	69.81889	0.0000
At most 1 *	0.668590	91.64439	47.85613	0.0000
At most 2 *	0.648512	58.51238	29.79707	0.0000
At most 3 *	0.527730	27.14499	15.49471	0.0006
At most 4 *	0.143267	4.638878	3.841466	0.0312

The Nigerian Capital Market-Growth Nexus: A Johansen System-VECM Approach

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.838417	54.68202	33.87687	0.0001
At most 1 *	0.668590	33.13200	27.58434	0.0087
At most 2 *	0.648512	31.36739	21.13162	0.0013
At most 3 *	0.527730	22.50611	14.26460	0.0020
At most 4 *	0.143267	4.638878	3.841466	0.0312

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level

4.4 Vector Error Correction Model(VECM) Estimation.

CointegratingEq:	CointEq1				
LOG(RGDP(-1))	1.000000				
LOG(SMTOR(-1))	0.423573 (0.05840) [7.25267]				
LOG(MCAP(-1))	0.285005 (0.11628) [2.45105]				
LOG(FINDEEP(-1))	-3.500182 (0.42501) [-8.23557]				
LOG(ASI(-1))	-1.110693 (0.12269) [-9.05291]				
C	6.468843				
Error Correction:	D(LOG(RGDP))	D(LOG(SMTOR))	D(LOG(MCAP))	D(LOG(FINDEEP))	D(LOG(ASI))
CointEq1	-0.136434 (0.05818) [-2.34521]	-0.866948 (0.29163) [-2.97273]	0.138219 (0.20903) [0.66123]	0.141793 (0.10428) [1.35978]	0.251801 (0.17620) [1.42903]

Source: Author's Computation Using Eviews 10+

The VECM output in Table 4 reported the variables (RGDP, SMTOR, MCAP, FINDEEP, ASI) in two lags instead of three lags as chosen in Table 3 which is one lag reduced. The reason is that a VECM is a differenced VAR and so must be estimated with a (k-1) lags for a VECM equation and not a k lags as shown in the VAR equation. In reading a regression result, a variable is considered significant when the value of the t-statistic is at least 2 or the p-value is at least 0.05. In Table 4 above, all the independent variables of interest (SMTOR, MCAP, FINDEEP, ASI) and their lags, in the short run, are not statistically significant with relation to economic growth in Nigeria for the period under study. In the long run, however, all the independent variables are statistically significant.

SMTOR has a t-statistics 7.25267 which is positively significant with RGDP. For the variable coefficient, a 1% changes in SMTOR leads to a 0.42% increase in RGDP all things being equal. This result is corroborated by that of Adoms *et al.* (2020), but contradicts those of Ighoroje and Eloho (2022) and Araoye *et al.* (2018). MCAP has a t-statistics value 2.45105 which is positively significant with RGDP. Again, a 1% changes in MCAP leads to a 0.28% increase in RGDP all things being equal. This result is corroborated by that of Ibekwe and Ogomegbunam (2022); Omimakinde and Otite (2022); Ighoroje and Eloho (2022); Esian and Ebipre (2020), but contradicts those of Ashamu and Soyabo (2020); Agu (2018); Araoye *et al.* (2018).

In the same vein, while FINDEEP has a t-statistics value of -8.24 which is negatively significant with RGDP. For the variable coefficient, a 1% changes in FINDEEP is associated with a 3.5% decrease in RGDP all things being equal. There is no result that supported this findings, but those that contradicts it are those of Omankhanlen *et al.* (2022) as well as Ibekwe and Ogomegbunam (2022). ASI has a t-statistics of -9.05 which are negatively, but statistically significant. Again, a 1% change in ASI is associated with a 1.11% decrease in RGDP all things being equal. This result is corroborated by that of Ighoroje and Eloho (2022); Udo *et al.* (2021) but contradicts those of Omimakinde and Otite (2022); Ubesie and Ude (2019); Eze *et al.* (2019); Obubu *et al.* (2018).

The error correction term, CointEq1, is also known as the speed of adjustment. Looking closely at CointEq1, the error correction term, for the first vector, rgdp, CointEq1 is negative (-0.136434) and statistically significant with a t-statistic value of -2.34521, which is usually the expected sign and value in empirical literature. This shows that the reversion to equilibrium is at an adjustment speed of 13.64%.

That is, the short run deviation from equilibrium is corrected in the correct period by an adjustment speed of 13.64%. This means that about 13.64% of departure from long-run equilibrium is corrected within one year period.

5.0 Residual Diagnostics Tests

The results from Table 6 and Table 7 show that there is no serial correlation and no problem of heteroskedasticity, since their p-values are clearly higher than 0.05. Since the p-value of the Jarque-Bera statistic is higher than 0.05 as shown in Table 8, the model is normally distributed. The Jarque-Bera statistic factor in the Skewness and the Kurtosis.

Table 6. VEC Residual Serial Correlation LM Tests

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	15.79945	25	0.9207	0.499414	(25, 16.4)	0.9428
2	18.17764	25	0.8348	0.602231	(25, 16.4)	0.8768
3	42.26921	25	0.0168	2.329275	(25, 16.4)	0.0400

*Edgeworth expansion corrected likelihood ratio statistic.

Table 7. VEC Residual Heteroskedasticity Tests (Levels and Squares)

Joint test:		
Chi-sq	Df	Prob.
334.5950	330	0.4192

Table 8. VEC Residual Normality Tests

Component	Skewness	Chi-sq	Df	Prob.*
1	0.306915	0.470983	1	0.4925
2	-0.304061	0.462265	1	0.4966
3	0.930521	4.329347	1	0.0375
4	-0.215705	0.232643	1	0.6296
5	0.673119	2.265449	1	0.1323
Joint		7.760687	5	0.1699

Component	Kurtosis	Chi-sq	Df	Prob.
1	2.858038	0.025192	1	0.8739
2	2.590721	0.209387	1	0.6472
3	3.656988	0.539541	1	0.4626
4	2.273926	0.658980	1	0.4169
5	2.999527	2.79E-07	1	0.9996
Joint		1.433100	5	0.9207

Component	Jarque-Bera	Df	Prob.
1	0.496175	2	0.7803
2	0.671652	2	0.7147
3	4.868888	2	0.0876
4	0.891623	2	0.6403
5	2.265449	2	0.3222
S.Joint	9.193786	10	0.5138

6.0 Conclusion and Recommendation

This study empirically investigates the impact which capital market has on economic growth in Nigeria over the periods from 1985 to 2018. The results of the VECM indicated that while none of the variables of interest is statistically significant on the short run, they are all statistically significant on the long run. With a $CointEq1$ coefficient of 13.64% speed of adjusting or converging to equilibrium in the long run, we can confidently conclude that the Nigerian capital market has all it takes to contribute to economic growth for the period under review. The study, based on the results above, recommends that government should ensure that all bottlenecks towards an efficient and effective stock market should be identified and remove if the goal of finance-led growth is to be realized. Specifically identified is that:

- 1) Government should realize that the general economic environment affects the operation of the capital market and the capital market in turn affects economic performance. Hence sound macroeconomic variables like interest rate, inflation rate, exchange rate, among others should be in place.

- 2) Regulators should ensure that investors' (current and potential, local and foreign) confidence is sustained. This is a major reason for a low market capitalization in Nigeria when compared to countries like South Africa and Egypt. There should be adherence to best global practice with respect to transparency and fairness in transaction dealing.
- 3) Technological innovations and human skills development has greatly helped most third world countries to compete favourably with the Western countries. Capital market operators should be abreast with these.

References

- Adoms, F. U., Yua, H., Okaro, C. S., & Ogbonna, K. S. (2020). Capital market and economic development: A comparative study of three Sub-Saharan African emerging economies. *American Journal of Industrial and Business Management*, 10, 963-987.
- Agu, B. O. (2018). Economic growth and capital market development in Nigeria: An appraisal. *Journal of Business Management and Economic Research*. 2(4), 27-38
- Alenoghena, R. O. (2014). Capital market, financial deepening and Nigeria's economic growth: cointegration and error correction model approach. *Global Journal of management perspective (G.J.C.M.P.)*, 3(3):18-26
- Araoye, F. E., Ajayi, E. O. & Aruwaji, A. M. (2018). The Impact of Stock Market Development on Economic Growth in Nigeria. *Journal of Business and African Economy*. 4(1), 1-15
- Ashamu, S. O. & Soyebbo, Y. A. (2020). Stock market activities and economic growth in Nigeria: A cointegration approach. *American Economic & Social Review*; 6(1), 1-7.
- Binh, P. T. (2013) Topics in time series econometrics.ptbinh@ueh.edu.vn
- Esian, A. J. & Ebipre, P. (2020). Capital market performance and economic growth in Nigeria. *International Journal of Innovative Finance and Economics Research* 8(3):65-76,
- Eze, O. M., Atuma, E. & Ogbonna, B. (2019). Stock market liquidity and manufacturing sector performance: Evidence from Nigeria. *IOSR Journal Of Humanities and Social Science (IOSR- JHSS)*, 24(4) 13-22

- Ibekwe, O. J. & Ogomegbunam, O. D. (2022). Financial market, monetary policy and economic growth: Evidence from Nigeria. *IIARD International Journal of Economics and Business Management*, 8 (2), 77-89
- Ighoroje, J. E. & Eloho, O. E. (2022). Financial market operations and economic growth of Nigeria: An empirical insight. *African Journal of Accounting and Financial Research* 5(2), 13-31.
- Levine, R. (2004). Finance and growth: theory and evidence. National Bureau of Economic Research (NBER) Working Paper 10766. <http://www.nber.org/papers/w10766>.
- Obubu, M., Obiora-Ilouno, H., Uzuke C. A. & Ikediwuwa, C. U. (2018). An empirical assessment of the impact of Nigerian all share index, market capitalization, and number of equities on gross domestic product. *Open Journal of Statistics*, 8, 584-602
- Omankhanlen, A. E., Samuel-Hope, D. C. & Ehikioya, B. (2022). The effect of financial development on economic growth in Nigeria. *Academy of Strategic Management Journal* 21 (4), 1-13.
- Omimakinde, J. A. & Otite, M. O. (2022). Effect of capital market reforms on economic growth of Nigeria. *IOSR Journal of Business and Management (IOSR-JBM)*, 24(6) 48-54
- Omojemite, B. U. & Oriavwote, V. E. (2012) Inflation - growth nexus: a vector error correlation modelling of the Nigerian experience. *Journal of Alternative Perspectives in the Social Sciences* 4 (1),
- Pesaran, M.H. (1995) Planning and macroeconomic stabilization in Iran, *DAE Working Papers Amalgamated Series No. 9508*, Department of Applied Economics, Cambridge University, Cambridge.
- Salisu, A. A. (2012). Econometric Workshop. *Centre for Econometrics and Allied Research (CLEAR)*
- Ubesie, M. C. & Ude, M. E. (2019). Responsiveness of capital market on the output of manufacturing firms in Nigeria. *International Finance and Banking*, 6(1), 17-30
- Udo, G. C., Nwezeaku, N. C. & Kanu, S. I. (2021). Effects of capital market development on the economic growth of Nigeria. *International Journal of Innovation and Economics Development*, 7 (2), 30-46.

Empirical Analysis of the Impact of Service Sector on Economic Growth in Nigeria

¹Azebi, Oyeinbrakemi Innocent & ²Tamuno, Cornelious

¹Department of Economics and Development Studies, Federal University Otuoke,
Bayelsa State

²Federal University Otuoke, Bayelsa State

Abstract

In recent times, technological advancement in the manufacturing sector has adversely reduced potentials to employ large amounts of unskilled and semi-skilled labour especially in developing countries. Consequently, job and productivity growth have declined greatly. Reacting to this, some developing countries have sort alternative avenues to boost job and productivity growth. This paper argues that the service sector is a veritable alternative. To substantiate this claim, the study examine how Real Estate (RE), Professional, Scientific and Technological Services (PST), Public Administration (PA), Accommodation and Food Services (AFS), Arts, Entertainment and Recreation (AER), as well as Financial and Insurance (FI) subservice sectors impact on Nigeria's economic growth. The Augmented Dickey-Fuller unit root test, Johansen Cointegration test and Error Correction Mechanism technique were used to estimate the data set obtained from the CBN Statistical Bulletin for the period 1990-2021. Findings from the ADF test revealed that the variables became stationary after first difference, while the Cointegration test indicates that there are five cointegrating equations. It was also discovered that RE, PA and FI have positive and significant long run impact on economic growth in Nigeria. AFS and AER both have positive, but insignificant impact, while PST has a negative and insignificant impact on economic growth in Nigeria. The study thus, recommends amongst others that more investments in Real Estate should be encouraged, expansion of public administration should be upheld by government, and also, more appropriate financial reforms are required to boost the Nigeria financial sector in order to enhance its performance.

Keywords: Service sector, economic growth, real estate, public administration.

1.0 Introduction

Over the years, the living standard of countries has been measured by economic growth. This measure has been upheld by Mankiw (2007) who argued that a country's standard of living depends on its ability to produce goods and services. Economic growth has been considered by many as sustained increase in production of goods and services. Palmer (2012) refers to economic growth as a situation in

which an economy is able to produce additional quantities of goods and services, due to its ability to increase its productive capacity. In a wider sense, it involves the increase of the Gross Domestic Product (GDP), Gross National Product (GNP) and National Income (NI), including the production capacity, expressed in both absolute and relative size, per capita, and encompassing also, the structural modifications of economy (Haller, 2012).

It is general consensus that economic growth is a prerequisite for economic development. In fact, it has been identified as the most powerful instrument that can be employed in curbing poverty and improving the quality of life especially in developing countries (Rodrik, 2007). Tejvan (2019) opined that faster economic growth comes with benefits in that, it expands the overall size of the economy and strengthens fiscal conditions; improve the fiscal outlook; increases average incomes; reduces unemployment; lowers government borrowing; leads to improved public services; increases investment level in a country; increases research and development; and leads to decline in absolute poverty. Given the enormous benefits economic growth holds, it is undoubtedly one of the most desired macroeconomic objectives of any country. To this end, many countries in the world, developing countries in particular aim at achieving increased economic growth.

Nigeria as one of the developing countries in the world has targeted increase in her economic growth overtime. However, since the early 1980s to 2021, the country's economic growth rate has fluctuated severally, and is characterized by eighteen (18) episodes of declining trends. Corroborating this, Abdullahi and Mukhtar (2020) noted that over the past one decade, Nigeria's economic growth has remained volatile. Again, Mukhtar, Mustapha, Shafiu, Kamal, and Mohammed (2021) described Nigeria's economic growth as an up and down convulsion comprising periods of recessions described as two consecutive quarters of negative growth in 2016 and 2020. Statistics from World Bank (2022), show that the negative economic growths recorded in 2016 and 2020 were -1.6 percent and -1.8 percent respectively. These fluctuating and declining trends in Nigeria's economic growth has been attributed to incessant episodes of collapse in oil prices, inadequate diversification of the economy, poor infrastructure, over dependence on imports, corruption, inflation, high interest rate, inability to process raw goods to finished goods, and terrorism amongst others (Abba, Babaji & Habu, 2017; InfoGuide Nigeria, 2023).

Ever since the industrial revolution, which provoked the jettisoning of agriculture as the main stay of the economy, manufacturing has been the key driver of rapid economic transformation. However, Ghani (2019) noted that technological improvements in the manufacturing sector also affected economic growth negatively. He argued that manufacturing today is not what it used to be, observing that in recent times, manufacturing has become much more capital-intensive and skill-intensive, with greatly diminished potential to absorb large amounts of unskilled and semi-skilled labour. He submits that this current development has affected job and productivity growth especially in developing countries. In response to this, several developing countries have sort for alternative ways that can ensure economic transformation, drive job growth and reduce poverty. In view of this, some developing countries have embraced economic activities in the service sector as an alternative way out.

The service sector of any nation has been described as the lifeline for the socio-economic growth of the economy. Philip and Semira (2020) observed that the sector is a major employer of labour in any country which involves the production of services instead of end products. Also, Ghani (2019) opined that the globalization of services provides alternative opportunities for developing countries to find niches beyond manufacturing, where they can specialize scale up and achieve explosive growth. The sector also contributes to productivity and economy-wide growth, as it provides essential inputs to other products and services. Many services have emerged as promising tradable services for developing countries, particularly with the development of telecommunications and information and communications technology (ICT) services. In addition, efficient services are catalysts for the expansion of regional and global value chains (UNCTAD, 2017).

In recent times, Nigeria's service sector has emerged as the highest contributor to the national output in the last decade and offers great potential to drive the diversification agenda of the government which has predominantly concentrated on agriculture and manufacturing (UKaid, 2020). The Nigerian services economy is among the fastest growing in the African continent. The sector has shown impressive gains amid tough economic circumstances. For instance, services now contribute the highest proportion of the overall domestic activities and economic growth moving from less than 30 percent of gross domestic product (GDP) in the 1990s to 50.79 percent of the GDP in 2010 and 53 percent in 2019 (CBN, 2021).

Erick (2017) stated that the growth in the service industry which has helped in diversifying the Nigerian economy was spurred by favourable government policies and increased foreign direct investment.

As contained in the CBN Statistical Bulletin (2021), the Nigerian service sector comprises 13 economic activities namely: Trade, Accommodation and Food Services, Transportation and Storage, Information and Communication, Arts, Entertainment and Recreation, Financial and Insurance, Real Estate, Professional, Scientific and Technical Services, Administrative and Supportive Services, Public Administration, Education, Human Health and Social Services, and Other Services. Few studies in Nigeria such as Ubong and Joel (2021); Adetukunbo and Edioye (2020); Ishola and Olusoji (2020) have examined the relationship between service sector and economic growth in Nigeria. These studies however, focused on analyzing how health services, education, transport and storage, and information and communication subservice sectors affect economic growth in Nigeria. This study contributes to empirical knowledge by analyzing how other subservice economic activities affect economic growth in Nigeria. This study therefore, examines the impact the Nigeria service sector has on economic growth in the country. For the specific objectives, the study investigates how Real Estate, Professional, Scientific and Technological services, Public Administration, Arts, Entertainment and Recreation, Accommodation and Food Services and Financial and Insurance subservice sectors affect economic growth in Nigeria.

Following the introduction in section 1, the rest of the study is organized into four (4) sections. Section two presents the review of literature, while section three presents the research methodology. Section four contains the analysis of results and discussion of findings, while section five presents the conclusion and recommendations of the study.

2.0 Literature Review

2.1 Empirical Literature

Some scholars have tried to examine the relationship between service sector and economic growth. The findings however are mixed. For instance, curious about the economic reforms that have driven China towards modernization and open economy since 1978, Murselzade and Cavusoglu (2021) in their study examined the relationship that exists between economic growth and the service sector in

China. Two service subsectors namely real estate and hotel and catering in China were used as proxy for the independent variable - service sector. The Autoregressive Distributed Lag Method (ARDL) was used to estimate time series data which were obtained from secondary sources. The result of the parameter estimate indicate that the explanatory variables both have positive and significant impact on China's economic growth both in the long run and in the short run. They conclude in their study that there exists a positive nexus between the service sector and economic growth in China.

Ravneet and Parmod (2019) employed a static sense analysis to explain the contributions of service sector to the economic growth of India. Sectoral GDP data from 1950-51 to 2013-14 was used to estimate the contribution of service sector to aggregate output and growth in India. Furthermore, the study used seven-year moving averages on the original data to match these levels. Findings from the research show that though agriculture sector's share to India's national output was more than that of the services sector till the first-half of 1980s, service sectors contribution to growth as defined in the note, in static sense has been more than that of other two sectors in the country. Service sector contribution to growth continues to increase throughout, while the contributions of the industrial and agricultural sector have continued to decline. Their study concludes that in a static sense, India's economic growth has been largely driven by the services sector.

Jalil, Manan and Saleemi (2016) examined the contribution of business and household-related services to economic growth in Pakistan using data set from 1960 to 2014. The study tested Pugno's Hypothesis. The long run relationship between economic growth and services sector in Pakistan was tested using Johansen-Juselius cointegration test and the autoregressive distributed lag bounds test. From the test result it was discovered that there exists a long run relationship between service sector and economic growth in Pakistan. Result from the estimated cointegrating vector indicates that Pakistan's economic growth enjoys positive contribution from the services sector.

Using data obtained from the Central Bank of Nigeria statistical bulletin for the period 1981 to 2019, Ubong and Joel (2021) studied how the service sector in Nigeria impacts on the country's economic growth. The estimation techniques used

Empirical Analysis of the Impact of Service Sector on Economic Growth in Nigeria

in analyzing the data comprise of Augmented Dickey-Fuller unit root test, Granger Causality test, Vector Autoregressive (VAR) technique, Bounds test for long run relationships and vector error correction mechanism. It was revealed from the findings that Nigeria's economic growth and its services sector have a bidirectional causality. The result from VAR show that the service sector in Nigeria exhibits weak exogeneity in forecasting economic growth in the country. Meanwhile, it was revealed that broad money supply and total government expenditure impacted significantly on economic growth in Nigeria. Evidence from result of the impulse response function show that there was a negative response by economic growth to shocks in the output of the service sector; while it was indicated by the variance decomposition test that gross domestic product (which served as proxy for economic growth) is strongly endogenous in forecasting its behaviour in the short run, while such declines in the long run. The Bound test for existence of long run relationship indicates that there exists a long run equilibrium relationship between the variables, while evidence from the error correction mechanism show that 88.3% of gross domestic product disequilibrium in the short run are corrected annually. Professional, scientific and technical services are discovered to be the major contributor to economic growth. Their study recommended among others the revitalization of the industrial sector, given that it serves as a veritable channel via which the service sector can impact positively on economic growth.

Following the neglect of service sector as an alternative for revenue generation, Adetukunbo and Edioye (2020) examines how Nigeria's economic growth responds to the dynamics of the nation's service sector. Annual time series data, endogenous growth model and autoregressive distributed lag technique were employed as data set, theoretical framework and estimation technique respectively. Findings from the study revealed that health service subsector and transportation and communication service subsector have a positive and significant relationship with economic growth in the country. It was also discovered that interactions between the subservice sectors and governance indicators indicate that the service subsectors have positive, but statistically insignificant relationship with economic growth. Their study concludes that education as a sub sector has no significant impact on economic growth in Nigeria. Given this finding, their study advocates for an increase in budgetary allocation to the education subsector as such would help the sector to contribute positively to economic growth. It was further recommended that frequent efforts be made in order to monitor government

processes, so as to prevent bureaucratic bottlenecks that would hinder the service sector from contributing significantly to economic growth.

In investigating the causal relationship and impact of service sector on economic growth in Nigeria, Maryam (2020) employed the Ordinary Least Square (OLS), Augmented Dickey-Fuller test, Johansen Cointegration test and Granger Causality test to estimate time series data set obtained from the Central Bank of Nigeria statistical bulletin for the period 1981 to 2019. The results of the parameter estimates indicate that transportation, health services, and information and communication all have a positive relationship with economic growth at the 5 percent level of significance, while education has a negative relationship with economic growth at the 5 percent level of significance. The study thus recommends that in order to boost the growth of GDP, government and private individuals should increase investment in the service sector, with more interest on the education subsector.

Uchechukwu and Elizabethh (2015) adopted a Vector Autoregressive (VAR) method to examine the contributions of Agriculture, Industry and services sectors to Gross Domestic Product in Nigeria. As revealed by the Augmented Dickey-Fuller unit root test, all the variables became stationary after first difference, that is, the variables are integrated of order one. Evidence from the granger causality test indicates that there exists a bilateral causality between gross domestic product and the industrial sector contribution to GDP. The result also reveals that both the agricultural sector and the services sectors have no causality relationship with GDP, and also, GDP does not Granger cause neither the Agricultural sector nor the Service sector. The study therefore recommended that it is essential for the Nigerian government to come up with strategic master plan to diversify the economy with the aim of boosting economic activities in the Agricultural and Service sectors, so as to increase their contributions to GDP.

In the same vein, Olusoji and Odeleye (2018) using quarterly data from 1981 to 2015 analyzed the contributions of the various sectors to economic growth in Nigeria. The study employed some non-oil components (agriculture, non-oil manufacturing and services) as the independent variables, while Gross Domestic Product was used as proxy for economic growth. The relationship between the

dependent and the independent variables was analyzed using multiple regression analysis. From the results of the analysis, it was discovered that during the pre-rebasing period of 1981 to 2013, agricultural sector contributed more to GDP, followed by the service sector. The result however was slightly different when analyzed in the post-rebasing period of 1981 to 2015. The result in the post-rebasing period reveals an increase in the service sector's contribution to GDP. The study concluded that if more attention is given to the service sector, it has the potentials to increase GDP in Nigeria. The study therefore recommends increased investments in the service sector in order to boost GDP growth rate.

Also, following the rebasing of the Nigerian economy, Ishola and Olusoji (2020) adopted a disaggregated model to examine the impact of service-industrial individual subsectors productivities on economic growth in Nigeria. Ordinary Least Square (OLS) method was used to analyze quarterly time series data for the period 2010 to 2016. The Augmented Dickey-Fuller unit root test and Phillips-Perron test were used to ascertain the stationarity of the variables, while the Johansen cointegration test was used to determine the long run relationship between the variables. Findings from their study show that; though services and the industrial sector contributed significantly to the growth of GDP in Nigeria, some subsectors such as professional, scientific and technical services, utilities, public administration, and transport were found to be insignificant and thus deficient in their contribution to GDP. Their study suggested that sector-specific policies would come in handy in strengthening the service and industrial sectors and hence, maximize their potentials.

Ehigiator (2017) adopted the service-led growth theoretical framework and descriptive statistics to analyze how the Nigerian service sector contributes to the economic growth of the country. The study revealed that for the past 15 years, the service sector has contributed significantly to Nigeria's Gross Domestic Product, capital imports, trade and employment. The study concludes that diversification per se was not a problem in the economy of Nigeria; rather it was failure in enhancing the performance of other economic sectors in the country. The study highlighted that Nigeria has a robust tertiary education system which is evident in the number of higher institutions across the country. However, the performance of this subsector has been be-devilled by weak infrastructural capacity and low funding. It was recommended therefore, that for sustained growth to be achieved through the service sector, there is the need to increase the provision made for education.

From the review of literature above, it is clear that there are mixed results as evident in the findings of various researchers. While some of the sub-service sector variables have statistically significant impact on economic growth, others are reported to have statistically insignificant impact on economic growth. This could be as result of the nature of data employed by the researchers which comprise of annual times series data and quarterly times series data, and also, the various empirical techniques used by the different researchers which comprise of Ordinary Least Square technique (OLS), Augmented Dickey-Fuller unit root test, Phillips-Perron test, Johansen Cointegration test, Johansen-Juselius Cointegration test, Multiple Regression technique, Vector Autoregressive (VAR) method, Granger Causality test, Autoregressive Distributed Lag (ARDL) model, and the Autoregressive Distributed Lag Bound test for long-run relationship.

Also, from the review of literature, it was discovered that most of the studies conducted in Nigeria focused more on seven (7) (Professional, Scientific and Technical Services, Health Services, Transport Services, Education Services, Information and Communication Services, Utilities, and Public Administration), out of the 13 sub-service sectors which make up the service sector in Nigeria, as contained in the Central Bank of Nigeria Statistical Bulletin 2021. The other six (6) sub-service sectors (Trade, Accommodation and Food Services, Arts, Entertainment and Recreation, Financial and Insurance, Real Estate, Administrative and Supportive Services) have been relegated in terms of empirical analysis. This study therefore, contributes to knowledge by empirically examining the impact of four (4) of the relegated sub-service sectors (Real Estate, Arts, Entertainment and Recreation, Accommodation and Food Services, and Financial and Insurance) on economic growth in Nigeria. In addition, Professional, Scientific and Technical Services, as well as Public Administration sub-service sectors were included in the model because of how robust these sub-service sectors are.

3.0 Methodology

3.1 Research Design

This study adopts an ex post facto research design to analyze the cause and effect relationship between the individual subsectors of the service sector and economic growth in Nigeria. This is because; the researchers have no intent of modifying the

data set. The annual time series data for the variables are taken as given. Gross Domestic Product (GDP) is employed as proxy for economic growth in Nigeria, while Real Estate (RE), Professional, Scientific and Technological Services (PST), Public Administration (PA), Accommodation and Food Services (AFS), Arts, Entertainment and Recreation (AER), and Financial and Insurance (FI) subservice sectors serve as proxies for the independent variable (service sector).

3.2 Sources of Data

Given that the nature of the research requires secondary data, annual time series data for the dependent and independent variables are sourced from the Central Bank of Nigeria Statistical Bulletin, 2021 edition. The data set spans from the period 1990 to 2021. Other statistics are sourced from World Bank.

3.3 Model specification

The model specification involves the expression of the relationship between variables in both mathematical and econometric forms. It specifies which economic phenomenon will be explained empirically by a set of regressands. The mathematical model is specified as follows:

$$GDP = f(RE, PST, PA, AFS, AER, FI) \dots \dots \dots (3.1)$$

The econometric model is specified below:

$$GDP = \beta_0 + \beta_1 RE + \beta_2 PST + \beta_3 PA + \beta_4 AFS + \beta_5 AER + \beta_6 FI + \mu \dots \dots \dots (3.2)$$

- Where; GDP = Gross Domestic Product (Proxy for economic growth)
RE = Real Estate
PST = Professional, Scientific and Technological Services
PA = Public Administration
AFS = Accommodation and Food Services
AER = Arts, Entertainment and Recreation
FI = Financial and Insurance
 μ = Error term
 β_0 = Intercept
 β_1 - β_6 = Slopes and also coefficients of the independent variables

The explanatory variables in the model make up 46.15 percent of the sub-service component. These variables have been included in the model, because of their growing contributions in the service sector. Besides, studies on the impact of sub-service variables such as Real Estate, Arts, Entertainment and Recreation,

Accommodation and Food Services, and Financial and Insurance on economic growth in Nigeria to the best of the researchers knowledge are not available, hence their inclusion in the model.

3.4 Estimation Techniques

The study employed the Augmented Dickey-Fuller unit root test to test for the stationarity of the variables, while the Johansen cointegration test was conducted to determine if there exists any long run relationship between the dependent variable and independent variables. Furthermore, the Error Correction Mechanism technique was used to estimate the impact of service sector on economic growth in Nigeria, while the serial correlation test was conducted to test for autocorrelation between the variables. Finally, the normality test was conducted to ensure that the variables in the model are normally distributed.

4.0 Results and Discussion

4.1 Descriptive Statistics Result

Table 4.1: Descriptive Statistics

	GDP	RE	PST	PA	AFS	AER	FI
Mean	48050.41	3417.203	1624.963	1361.831	359.9294	78.88875	1493.692
Median	26748.53	2353.355	806.3500	1098.770	111.9750	14.41000	801.5350
Maximum	176075.5	9249.650	5017.460	3007.990	1490.140	291.2100	5300.710
Minimum	494.6400	12.72000	7.750000	22.17000	1.190000	0.070000	44.22000
Std. Dev.	52571.45	3457.396	1881.753	1117.281	483.8719	107.6392	1639.489
Skewness	0.956937	0.552646	0.744742	0.222415	1.160948	1.010468	0.877117
Kurtosis	2.706136	1.690667	1.952671	1.461337	2.865034	2.305909	2.447762
Jarque-Bera	4.999024	3.914697	4.420618	3.420476	7.212560	6.087929	4.509738
Probability	0.082125	0.141232	0.109667	0.180823	0.027153	0.047646	0.104887
Sum	1537613.	109350.5	51998.80	43578.60	11517.74	2524.440	47798.15
Sum Sq. Dev.	8.57E+10	3.71E+08	1.10E+08	38697811	7258091.	359172.2	83325615
Observations	32	32	32	32	32	32	32

Source: Author's Computation 2022

Table 4.1 above presents the descriptive statistics. The average of gross domestic product (GDP) is 48050.41, with a high standard deviation of 52571.45. This implies that the observations are widely spread from the mean. The positive skewness implies that GDP lie to the right of the mean, while the kurtosis which is

less than three (3) indicates that the distribution is flat (platykurtic) relative to normal distribution.

Real Estate (RE) has an average of about 3417.203 with a high standard deviation of 3457.396. This also implies that the observations are widely spread from the mean. The positive skewness implies that RE lie to the right of the mean. Its kurtosis is less than three and thus indicates that the distribution is flat (platykurtic) relative to normal distribution. Further information from the table show that the means of Professional, Scientific and Technological services (PST), Public Administration (PA), Arts, Entertainment and Recreation (AER), Accommodation and Food Services (AFS) and Financial and Insurance (FI) are 1624.963, 1361.831, 359.9294, 78.88875 and 1493.692 respectively. Their respective high standard deviations which stood at 3457.396, 1881.753, 1117.281, 483.8719, 107.6392 and 1639.489 indicate that the observations are widely spread from their means. Their respective positive skewness point to the fact that PST, PA, AER, AFS and FI all lie to the right of the mean, while their kurtoses which is less than three suggests that the distribution is flat (platykurtic) relative to normal distribution.

From the above, it is clear that all the variables are positively skewed and at the same time normally distributed. This is because the Jarque-Bera test value and the probability value are not statistically significant at 5% level of significance.

4.2 Unit Root Test

The Augmented Dickey-Fuller Unit root test was conducted to test for the stationarity of the variables in order to avoid spurious regression and biased conclusion. The test result for the unit root is presented in table 4.2 below

Table 4.2: Augmented Dickey-Fuller Unit Root Test

Variables	@ Levels		@ 1st Difference		I(d)
	ADF Stat	ADF 95%	ADF Stat	ADF 95%	
Log(RGDP)	-1.642688	-3.580623	-3.985836	-3.580623	I(1)
Log(RE)	-0.812045	-3.562882	-5.916189	-3.622033	I(1)
Log(PST)	-0.257017	-3.562882	-3.972886	-3.568379	I(1)
Log(PA)	-1.712642	-3.562882	-5.783814	-3.568379	I(1)
Log(AFS)	-0.992687	-3.562882	-4.897618	-3.568379	I(1)
Log(AER)	-0.699759	-3.562882	-3.819916	-3.568379	I(1)
Log(FI)	-1.532251	-3.562882	-5.473336	-3.568379	I(1)

Source: Author's Computation 2022 using E-Views 10

As observed in table 4.2 above, none of the variables were stationary at levels. However, all the variables became stationary after their first difference. In other words, all the variables are integrated of the same order, that is, integrated of order one (I(1)).

4.3: Cointegration Test

Following the result in table 4.2 above, we go ahead to conduct the cointegration test, in order to confirm if the variables have any long run relationship or not. To achieve this, we employ the Johansen cointegration test, and the result is presented in table 4.3 below.

Table 4.3: Johansen Cointegration Test

Unrestricted Cointegration Rank Test (trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.989395	383.4791	125.6154	0.0000
At most 1 *	0.964502	247.0874	95.75366	0.0000
At most 2 *	0.876527	146.9393	69.81889	0.0000
At most 3 *	0.784623	84.18732	47.85613	0.0000
At most 4 *	0.650521	38.12630	29.79707	0.0044
At most 5	0.175762	6.586975	15.49471	0.6261
At most 6	0.025928	0.788104	3.841466	0.3747

Unrestricted Cointegration Rank Test (maximum eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.989395	136.3917	46.23142	0.0000
At most 1 *	0.964502	100.1481	40.07757	0.0000
At most 2 *	0.876527	62.75203	33.87687	0.0000
At most 3 *	0.784623	46.06102	27.58434	0.0001
At most 4 *	0.650521	31.53933	21.13162	0.0012
At most 5	0.175762	5.798871	14.26460	0.6392
At most 6	0.025928	0.788104	3.841466	0.3747

Source: Author's Computation 2022 using E-Views 10

From table 4.3 above, the trace statistics and the maximum Eigenvalue statistics show that, there are five (5) cointegrating equations. This implies that the variables have a long run relationship. With this information, we go ahead to estimate the error correction mechanism and the result is presented in table 4.4 below.

4.4: Error Correction Mechanism

The table below presents the result of the error correction mechanism.

Table 4.4: Error Correction Mechanism

ECM Estimates				
Variables	Coefficient	Std. Error	t-Stat	Prob.
C	0.009343	0.028932	0.322940	0.7497
DLOG(RE)	0.205340	0.096633	2.124954	0.0446
DLOG(PST)	-0.086915	0.093520	0.929377	0.3623
DLOG(PA)	0.174802	0.065938	2.650995	0.0143
DLOG(AFS)	0.159918	0.119612	1.336973	0.1943
DLOG(AER)	0.151617	0.077493	1.956533	0.0627
DLOG(FI)	0.311340	0.074562	4.175599	0.0004
ECM(-1)	-0.330869	0.175006	1.890621	0.0713
R-squared	Mean dependent variable			
0.711223	0.189511			
Adj R-squared	S.D. dependent variable			
0.623334	0.119154			
S.E. of regression	Akaike info criterion			
0.073128	-2.175569			
F-statistic	Prob(F-stat)			
8.092315	0.000056			

Source: Author's Contribution 2022 using E-Views 10

As observed in table 4.4, Real Estate has a positive and statistically significant long run impact on gross domestic product in Nigeria. A unit increase in real estate

increases economic growth by approximately 0.205 units in the long run. Professional, Scientific and Technological Services is seen to have a negative but statistically insignificant impact on gross domestic product in the long run. This is evident as shown by the probability value of 0.3623, which is more than the 5 percent level of significance. The result shows that as Professional, Scientific and Technological services increase by 1 unit, gross domestic product decreases insignificantly by approximately -0.09 units. Public Administration is significant and impacts positively on gross domestic product in the long run. Its level of significance is confirmed by its probability value of 0.0143. Thus, as Public Administration increases by 1 unit, gross domestic product increases by approximately 0.175 units. Accommodation and Food Services also has a positive but statistically insignificant impact on gross domestic product in the long run. Its probability value of 0.1943 confirms it is insignificant at the 5 percent level of significance. By implication, a unit increase in Accommodation and Food Services leads to an insignificant increase in gross domestic product by approximately 0.16 units. From further results as contained in table 4.4, the probability value of 0.0627 and a coefficient of 0.151617 imply that Arts, Entertainment and Recreation have a positive but statistically insignificant impact on gross domestic product in the long run. This means that gross domestic product would increase insignificantly by approximately 0.15 units when Arts, Entertainment and Recreation increase by 1 unit. Also from the table, it is clear that Financial and Insurance have a positive and significant impact on gross domestic product in the long run. The probability value of 0.0004 confirms that the variable is statistically significant at the 5 percent level of significance. Thus, a unit increase in Financial and Insurance causes gross domestic product to increase by approximately 0.31 units.

The ECM also shows a 33 percent speed of adjustment back to equilibrium whenever there is disequilibrium in the model. This means that every necessary error that occurred in the previous years will be corrected in the current year at an adjustment speed of 33 percent. The coefficient of the error term further explains that the model is statistically significant, and has a high adjustment speed in the long run.

4.5: Normality Test and Serial Correlation Test

The normality test as shown in the figure below indicates that the variables in the model are normally distributed.

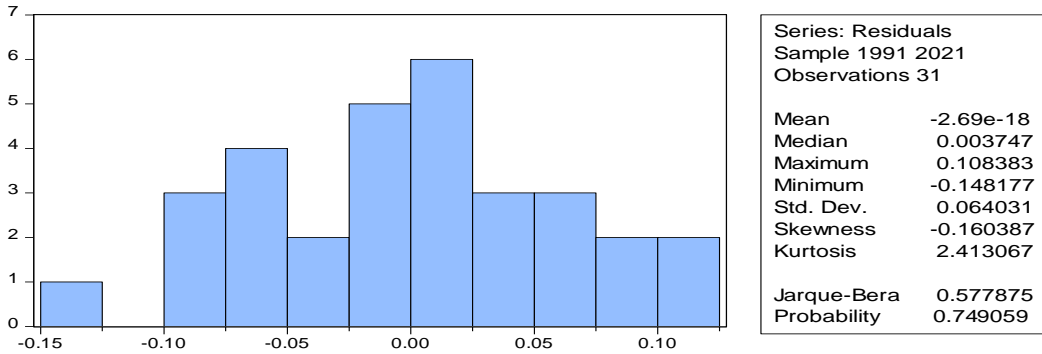


Fig 4.1: Normality Test

Also, the Breusch-Godfrey Serial Correlation LM Test as presented in table 4.5 indicates that there is presence of serial correlation.

Table 4.5: Breusch-Godfrey Serial Correlation LM Test

F-statistic	5.883163	Prob. F(2,21)	0.0094
Obs*R-squared	11.13204	Prob. Chi-Square(2)	0.0038

Source: Author's Computation 2022 using E-Views 10

The table above revealed that there is presence of serial correlation at 1 percent level of significance. This is because the observed R-squared value and the probability value is less than 1 percent significant level. That is, the probability value of the observed chi-square value is less than 1 percent.

4.6 Heteroscedasticity Test

Result of the Heteroscedasticity test is presented in the table below.

Table 4.6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.285743	Prob. F(7,23)	0.3007
Obs*R-squared	8.718890	Prob. Chi-Square(7)	0.2735
Scaled explained SS	3.390987	Prob. Chi-Square(7)	0.8466

Source: Authors Computation using E-views 10

The above result indicates that there is constant variance (homoscedasticity) and thus, conforms to the Ordinary Least Square assumption of no heteroscedasticity. This is because the observed R-squared and probability value are not statistically significant at 5 percent level of significance. We therefore, conclude that there is no autocorrelation in the model.

4.3: Discussion and Policy Implication of Findings

From the empirical evidence in table 4.3, Real Estate, Public Administration and Financial and Insurance were all statistically significant at the five percent level of significance. These variables have positive long run impacts on economic growth in Nigeria. In recent times, real estate services in Nigeria have grown significantly. A lot of local, as well as, foreign investors have taken advantage of the growing demand for housing due to Nigeria's growing population and increasing urban cities. Evidence from the result estimates suggests that, a 1 percent increase in Real Estate investment would increase Nigeria's economic growth by approximately 20.5 percent. The positive impact of Public Administration on economic growth in Nigeria could be as result of Nigeria's robust civil service system. The Nigerian government is the major employer of labour in the country. Thus, empirical evidence from the result estimates suggests that, a 1 percent increase in public administration leads to an increase in Nigeria's economic growth by approximately 17.5 percent. Financial and Insurance subservice sector which also impacts positively on economic growth in Nigeria is as a result of the several financial reforms which have taken place in the finance and insurance subsectors of the economy. These reforms have made the Nigerian financial sector more stable and robust. Thus, a 1 percent increase in the Financial and Insurance subservice sector causes Nigeria's economic growth to increase by approximately 31 percent.

Further empirical findings reveal that Accommodation and Food Services, Arts, Entertainment and Recreation, and Professional, Scientific and Technological services all impacted insignificantly on Nigeria's economic growth. While the first two variables had positive impacts on economic growth in Nigeria, the latter exhibited negative impact on Nigeria's economic growth. This could be attributed to the country's poor level of technological progress. Nigeria is known as a nation that imports technology from developed countries. Several technological equipment (such as: laptops, computers, internet services, photocopiers, projectors, and generators, to mention a few) that are used in the services sector are mostly imported from other developed countries. The government of the country is also known to rely heavily on professional services from abroad. For instance, the implementation of the Integrated Payroll and Personnel Information System (IPPIS) which is serviced by a foreign company outside Nigeria, and the likes of such professional services are major leakages, and hence have negative effects on the country's GDP. The insignificant impact of Accommodation and Food Services could be due to the slow development of this subservice sector. Most of the food services are not properly accounted for and several food vendors are not taxed adequately. More so, accommodation services in the country are largely in the hands of households and business firms. In most cases, house owners across several states in the country do not pay property tax. On the other hand, the insignificant impact of Arts, Entertainment and Recreation subservice sector could be linked to the inadequacies that bedevil this subservice sector. The high level of piracy in the sector is a major factor that limits its impact on economic growth in the country. Again, easy access to downloaded music or movie contents which are easily shared through mobile devices is another factor that reduces turnover in this subsector and hence limits its ability to impact significantly on economic growth in the country. Appropriate policy implementation with regards to the above setbacks can ameliorate these subservice sectors ability to contribute significantly to economic growth in Nigeria.

5.0: Conclusion and Recommendations

This paper investigates the impact of service sector on economic growth in Nigeria using vector error correction technique. The results show that investment in the service sector can lead to economic growth in Nigeria. From the findings of this study, real estate, public administration, and financial and insurance provide opportunities for economic growth in given their respective significant impacts on gross domestic product. Accommodation and food services, as well as arts,

entertainment and recreation indicate great potentials for improving economic growth in Nigeria. This is because they exhibit positive impacts on gross domestic product even though the impacts are not statistically significant. On the other hand, professional, scientific and technological services as indicated in the findings of the study inhibit economic growth in the country. Thus, as Nigeria, fails to develop her indigenous technology and rely more on foreign technology, economic growth of the country declines.

In conclusion, the overall result shows that five out of the six service sub-sectors employed as explanatory variables can promote economic growth in Nigeria. Thus, following empirical evidence as shown by the result estimates, the study concludes that the Nigerian service sector impacts positively on the country's economic growth in the long run.

Considering the statistical and econometric validity of the result estimates, the study therefore makes the following recommendations for possible policy implementation:

1. More investments in Real Estate should be encouraged. In addition, government should create an enabling environment that can enhance the expansion of Real Estate business in the country.
2. In order for Professional, Scientific and Technological services to impact significantly on economic growth in Nigeria, the government must sincerely and deliberately invest more in research and development in order to develop and boost local technology. Government must also limit its dependence on foreign professional services in favour of quality local professional services.
3. The expansion of public administration services should be encouraged considering its significant impact on economic growth in the country.
4. For Accommodation and Food Service subservice sector to impact significantly on economic growth in Nigeria, government must effectively and efficiently collect various forms of property taxes. In addition, utility remittances such as electricity bills, water bills, sanitation bills and the likes must be properly collected and adequately remitted to government coffers.
5. The Nigerian government and relevant institution(s) in the country should effectively combat piracy in the Arts, Entertainment and Recreation

subservice sector as this would enhance its ability to impact significantly on economic growth in the country.

6. More appropriate financial reforms should be made in the financial sector of the country, so as to boost its stability, make it much stronger and more reliable. This would help improve its significant impact on economic growth in the country.

References

- Abba, K., Babaji, M. & Habu, H. (2017). Economic Recession in Nigeria: Implications for Nursing Education and Practice. *IOSR Journal of Nursing and Health Science*, 6(2): 54-62.
- Adetunbo, A. M. and Edioye, O. P. (2020). Response of Economic Growth to the Dynamics of Service Sector in Nigeria. *Future Business Journal*, 6(1), 1-10.
- CBN (2021). Central Bank of Nigeria Statistical Bulletin, Volume 32, December.
- Ehigiator, B. O. (2017). The Service Sector in Nigeria: An Escalor for New Economic Growth. A Masters Thesis Submitted to the School of Economics and Management, LUND University, 1-77.
- Erick, O. (2017). Nigeria's Services Economy: The Engine for Future Growth. *U.S. International Trade Commission*. Executive Briefings on Trade, (202), 205-3033
- Ghani, E. (2019). Services, Productivity and Economic Transformation in Nigeria. *Bank of Industry*, Working Paper Series: No. 5
- Haller, A. P. (2012). Concepts of Economic Growth and Development. Challenges of Crisis and of Knowledge. *Economy Transdisciplinarity Cognition*, 15(1), 66-71.
- InfoGuide Nigeria (2023). 11 Factors Affecting Economic Growth in Nigeria. Available on: <https://infoguidenigeria.com/factors-affecting-economic-growth-nigeria/>. Last Accessed: 20th January, 2023.
- Ishola, O. A and Olusoji, M. O. (2020). Service Sector Performance, Industry and Growth in Nigeria. *International Journal of Service Science, Management, Engineering, and Technology*. 11(1), 15.
- Jalil, A., Manan, S. and Saleemi, S. (2016). Estimating the Growth Effects of Services Sector: A Cointegration Analysis for Pakistan. *Journal of Economic Structures*, 5(6), 1-14.

- Mankiw, N. G. (2007). *Essentials of Economics*. Fourth Edition. Published by Thomson Higher Education, 5191 Natorp Boulevard Mason, OH 45040 USA.
- Maryam, M. A. (2020). Impact of Service Sector on Economic Growth in Nigeria. A project submitted in partial fulfillment of the requirements for the award of a Bachelor of Science (B.Sc.) Degree in Economics to the Department of Economics, Faculty of Management and Social Sciences, Baze University, Abuja
- Mukhtar, S., and Abdullahi, S. I. (2020). Testing the relationship between socio-political factors, economic variables and food insecurity in Nigeria. *Journal of Conflict Resolution and Social Issues*, 1(1), 148-159.
- Mukhtar, S., Mustapha, Y., Shafiu, I. A., Kamal, K. S. & Mohammed, B. A. (2021). What Explains Economic Growth in Nigeria in the Last Three Decades? – A Dynamic Modelling Approach. *East African Scholars Multidisciplinary Bulletin*, 4(7), 1-10.
- Murselzade, V. and Cavusoglu, B. (2021). Relationship between the Service Sector and Economic Growth: Evidence from China. *Asian Journal of Social Sciences and Management Studies*, 8(1), 15-22.
- Olusoji, M and Odeleye, A. (2018). Service Sector Potentials in the Transformation of the Nigerian Economy. *BizEcons Quaterly, Strides Educational Foundation*, 2, 24-35.
- Palmer, T. N. (2012). The Importance of Economic Growth. *CPA Ireland*, 1-6.
- Philip, I. N. and Semira, O. T. (2020). Government expenditure and service sector growth in Nigeria. *Journal of Economics and Management*, 40 (2), 74-90.
- Ravneet, K. and Parmod, K. A. (2019). The Contribution of the service Sector to Economic Growth in India. *IOSR Journal of Economics and Finance*, 10(3), 01-09.
- Rodrik, D. (2007). One Economics, Many Recipes: Globalization, Institutions and Economic Growth. *Department for International Development*. 1-25.
- Tejvan, P. (2019). Benefits of Economic Growth. Available Online: <https://www.economicshelp.org/macroeconomics/economic-growth/benefits-growth/>. Last accessed: 28th October, 2022.
- Ubong, E. E. and Joel, I. O. (2021). The Service Sector-Led Growth Relationship: The Case of Nigeria. *Asian Journal of Economics, Business and Accounting*, 21(1), 90-111.

Empirical Analysis of the Impact of Service Sector on Economic Growth in Nigeria

- Uchechukwu, G. and Elizabeth, U. I. (2015). Sectoral Contributions to Nigerian Gross Domestic Product using VAR Approach. *Global Journal of Pure and Applied Sciences*, 21, 137- 143.
- UKaid (2020). Analysis of Potentials of Nigeria's Services Sector for Economic Diversification, Employment and Foreign Trade. *PDF The Bridge Programme*, 1-23.
- UNCTAD (2017). The role of the services economy and trade in structural transformation and inclusive development. *United Nations, TD/B/C.I/MEM.4/14*, 1-24.
- World Bank (2022). GDP growth (annual %) – Nigeria, World Bank national accounts data, and OECD National Accounts data files. Available Online: <https://data.worldbank.org/indicator>. Last accessed: 28th October, 2022.

Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks (A Study of United Bank for Africa)

Okonji Patrick Sunday, Ph.D.

Department of Business Administration, Faculty of Management Sciences,
University of Lagos

Abstract

This study investigated the application of balance scorecard in improving performance of managers in UBA plc. The main objective of the study is to examine the effect of balance scorecard adoption on the performance of managers, as reflected in improved abilities, achieve customer and financial objectives, competencies levels and potential abilities for innovative behaviour. Cross-sectional survey research design was adopted for the study. The target population is the staff of selected branches of United Bank for Africa (UBA). Yamane's formula was used to randomly choose a sample of 300 employees from the focal organization. A structured questionnaire was used for data collection. Descriptive statistic of frequency counts and simple percentages were used in analyzing the data, while the hypotheses were tested with Pearson Moment Correlation. The findings of the study showed that there is a significant relationship between balance scorecard and performance of bank managers in UBA plc. It was concluded that the balanced score card if properly implemented will enhance managerial performance in Nigerian organizations. Based on the findings of this study, the study recommends that management of UBA plc should put in place structure to aid the effective implementation of the balanced scorecard as a key measure of performance among the bank managers. Since the balanced scorecard is a strategic instrument for enhancing performance, there should be organizational wide participation in its development. Managers should tailor the perspectives to reflect the specific organizational situation and needs. There should be in-built flexibility and adjustments in the face of the dynamic and complex environment.

Keywords: *Organization, manager, performance, balanced scorecard*

Introduction

For over thirty years, bank manager's performance and measures have been regarded as a critical building element that pervades today's banking companies, allowing important stakeholders to evaluate the firms' accomplishments. According to the number of topics addressed at important business conferences, as well as the number of researches conducted on financial institution performance management

*Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks
(A Study of United Bank for Africa)*

score cards (Micheli & Mari 2014). It had become a popular subject, and it had progressed to the point where it is recognized as a crucial component of financial management. The internal and external outcomes of any organization's leaders, including managers and other management cadre, have a significant impact on the organization's success. Sawent (2016) sees managerial performance as a continuous process used to identify, measure and create strategies in tandem with the purpose and vision of the business.

The balance scorecard is a strategic management performance measure used to solve problems in various internal organization functions and improve various company operations as a consequence of external events. Balanced scorecards are used to measure and provide feedback on the productivity of managers in organizations. A balanced scorecard is primarily viewed as a performance management report used by the managerial team, and is typically focused on managing the execution of strategies or operational activities. The balanced scorecard is a strategic performance assessment tool that allows companies to integrate non-financial indicators into their performance in order to get a comprehensive picture of their success. Because certain elements of financial metrics may not be recorded, the measurement is important. Financial metrics such as the return on investment (ROI), return on equity (ROE), return on asset (ROA), worker productivity, organizational profitability, sales margin, and profits per share (EPS) are used to calculate outcomes. The balanced scorecard assists in translating a company's vision and strategy into a set of measurable performance indicators. As a result, the full implementation of the method connects each individual on the team to guarantee that everyone understands how they may contribute to the plan. According to Kaplan and Norton (2007), the balanced scorecard complements conventional financial measurements by offering three non-financial metrics for evaluating performance. Customer perceptions, internal company processes, and learning and development are among the non-financial metrics.

Kaplan and Norton (2001) created the balanced scorecard in response to the increasing financial requirement to properly build and execute a successful strategic planning and assessment tool that uses both financial and non-financial metrics. In order to accomplish better strategic objectives, banks and other businesses need to have a balance performance indicator. The balanced score card converts an organization's objectives and strategy into a complete set of performance metrics that serve as a framework for executing that plan. It derives its name from an effort

*Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks
(A Study of United Bank for Africa)*

to balance financial and non-financial aspects of service and manufacturing organizations in order to assess both short- and long-term performance in a single report. The Balanced Scorecard method of performance management aims to strike a balance between immediate and long-term goals. In fact, using a performance balance scorecard system to identify important measures may assist increase the likelihood of reaching and completing organizational objectives. Advanced performance management system, business implementation methods, and improving overall performance against key indicators may be characterized as the three main benefits of balancing score card performance. As a result, the use of a performance scorecard may be used to assess managers' work, boost productivity, and improve overall organizational performance, while increasing corporate profit (Kaplan & Norton, 2001).

A business must utilize measurement and management methods generated from its strategy and capabilities if it is to survive and thrive in this information age competition (Kaplan & Norton, 2006). Unfortunately, many businesses base their strategies on customer connections, core capabilities, and business capacity, while solely using financial metrics to motivate and evaluate success. Financial metrics, which are used by the majority of businesses to evaluate success, have been criticized since they are historical in nature and lack a forward-looking perspective (Emmanuel & Otley, 2005). Commercial banks' financial services are becoming more complex and extensive in Nigeria, but the degree of managerial failure in these services suggests that there is a lack of an effective balance sheet for bank managers, as well as a lack of strong client relationships. With such a large difference, bank managers and executives have a lot to learn about how to create sound financial and serviceable plans to close the gaps using the right methods.

The intricacy of today's competitive experiences in the banking sector makes commercial bank managers (UBA Plc) anxious, to the point that Bank "A" manager views Bank "B" manager as a rival, and they don't regard each other as branch managers of the same bank, but as competitors. This single conduct damages the performance of bank management in the banking operation to stakeholders (customers and staff). The current degree of competition has caused commercial bank managers to become more focused and anxious on how to maintain tight touch with their clients at all costs, in order to avoid losing their active consumers to

assumed rivals. Commercial bank managers have evolved into chameleons, shifting from one service provision to the next, often combining multiple services and relocating or establishing a new branch to meet the needs of their customers as a strategic performance and to demonstrate to the general public that their services are unique and better than those of their competitors. Thus, there is an ever increasing pressure on managers for performance improvements. This is exacerbated by industry competition and slow economic growth. Banks management is therefore in constant search of strategies in improving managerial performance (Umar & Olatunde, 2011). The balance scorecard has been seen as a viable tool in this regard. However, there is the lack of understanding of its suitability for the banking sector leading to its limited application. There is also the dearth of empirical literature on the benefits reported from these few applications. This study will fill this gap by providing the needed evidences.

The main objective of this study is to investigate the application of balance scorecard in improving the performance of managers in UBA plc. The specific objectives are to:

- I. To determine the extent to which the adoption of the balanced scorecard has resulted in better serving of customers' needs.
- II. To ascertain if balanced scorecard adoption has helped in improved attainment of financial objectives.
- III. To find out if the adoption of the balanced scorecard has improved competency levels of managerial employees.
- IV. To establish if the adoption of the balanced scorecard has resulted in significant improvement in managerial innovative potentials.

The following hypotheses stated in null forms are tested:

- 1:** There is no relationship between the adoption of balanced scorecard and customers 'needs satisfaction.
- 2:** There is no significant relationship between the adoption of balanced scorecard and improved attainment of financial objectives.
- 3:** The adoption of the balanced scorecard has not resulted in significant improvement in managerial competency levels.

- 4:** There is no relationship between the adoption of the balanced scorecard and significant improvement in managerial innovative potentials.

The significance of the study lies in the fact that it provides empirical evidence on the potency of the balanced scorecard in enhancing managerial performance. The results will be a source of information for future researchers on the topic and provide the basis for training and rewarding managers.

Review of Literature

The Balanced Scorecard as we know it now was created by Kaplan and Norton (1992) to improve managerial planning and control. Measures on the Balanced Scorecard were originally developed to complement "traditional financial measures with criteria measuring performance from three additional perspectives, those of customers, internal business processes, and learning/growth.

Learning and growth perspective views, as the most fundamental component of the causal connection, concentrate on how workers may better themselves and provide greater value to the organization (Pourmoradi *et al.*, 2016). Without a doubt, learning and growth perspectives such as the effective process (quality information system), employee ability (experienced and skilled), and degree of firm alignment (culture, teamwork, and congruence) are critical in achieving the company's objectives (GonzalezSanchez *et al.*, 2017). Financial perspective shows if a strategy's transformation leads to increased economic success. The emphasis is on cost and providing the greatest value to consumers and stakeholders. Net Operating Income, Return on Capital Employed (ROCE), Revenue Growth, Return on Investment (ROI), Cash Flow, and other metrics may be included.

According to Kairul *et al.* (2013), customer perspective is a viewpoint that evaluates a company's capacity to provide excellent services and goods to consumers, including delivery efficiency and customer happiness. Customer perspective covers; customer acquisition, customer profitability, customer satisfaction and retention (Putri *et al.*, 2017). The internal business process is important to achieving the two previously stated views since it assists in identifying the main business processes in which they must excel (Kairul *et al.*, 2013; Gekonge,

2005). In addition, Kaplan and Norton (1992) defined a few process value-chains within this viewpoint, including invention, operation, and post-sales service.

Benefits of Balance Scorecard

According to Kaplan and Norton (1992), there are three main benefits of using BSC. First and foremost, it gives a complete picture of a company's performance in a single report by linking various metrics to the company's key capabilities and strategy. As a whole, BSC assists companies in focusing on performance measurement across multiple areas; it considers elements of some of the most significant competitive advantages in the business, and it only keeps measures that are directly related to strategy, preventing information overload within the company. As a strategic management tool, balanced scorecard helps bank top management to convey its vision, purpose, aim, goals and strategies more effectively and efficiently to the whole company.

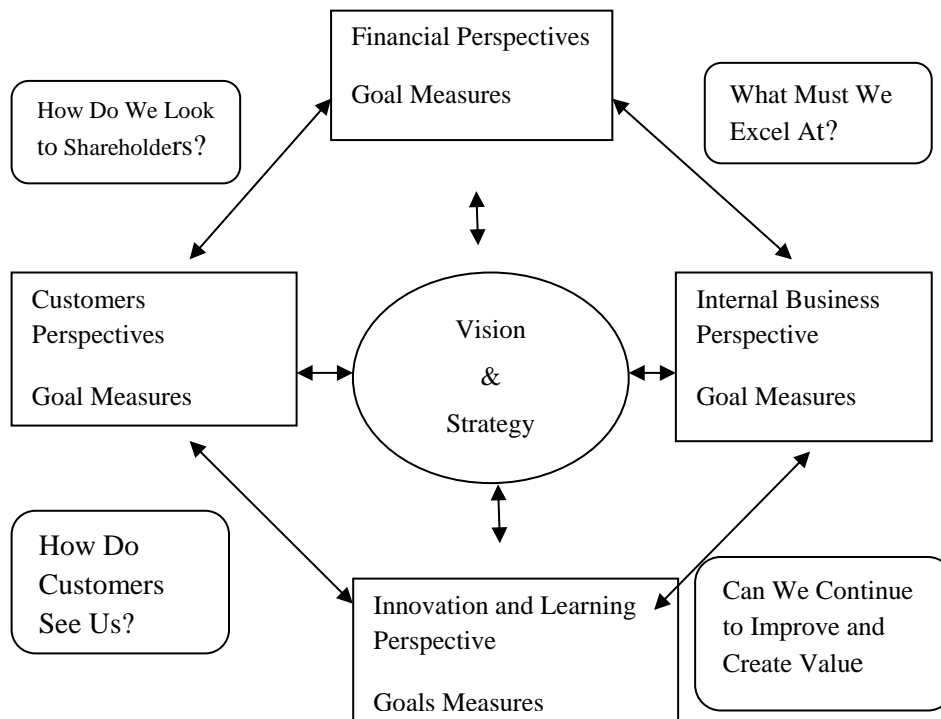


Figure 1: Balance Scorecard as performance measurement tool, that drive managers' performance. **Source:** (Kaplan and Norton1999)

*Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks
(A Study of United Bank for Africa)*

Nair and Pareek (2011) looked at the performance management methods and metrics utilized by a sample of Indian private sector businesses. According to the results of a study, every company questioned utilized both financial and non-financial performance metrics to assess its success. Using a corporate scorecard system modified from the BSC, Ridwam, Harun, and Fahmid (2013) investigated the effects on the performance of a state-owned business (Freemantle Port Authority). The research technique that was used was a case study. There were substantial effects on the organization's structure, operations, and overall performance due to BSC, according to the results.

Teker, Teker, and Kent (2011) used time series panel data from 2003 to 2010 to evaluate the financial performance of Turkish commercial banks. It was decided to employ thirteen Turkish commercial banks registered on the Istanbul Stock Exchange. The goal was to create a financial performance indexing model. The development of a bank performance measuring model was undertaken. Non-financial variables were shown to be more significant than financial success in recent years in evaluating the performance of the chosen commercial banks. Increased client happiness, efficient administration and effective leadership, as well as the use of cutting-edge technology in banking operations, all contribute to determining a bank's success in nonfinancial terms. Ibrahim and Murtala (2015) investigated the usefulness of BSC in the Nigerian banking sector for evaluating performance. The data was gathered via a survey. The studied banks acknowledged the value of adopting BSC as a performance metric, according to the findings.

Asante (2013) conducted research to find out the performance metrics local Ghanaian banks used to evaluate the efficiency of their branches and whether or not those same performance measures were also applied to branch managers. The study included both qualitative and quantitative methods. Primary data was gathered via the use of a questionnaire and interviews, both formal and unstructured. Also used were the chosen banks' Annual Accounts for the years 2009-2012 to collect data. Researchers discovered that Ghanaian banks use financial and non-financial performance indicators to evaluate the effectiveness of their local branches and branch managers.

*Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks
(A Study of United Bank for Africa)*

Using a quasi-experimental design, Davis and Albright (2004) investigated the impact of adopting a balanced scorecard on financial performance at bank branches to see whether they outperformed bank branches of the same company. Researchers discovered that BSC-model-implementing branches outperformed their non-BSC counterparts in terms of financial performance. They also found that including non-financial indicators logically and systematically enhanced financial performance when using the BSC approach. As a result of this, there was less of a link between the beleaguered interest financial metric and performance system actions performed under conventional performance assessment systems.

In their theoretical work "Study on Balanced Scorecard of Commercial Bank in Performance Management System," Zhang and Li (2009) examined Chinese commercial banks. It was decided to use the BSC model to help commercial banks improve their performance. These researchers found that the BSC model improved the validity of Performance Management Appraisal System by taking into account internal company processes, customer and financial considerations, as well as the development of workers.

This study will derive great impetus from the shareholders' value and balanced scorecard stakeholders' theories. Friedman (1971), the proponent of Shareholder Theory, argued that a corporation is regarded as an asset held only by its shareholders. Since then, the emphasis of evaluating company performance has always been on financial performance, such as shareholder return, whether success is measured by profit or failure by bankruptcy (Porter, 2008). The Balance Score Card (BSC) framework was the most often referenced and discussed performance framework in the research, with over 168 citations (Neely, 2005). Kaplan and Norton(1992) were the first to develop the BSC performance assessment system, which was based on stakeholder theory. According to Gonzalez Sanchez *et al.* (2017), as a result of the technological revolution, the traditional measurement system is only suitable for the industrial-age environment; as a result, qualitative and descriptive data covered by BSC will provide managers with a clearer holistic view of organizational performance (Malgwi & Dahiru, 2014). BSC has progressed from a basic framework to the primary component of a strategic planning and management system since then.

Methodology

The study utilized the cross-sectional research design. The cross-sectional survey was chosen because it allowed for the gathering of primary data through questionnaires, which were then quantitatively evaluated using descriptive and inferential statistics (Ridwam, Harun & Fahmid, 2013). The study's participants were employees of a first-tier commercial bank (UBA PLC) in Lagos, Nigeria. The justification for the focus on the banking sector was based on its role in the country's economic development. According to Ilesanmi (2011), the financial sector of every economy is the nation's "heart beat". In addition, Lagos is the 'hub' of the activities in Nigeria. It looked at the managers' performance in terms of core competency, customers' needs satisfaction, financial target achievement, and innovative potentials.

Due to a lack of funds and time, four local government areas (Ikorodu, Island, Oshodi/Isolo, and Ikeja,) were selected through ballot from the list of ten local government areas of the state. Thereafter, eight branches (two branches each) from four local government areas were conveniently selected. According to Wikipedia.com, UBA has a population of about 20,000 people as of January 11, 2020. The total number of employees at the UBA's chosen branches in Lagos State is (1528). Yamane (1967) formula was used to draw a representative sample of 317 employees using the systematic random sampling method. The data collection instrument was a 5-point Likert. Structured questionnaire adapted from the works of Soderberg(2006) on the balance scorecard: Structure and Use in Canadian Companies.

Content validity of the instrument was established by three management experts who confirm that the instrument sufficiently covered the subject of inquiry. The Cronbach Alpha test was used to determine its reliability of the instrument. Result of the analysis of 12 prototype questionnaires administered yielded values of dependent variable (Managerial Performance) = 0.72 and the independent variable (Balance Scorecard) = 0.85, 0.68, 0.81 and 0.73, respectively. SPSS Software Version 21.0 was used to analyze the data. The first stage of data processing involved descriptive analysis, which consisted of tables with frequency distribution, percentages, means, and standard deviation for the variables in the

questionnaire, while the Pearson moment correlation was used to test the hypotheses proposed at the start of the study. The correlation coefficient (r) was utilized to assess the type and degree of the connection between the dependent (managerial performance) and independent (Balance Scorecard) variables in order to establish the relationship.

Data Analysis, Findings and discussions

The demographic distribution of sampled respondents, gender distribution shows 53.7% of the respondents were male, while 46.3% of the respondents were female. In term of marital status distribution in the study, it shows that 11.3% of the respondents were single, 25.0% of the respondents were married, 3.3%, 18.7 and 8.3% were within divorced, separated and others respectively. In addition, the distribution of respondents focusing on educational qualification, 0.2% of the respondents were in SSCE/Diploma levels, 23.3% of the respondents were in NCE/OND levels, 26.7% of the respondents were in B.Sc./HND levels, while 26.3% of the respondents were in MBA/M.ED. Levels and 14.7% were Professional Qualification. In addition, according to Department of the respondent in the organization, 29.7% of the respondents are management staff, 20.3% of the respondents are senior staff, 19.7% junior staff and 15.0% of the respondents are contract staff. According to distribution focusing on tenure, 23.3% of the respondents have spent between 1-5years in the bank, 41.7% between 6-10years, 22.3% between 11-15years, 12.7% respondents had spent 16years and above in the organization.

	PEARSON CORRELATION COEFFICIENT (r)	P.VALUE	REMARKS
HYPOTHESIS 1	0.531	0.000	SIGNIFICANT
HYPOTHESIS 2	0.625	0.000	SIGNIFICANT
HYPOTHESIS 3	0.645	0.000	SIGNIFICANT
HYPOTHESIS 4	0.823	0.000	SIGNIFICANT

Source: SPSS Data Analysis Output 2022

Discussion of Findings and Policy Implications

The findings of hypothesis one showed that scorecard results in better satisfaction of customers' needs by managers ($r = .531$; $p = .000 < 0.05$). This implies that the balanced scorecard plays a significant role in helping managers meet customers' needs. This is borne out the fact that managers are forced by the balanced scorecard to identify the specific needs of customers and organizational requirements for meeting them. Managers will weed out non performing customers and market segments, while focusing on the needs and segments which the organization is best suited to serve. The finding is consistent with those of Agyeman (2017), who found that Ghanaian banks used the balance scorecard to improve bank managers' performance with respect to customers' needs satisfaction.

The findings of hypothesis two showed that the balanced scorecard has a significant effect on managers' attainment of set financial objectives ($r = 0.625$; $p = 0.000 < 0.05$). The implication of this is that the balanced scorecard provides the needed impetus for the achievement of targeted financial objective. Given the needed resources both at the individual and organizational levels, the balanced scorecard enable managers to vigorously pursue and achieve targeted financial objectives. The result is in agreement with those of Kambari, Nyikyaa, and Ladan (2019) on the use of the balance scorecard as a major performance instrument in evaluating the financial performance of deposit money bank managers in Nigeria.

The findings of hypothesis three revealed that the use of the balanced scorecard improves the competency levels of managers ($r = .645$; $p = .000$). This implies that as an instrument for measuring performance, the balance scorecard ensures that required skills and competencies are determined in advance to aid managerial performance. The setting of both customer and financial objectives requires a corresponding determination of the competency levels required of managers to achieve them. To this end, the organization strives to impart these skills in the managers in order to improve their performance levels. This finding is line with Kerin and Rudelius (2014), who found that the balanced scorecard provides a link between competency and performance levels of managers.

The findings of hypothesis four showed that there is a relationship between the adoption of the balanced scorecard and innovative behavior of managers ($r = 0.823$;

$p = 0.000 < 0.05$). The implication of this is that the use of the balanced scorecard provides an enabling environment for managerial innovation. The provision of efficient processes and investment in organizational infrastructures provides the needed dynamic capabilities required for innovative behaviours. Managers key into this to acquire and exhibit innovativeness in the performance of their jobs.

Conclusion and Recommendations

Based on the findings, it can be concluded that utilizing the balanced scorecard is a potent tool in improving the performance of bank managers in Nigeria. The balance scorecard forces organizations to not only set financial objectives, but in addition determine concrete activities that will aid the achievement of stated objectives. The balance scorecard enables the organization to think systematically by considering all factors that are essential in enhancing organizational performance. These measures are used to motivate and measure managerial performance based on an integrated framework. Performance management become easier when organizations not set managerial targets but also provide the needed information, resources and investments needed based on the application of the balanced scorecard. Improved managerial performance will invariably improve total organizational performance. This study has helped in providing the needed evidence to support the deployment of balanced scorecard for evaluating managers in Nigerian organizations. The study recommends that:

Banks should implement the balanced scorecard as a performance measurement and strategic tool to improve the performance of managerial employees in an organization. Information systems to track the various dimensions of the balanced scorecard should be developed and strengthened to aid the implementation of the framework. There is also the need for investment in training and development as well organizational infrastructures to reap the benefits of the balanced scorecard. Since the balanced scorecard is a strategic instrument for enhancing performance, there should be organizational wide participation in its development. Managers should tailor the perspectives to reflect the specific organizational situation and needs. Flexibility and adjustments in the event of the dynamic and complex environment become prerequisites for success.

References

- Al-Najjar, S. M., & Kalaf, K. H. (2012). Designing a balanced scorecard to measure a bank's performance: A case study. *International Journal of Business Administration*, 3(4), 44.
- Asante, E.(2014). Adopting human performance technology model (HPT) in polytechnic libraries in Ghana. *Africa Development and Resources Research Institute journal*, 8(2), 1-24.
- David, S., & Albright, (2004). An investigation of the effect of balanced scorecard implementation on financial performance. *Management Accounting Research*, 15, 135-153.
- Ibrahim, M., & Murtala, S.(2015). The relevance of balanced scorecard as a technique for assessing performance in the Nigerian banking industry. *European Journal*, 3(4), 2056-6018.
- Ilesanmi, O.A. (2011). The impact of strategic planning on the performance of Nigerian banks. *European Journal of Scientific Research*,65(1)131-143.
- Ishtiaque, A.N., Khan, M.D., Akter,M.S., & Fatima, Z.K.(2007).Perception analysis of balanced scorecard- An application over a multinational corporation of Bangladesh. *Journal of Business Studies*, XXV111(2),235-2681.
- Jensen, M. C. (2001). Value maximization, stakeholder theory and the corporate objective function. *European Financial Management*, 7, 297-317.
- Kairu, E.W., Wafula, M.O., Okaka, O., Odera, O.,& Akerele, E.K. (2013). Effects of balanced scorecard on the performance of firms in the service sector. *European Journal of Business and Management*, 5(9), 81-88.
- Kaplan, R.,& Norton, D. (1992). The balanced score card – measures that drive performance. *Harvard Business Review*, 70(4), 71-79.
- Kshatriya, A., Dharmadhikari, V., Srivastava, D., & Basak, P. C. (2017). Strategic performance measurement using balanced scorecard: A case of machine tool industry. *Foundations of Management*, 9(1), 75-86.
- Kaplan, R.S., & Norton. D.P.(1992). The Balanced Scorecard - Measures that Drive Performance. *Harvard Business Review January-February: 71-79.*
- Kaplan, R.S., & Norton. D.P (1996). *The Balanced Scorecard*. Boston, MA: Harvard Business School Press.

*Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks
(A Study of United Bank for Africa)*

- Kaplan, R.S., & Norton, D.P.(2000). *The Strategy-Focused Organization*. Boston, MA: Harvard Business School Press.
- Kaplan, R.S., & Norton, D.P. (2001). Transforming the Balanced Scorecard from performance measurement to strategic management: Part 1. *Accounting Horizons 15: 87 - 104*.
- Kaplan, R.S., & Norton, D.P. (2006). Transforming the Balanced Scorecard from performance measurement to strategic management: Part 2. . *Accounting Horizons 15: 147 - 160*.
- Li, H., & Zhang, H.(2007). The role of manager's political networking and functional experience in new venture performance: Evidence from China's transition economy. *Strategic Management Journal*, 28,792-804.
- Malgwi, A., & Dahiru, H. (2014). Balanced scorecard financial measurement of organisational performance: A review. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 4(6),1-10.
- Mari, P.M., & Micheli, P. (2014). The theory and practice of performance measurement philosophy. *Management Accounting Research*, 25,147-156.
- Nair, B.,& Pareek, A. (2011), A study of various performance management systems adopted by selected Indian Private Sector Organizations, *International Journal of Research in Commerce and Management*, 2 (6), 6-10.
- Neely, A. (2005). The evolution of performance measurement research: Development in the last decade and a research agenda for the next. *International Journal of Operations & Production Management*, 25(12), 1264-77.
- Oderberg, M.J.(2006). Balanced Scorecard: Structure and use in Canadian companies. *Unpublished Thesis submitted to the Graduate studies and Research, University of Sastchewen, Saskatoon, Canada*.
- Opara, B. & Nwulu, S.C.(2009). Impact of Relationship marketing on corporate performance of GSM network service companies. *The University Advance Research*, 1,143-154.
- Porter, M.E., (2008). *Competitive Strategy: Techniques for analysing industries and competitors*. Simon and Schuster.
- Pourmoradi, R., Niknafs, J.,& Abdollahian, F. (2016). A literature review on balanced scorecard: quantification of the balanced scorecard. *Applied Mathematics in Engineering, Management and Technology*, 4(3), 133-142.
- Putri D. I., Baga, L. M.,& Burhanuddin. O. I. (2017). Performance criteria of rubber UKM based on cooperative using balance score card method. *Indonesian Journal of Business and Entrepreneurship*, 3(1), 34-42.

*Balanced Scorecard: A Strategic Tool for Enhancing Managerial Performance in Nigerian Banks
(A Study of United Bank for Africa)*

- Ridwan,R..., Haruna, H. & Fahmid,I.(2013). The impact of Balanced Scorecard on Corporate performance: the case of Australian Public sector Enterprise. *International Business Research*, 6(10),103-110.
- Sawant, Y. (2016). Performance management: The top business priority. *Psychology Research Paper*, 5(2), 325-327.
- Teker, S., Teker, D., & Kent, O. (2011), Measuring commercial banks' performances in Turkey: A proposed model. *Journal of Applied Finance & Banking*, 1(3), 97-112.

Store Layout: An Investigative Study on Affective Evaluation and Customer Response of Hypermarkets in Nigeria

¹Jekey, Lekue Ph.D & ²Jonah, Charles Tambari Ph.D

¹Department of Marketing, University of Port Harcourt, Rivers State

²Department of Management, University of Port Harcourt, Rivers State

Abstract

The study investigates the relationship between store layout, affective evaluation and customer response of hypermarkets in Nigeria. Four thousand (4000) active customers drawn from the customer care database of four hypermarkets in South-South region of Nigeria serves as the population of the study, with a sample size of three hundred and fifty two, derived through the application of krejcie and morgan technique. Questionnaire was used to elicit information from respondents. Data was analyzed using Pearson Product Moment Correlation (PPMC) techniques at 0.5% error levels of significance. Findings revealed that store layout positively and significantly influenced customer affective evaluation and customer response in hypermarkets. The study concluded that store layout played a significant role on how customer affectively evaluate and respond to merchandize in hypermarkets. The study recommends that operators of hypermarkets should embrace innovative store layout strategy that will enhance customers' affective evaluation and response in their market space.

Keywords: Store layout, Customer Perception, Affective Evaluation and Customer Response

1. Introduction

In a traditional retailing business, the environment is the most focus aspect to the business owner. In another spheres, changes in the business world ranging from competition from those in the same sphere of business and customer preference levels, as well as innovative ambience influence the perceptions of customer in the retailing industry. In the modern society the retailing industry has increase in scope through the integration of technology, economic and demographic changes (Ihfiyar, Ahmad & Osman, 2014; Kumar & Kim, 2014; Ogden, 2005). Retailing industry played a vital role in meeting the needs of a modern society as well as a significant component of an action economy (Bawa, Gupta & Sharma 2013). It is premise upon this that scholars emphasized that innovative ambience such as design and social factors has a strong influenced on customer buying behaviour and perception (Baker, Parasuraman, Grewal & Voss 2002; Liao, Huang & Deesentham 2012; Seok, 2009). Furthermore, store innovative ambience impact not only on impulse

buying, but also on patronage (Mohan, Sivakumaran, Shanna, 2013). The trend in information technology in business pursuit has created an increasing interest in developing tools for making the point of sale more attractive in terms of store appealing, product display, as well as facilities for consumers (Pantano & Naccarato, 2010; Laria & Pantano, 2011).

There is no doubt that advancement in information and communication technology has enhanced the layout of stores in the retailing industry. Man and Nikorhova (2017) admitted that technological innovation such as Mobile Apps, Scan-and-go technologies, self check out, and smart self technology are some of the technological innovative advancement in retail hypermarkets today. Customers are attracted to good designs that give superior customer experience through the use of technology (Verhoef, Peter, Katherine, Lemon, Parasuraman, & Schlesinger, 2009). It is quite worrisome that the layout of most hypermarkets does not fit into the current technological innovative advancement, hence, affecting the perception of customer buying behaviour and produces specific emotional effects on the minds of the buyers. This paper is a relational study established on how store layout enhances customer perception through affective evaluation and customer response toward hypermarkets in Nigeria.

The study is organized as introduction in part one, part two carries out the review of relevant literatures, methodology is in part three, part four comprises of result and discussion, part five is the conclusion and recommendations.

2. Review of Relevant Literature

2.1 Store Layout

Store layout refers to where both the merchandise and other structures and facilities are physically located with the effect of creating a particular pattern of people traffic (Miller, 2008). Levy and Weitz (2009) stated that store layouts are created to guide customers through the store and help them in locating and finding information about products. Dunne, Lusch and Carver (2011) emphasized that layout in the retail store industry consists of three principles: circulation, coordination, and convenience. The authors stated that the principle of circulation provides for arrangements that facilitate the control of traffic flow through the store; coordination refers to the arrangement of merchandise in such places to help in

promoting sales, creating goodwill, and furnishing subject matter for publicity; and convenience is arranging items to furnish a high degree of convenience to the customer and personnel. Store layouts can facilitate the efficient flow of shoppers and decreases the feeling of crowding as well as eliminating the psychological costs of negative feelings and diminishes price perceptions (Aylott & Mitchell, 1999; Titus & Everett, 1995). It is scholarly established that a good layout can make shopping more fun and more enjoyable by decreasing the stress and evoking a positive effect (Yoo et al, 1998; Baker et al, 2002). In the same way, a good layout can make store merchandise more impressive, giving the impression that more products are displayed than actually exist (Morates *et al*, 2005).

In addition, scholars identified different types of layout such as: forced-path layout, counter store layout, grid layout, race track layout, free form layout, as well as mixed layout (Ebester & Garau, 2015). Dhotre (2010) supported the viewed above, but added loop layout and spine layout. The scholar agreed with grid layout and free form layout. The scholars emphasized that loop layout improves the stores productivity, allows retailers to display as many products as possible and encourages impulse buying behavior (Dhotre, 2010). The scholar further stated that spine layout allows retailers to display products at both sides of the aisle in various forms and patterns. Dhotre (2010) states that spine free-flow and loop layout. Hence the traffic flow is arranged in the store as a straight line running from the entrance to the back. DeRosa (2017) asserts that as organizations grow and adapted innovative technologies and practices they are bound to compete effectively in the marketplace.

2.2 Affective Evaluation

Emotional state or affective evaluation is a judgment whether an object is pleasant, attractive, valuable, likable, or preferable (Russell & Snodgrass, 1987). Mehrabian and Russell (1974) hypothesized that any environment is capable of inducing and producing different emotional states in an individual. Mehrabian and Russell (1974) suggest three dimensions for the emotional states that are developed in an individual's mind pleasure, arousal and dominance, also called the PAD framework. These emotional responses determine the need to remain within or leave a physical environment (Bennett, 2005). These three dimensions commonly represent the organism aspect of the SOR framework. The pleasure aspect determines whether individuals perceive the environment as enjoyable or not

enjoyable. The arousal dimension evaluates how much the environment stimulates the individual. The dominance element relates to whether individuals feel dominant (in control) or submissive (under control) in the environment (Mehrabian & Russell, 1974). The affective space evoked by environments was found to be better described by pleasantness and arousal dimensions, whereas dominance was not found to have a predictable or significant effect on behavior (Russell & Pratt, 1980; Russell, Ward, & Pratt, 1981; Ward & Russell, 1981). Russell and Barrett (1999) attributed the reason for this to the fact that dominance factor is a cognitive component of affective reactions. Studies in both retail and non-retail 34 environments support that the pleasure and arousal dimensions are related to consumer reactions, but the effect of the dominance dimension is unclear (Russell, 1980; Yalch & Spangenberg, 2000). For example, Donovan and Rossiter (1982) found that shopping behaviors were related only to the pleasure and arousal dimensions in a retail setting. Yalch and Spangenberg (2000) state that behaviors associated with dominance are difficult to identify as it reflects only a small influence on behavior. As a result, the dominance dimension is often not measured as an emotional/affective response (Russell, 1980).

Researchers have established the mediating role of pleasantness and arousal in the context of store environments. Donovan and Rossiter (1982) find pleasantness and arousal to have positive effects on intentions to remain in the store and to spend more money. Baker et al. (1992) find a positive relationship between the emotional states and intention to purchase. In sum, the literature review suggests that consumers affective evaluations can be explained in terms of pleasure and arousal dimensions. Further, pleasure and arousal mediate the relationship between the store atmosphere and consumers response to the store atmosphere.

2.3 Customer Response

Response is associated with the psychological reactions such as: attitudes and behavioral reactions of consumers (Bagozzi, 1986). The retail atmosphere has been found to influence customer behavioral intention, which is composed of different dimensions such as number of items purchased, amount of money spent in the store, and whether the shopper liked the store environment or not (Sherman & Smith, 1986). In the retailing context, response to store stimuli is often termed as approach

or avoidance behavior. Approach is the desire to remain in the store, continue shopping and willingness to stay for relatively long periods. In contrast, 35 avoidance behaviors are associated with negative reactions including a desire to leave the store and not return (Mehrabian & Russell, 1974). Approach-avoidance behaviors are the actions resulting from individual internal states. Mehrabian and Russell (1974) suggest that approach behaviors include physical approach, work performance, exploration, and social interaction.

Turley and Milliman (2000) suggest that atmospheric variables lead to a certain behavioral response by the consumer such as time spent in the store, items examined, information acquired, and satisfaction. Donovan and Rossiter (1982) also suggest several responses applicable to a retail environment, including the number of items purchased, amount of time and money spent in the store, and whether the consumer likes the store environment. Zeithaml, Berry, and Parasuraman (1996) identified five dimensions of behavioral intention: intention to remain loyal, propensity to switch, disposition to pay more, external response to problem, and internal response to problem. Donovan and Rossiter (1982) found that approach behavior and the related behavioral intentions are highly influenced by the emotional responses to an atmosphere within an environment. Researchers have also found a direct relationship between atmospheric dimensions of an environment and the approach-avoidance behavior (Crowley, 1993; Hirsch, 1995; Herrington & Capella, 1996). In summary, atmospheric stimulus has an impact on the intervening mental evaluative state, which, in turn, affects the response toward the environment.

2.4 Customer Perception

Customer perception is described as acting and reacting on what one sees (Kotler *et al*, 1998). Relating this definition to retail store environment, it implies that customer reacts to what they see in the purchasing environment. In other words, customers' response to a given supermarkets is predicated upon what they see which is capable of arousing their purchasing interest. This is in agreement with the proposition of scholars that customer perception shapes and induced behavioral response (Jones *et al*, 2010).

It is worthy of note that customer perception (CP) is borne out of cognitive theory and the affective theory (Park & McClung, 1985; Park & Young, 1986; Gyo-Lee & Thorson, 2009). The cognitive involvement in customer perception has to do with the thought related reaction generated by stimuli (Blackwell, Miniard & Emgel, 2001). While affective involvement consists of feelings and arousal induced by stimuli (Dube, Cervellon, & Jingyuan, 2003; Yoo & Machlunnis, 2005). This is individual's relationship with any (consumption) object may involve positive feelings of affect, as well as identification.

These theories collectively demonstrated that when consumers are exposed to certain design, social interactions and ambient factors in a store environment they cognitively conceptualize or think about what they see, and if they are affectionate about it, they identify themselves with it and probably arouse positive reaction eventually. Tylee (1989) and Meenaghan (2001) explain that this kind of reaction is similar to what they refer to as see-saw perception toward an object.

Furthermore, Weinslit (1999) posits that consumer perception is identified by the color, shape, and taste of the product. This is equally akin to store environment where interior decoration or design will spark up customers' attention to continuously buy from the store or supermarket. In order words, the way customer processed its selection, organized and interpreting and attaching meaning to events happening in the environment. Put it differently, perception is a process by which an individual (customer) select, organize and interpret stimuli in a meaningful picture of the world. This means that customer might patronize or response to a retail store / supermarket that might have good design factors, ambience and socially related.

Empirical Review

The aim of this section is to review literature that is related to the current study as studied by other researchers in the retail industry. Mortime and Clarke (2010) conducted a study on the importance of store characteristics within a supermarket retail environment in Australia. The study focused on consumer survey of two hundred and eighty (280) male and female grocery shoppers across four major supermarkets. Simple random sampling technique was employed to collect data. The study revealed that significant statistical differences exist between male and

female grocery shoppers on all ten store characteristics constructs. The study equally revealed that female grocery shoppers considered supermarket store characteristics more important than male shoppers. Carpenter and Moore (2006) carried out a research in United States (US) market place with a focus on the relationship between grocery consumers' demographics with their retail format choice. A population of four hundred fifty four (454) US grocery consumers was studied using a self-administered questionnaire. Descriptive and inferential statistical techniques, (regression, ANOVA) were used to evaluate the data. The finding identified demographic variables specific to formats, (specialty Grocers, traditional supermarkets, supercenters, warehouse clubs and internet grocers) and examined store attributes (price competitiveness, product selection, and atmosphere) as drivers of format choice. Prasad and Aryasri (2011) made a detailed study on the effect of shoppers' demographic, geographic, and psychographic dimensions in terms of format choice behavior in the fast growing Indian food and grocery retailing. The authors adopted descriptive research design by applying mall intercept survey method using structured questionnaire for data collection. Both descriptive and inferential statistical tools like factor analysis and multivariate analysis was used to analyze the data collected from one thousand four hundred (1040) food and grocery retail customers from upgraded neighborhood kirana store, convenience stores, supermarkets, and hypermarkets in conjoin cities of secunderabad and Hyderabad in Andhra Pradesh in India. The study found that shoppers' age gender, occupation, education and distance travelled to store have significant relationship with retail format choice decision. Seock and Lin (2010) conducted a study on cultural influences on young consumers' loyalty tendency and evaluations of the relative importance of apparel retail store attributes in Taiwan and the USA. A structured questionnaire was developed to obtain data from respondents. Factor analysis was employed to identify dimensions of apparel retail store image attributes. In the study, multivariate analysis of variance and hierarchical multiple regression analysis were used to examine the hypotheses. The results showed that American consumers have significantly greater collectivistic characteristics than Taiwan.

It is obvious that all empirical studies are foreign based. It is equally important to note that the influence of affective evaluation and customer response based on store layout were not captured in the prior studies. Few of the studies were carried out in the supermarkets. Therefore, these are the identifiable gaps in the literature which the current study addresses.

Theoretical Framework

Stimulus-Organism-Response- Model

Mehrabian and Russell's environmental psychology model is based on the stimulus – organism – Response (SOR) paradigm. This model has two assumptions. First, people's (customers) emotions determine what they do and how they do it. Second, customers respond with different sets of emotions to different environment (Tai & Fung, 1997). Mehrabian and Russell's (1974) Stimulus-organism-response model demonstrates the link between physical environment and its effect on an individual's behavior. This implies that a physical environment influences an individual's internal states, which lead him or her to either approach or avoid an environment (Mehrabian & Russell, 1974). Stimulus–Organism–Response Model has been adopted in the context of retail environment with several studies supporting the relationship between store environment and consumer purchase behavior (Baker, et al, 1992; Donovan & Rossiter, 1982). Scholars also emphasize that retail store designs that shape a retail space create or alter consumers' mood and impact consumers' behavioral response (Markin, Lillis, & Narayana, 1976). Donovan and Rossiter (1982) applied the SOR framework to a retail store settings and test the link between organism and response valuables. The authors conclude that environmental stimuli have an impact on emotional states of consumers in such a way that consumers may not be fully aware of the stimuli, but the stimuli can indirectly affect consumers' approach or avoidance behavior. This is in line with a study conducted by Baker *et al*, (1994) which emphasized that a retail store can offer a distinctive atmosphere that influences a shopper's patronage decision. Ghosh (1990) argues that atmosphere influences the overall value provided by retailers and defines the concept of retail atmosphere as the psychological effect or feeling created by a store's design and its physical surroundings. The authors further stated that store atmospherics have an impact on the shopper through the sensory channels of sight, sound, scent, and touch. Researchers have studied the effects of five popular atmospheric cues that impact the senses, color and lighting (Bellizzi, Crowley, & Hasty, 1983), social factors (Baker et al, (1992), ambient factors, that is, music and lighting (Baker *et al*, 1992; Kellaris & Kent, 1992; Milliman, 1982, Crowding, Eroglu & Harrel, 1986), and point-of-purchase display (Phillips, 1993; Quekh & Cannon– Bonventre, 1983), store entrances, checkouts,

and customer service areas (Newman, Yu, & Oulton, 2002). Based on the above scholarly argument, this study adopts Stimulus-Organism-Response Model as the underpinning theory in this study. Based on the literature review above, the research model in the figure below was formulated. Thus:

Figure 1.1:

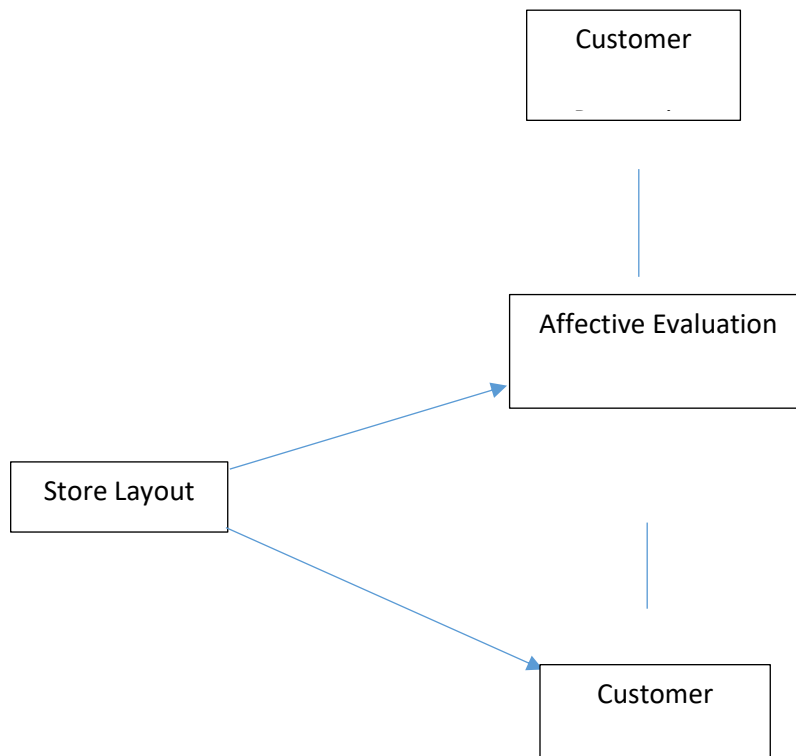


Figure 1.1: Conceptual Model of the Study

The following hypotheses were formulated from the model, thus:

H0₁: Store layout has positive and significant relationship with affective evaluation.

H0₂: Customer response positively and significantly relates with store layout.

3. Research Methodology

The study investigates the relationship between store layout, affective evaluation and customer perception of hypermarkets in South-South region of Nigeria, with 4000 active customers drawn from customer care data base of four hypermarkets, which are; Spar (Port Harcourt), Spar (Calabar), Shoprite (Sapele), and Next Cash and Carry (Port Harcourt). Cross sectional survey design was adopted. Since the Population is known, Krejcie and Morgan (1970) sample size determination technique was used to arrive at a sample of 352, with an error margin of 5% (0.05). The data for the execution of this study were mainly obtained from primary source. The primary data were gotten from the respondents through the deployment of a structured questionnaire. The expression of the respondents was rated on a five-item likert-scale in which 1 denotes "Poor," 2 denotes "Fair," 3 denotes "Average," 4 denotes "Good," and 5 denotes "Excellent," as well as an "Uncertain" alternative to prevent bias in response. Content validation was used for the instrument validity, while Cronbach's Alpha coefficient was used to confirm the reliability after carrying out a pilot survey on 35 customers. The Cronbach's alpha score for the constructs was 0.969. Data analysis techniques employed was Pearson Product Moment Correlation. This analysis was computed electronically with the aid of Statistical Package for Social Science (SPSS), version 23.

4. Analysis and Discussion

Table 1: Results for the Reliability of the Study Instrument

Variables	Number of Items	Alpha Value
Store Layout	5	.834
Affective Evaluation	5	.827
Customer Response	5	.797

Source: Survey Data 2022.

Table 2: Store Layout and Affective Evaluation

Correlations

		Store Layout	Affective Evaluation (AE)
Store Layout	Pearson Correlation	1	.702**
	Sig. (2-tailed)		.000
	N	341	341
Affective Evaluation (AE)	Pearson Correlation	.702**	1
	Sig. (2-tailed)	.000	
	N	341	341

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data, 2022

Table 3: Store Layout and Customer Response

Correlations

		Store Layout	Customer Response
Store Layout	Pearson Correlation	1	.572**
	Sig. (2-tailed)		.000
	N	.572**	341
Customer Response	Pearson Correlation	.000	1
	Sig. (2-tailed)	.432	
	N	341	341

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data, 2022

Discussion of Findings

The result in table 2 shows that store layout correlates with affective evaluation ($r = 0.702$, $p < 0.001$). This signifies a very high correlation indicating a normal relationship. The relationship that exists between store layout and affective evaluation is shown to be significant at 0.01 significant levels. Since an R values that is less than 0.20 ($r < 0.20$) is the yardstick for accepting the null hypotheses and an R values that is greater than or equal to 0.20 ($r \geq 0.20$) is the yardstick for rejecting the null hypotheses, based on this guidelines for accepting or rejecting the null hypothesis as stipulated by Irving (2005) cited in Ahiazu and Asawo (2016), the researcher rejected the null hypothesis and accepted the alternate hypothesis. Therefore, there is a significant relationship between store layout and affective evaluation of hypermarket in south-south region of Nigeria. The result in table 3 shows that store layout correlates with customers response ($r = 0.572$, $p < 0.001$), this signifies a very high correlation, indicating a normal relationship. The relationship that exists between store layout and customers response is shown to be significant at 0.01 significant levels. Since an r value that is less than 0.20 ($r < 0.20$) is the yardstick for accepting the null hypotheses and an r value that is greater than or equal to 0.20 ($r \geq 0.20$) is the yardstick for rejecting the null hypotheses, based on this guidelines for accepting or rejecting the null hypothesis according to Irving (2005) cited in Ahiazu and Asawo (2016), the researcher rejected the null hypothesis and accepted the alternate hypothesis. This was as, the r value obtained from our SPSS computed output was higher than 0.20, that is, $r = 0.572$ is higher than 0.20. Therefore, there is a significant relationship between store layout and customers response of hypermarket in south-south region of Nigeria. On the test of relationship between store layout, affective evaluation, and customer response, the results on store layout and affective evaluation revealed a strong, significant and positive relationship between the variables. This findings was supported by scholars who admitted that store layout facilitate efficient flow of shoppers and decreases the feeling of crowding as well as eliminating the psychological costs of negative feelings and diminishing price perceptions (Aylott & Mitchell, 1999; Titus & Everett, 1995). On the test of relationship between store layout and customer response, the results indicates, strong, positive and significant relationship between the two variables. The findings was supported by Levy and Weitz (2009) who stated store layouts are created to guide customers through the store and help them to

locate and find information and products. Vrechopoulos *et al* (2004) admitted that well designed layouts are extremely important, because it influences in-store traffic pattern, shopping behaviour, as well as operational efficiency. Kumar and Kim (2014) equally affirm the outcome of the results by stating that customer response to hypermarket is depending on store layout strategy.

5. Conclusion and Recommendations

The finding of the study is based on the results from the quantitative analysis of the data which is in line with the aim of the study. The major conclusion is derived from how operators of hypermarkets of the retail industry and other relevant stakeholders perceived retailing innovative ambience and its relationship with customer perception. Specifically store layout positively and significantly relates with effective evaluation and customer response. The study recommends that:

- 1) Hypermarket operators in South-South Nigeria should improve upon their business environment with innovative facilities so as to influence customer perception.
- 2) Operators of hypermarkets should ensure proper landscaping or aesthetic design of the environment such that it will be appealing to the customers that will enhance patronage by ways of positive perception.
- 3) Managers of hypermarkets should ensure affective evaluation of customer response in their market space so as to enhance patronage and memorable shopping experience.

References

- Ahiazu, A. I., & Asawo, S. P. (2016). *Advanced Social Research Methods*; Cimrat Publication.
- Bagozzi, R. P. (1986). Theoretical progress in consumer psychology: The contribution of behavioural analysis of choice. *Journal of Economics psychology*, 7(4) 393-414.
- Baker, J., Parasuraman, A, Grewal, D. & Voss, G. B. (2002). The influence of multiple store environment cues on perceived merchandise value and patronage intentions. *Journal of Marketing*, 66(2), 120-141.

- Barata, D. D. & Halim, L. H. P. (2016). Pengaruh store environment terhadap customer evaluation Serta Dampaknya Pada Customer Response Di Took Ritel. *Journal widyakala*. 3:29-43.
- Bawa, B. G, & Sharma, B. (2013); Retail service quality's impact on value delivery and customer satisfaction in a retail store environment. *Journal of marketing and communication*. 8 (4), 21-23.
- Bellizzi, J. A., Growley, A. E., & Hasty, R. W. (1983). The effects of color in store design. *Journal of retailing*, 59(4), 21-45
- Capenter, J. M., & Moore M. (2006). Consumer demographics, Store attributes, and retail format choice in the US grocery market. *International Journal of Retail and Distribution Management*, 62(3), 201-221
- Chen, H. & Hsieh, T. (2011); the effect of atmosphere on consumer perceptions and customer behaviour responses in chain store supermarket. *African journal of business management* 5(24), 10054-10066.
- Cui, X. & Hu, J. (2012). A literature review on organization culture and corporate performance. *International journal of business administration*, 3(2), 30-31.
- DeRosa, D. (2017). Preparing for change: 2018 organizational development trends. Retrieved from <https://www.onpointeconsulting//c.com/blog/preparing-for-change-2018-organizational-developemnt-trends>
- Donovan, R. J., & Rossiter, J. R. (1982). Store atmosphere: An environmental psychology approach. *Journal of Retailing*, 58, 34-57.
- Dhotre, M. (2010). Channel management and retail marketing. Mumbai: channel management and retail marketing.
- Dunn, P., Lusch, R. & Carver, J. (2011). *Retailing*, (7th edn.), Mason, Ohio. Ebster, C. & Garaus, M. (2015). Store design and visual merchandising: creating store space that encourages buying, (2nd ed.). New York: Business Expert Press.
- Eroglu, S., & Harrel, G. D. (1986). Retail Crowding: Theoretical and strategic implications. *Journal of retailing*, 66(2), 201-213
- Griffith, D. A. (2005). An examination of the influences of store layout in online retailing. *Journal of business research*, 58 (10): 1391-1396.
- Growley, A. E. (1993). Activation research: psychological Approaches in Consumer research. *Journal of consumer research*, 5(3), 240-250
- Herrington, J. D., & Capella, L. M. (1996). Effects of music in service environments: A field study. *The Journal of service marketing*, 10, 26-41

- Hirsch, A. R. (1995), the effects of ambient odors on slot-machine usage in a Las Vegas Casino. *Journal of psychology and marketing*, 12(7), 585-594
- Ihtiyar, A., Ahmad, F. S. & Osman, M. H. (2014). An integrated framework: Intercultural competence, service quality and customer satisfaction in grocery retailing, *social and behavioural sciences* 109 (1), 492-496.
- Kumar, A. & Kim, Y. K. (2014). The store-as-a-brand strategy: The effect of store environment. *Journal of retailing and consumer services*, 21(5), 685-695.
- Laria, G. & Pantano, E. (2011); immersive environments for an advanced technology-based store. *The 17th international conference on Networked computing and advanced information management*, 218-221.
- Levy, M., Weitz, B. A & Beattie, S. (1995). Retailing management (online). Available at: [http://shcidx.mba.net/calalogue/syllabus/2006 WINTER MARK 468 LEC BI. Pdf](http://shcidx.mba.net/calalogue/syllabus/2006%20WINTER%20MARK%20468%20LEC%20BI.Pdf). (accessed a December 2008).
- Levy, M & Weitz, B. A, (2009), Retailing Management, 7th edition McGraw-Hill/Irwin.
- Liao, C. Huang, C., Huang, T. & Deeseentham, K. (2012). A cross- cultural-examination of store environment cues and purchase intention in Taiwan and the United States. *Journal of applied business and economic*, 13(1), 73-83.
- Marketing glossary (online) (2007). Available at: <http://www.marketingnews.co.in/glossary/4> (Accessed a December 2008).
- Meenaghan, T.(2001). Sponsorship and advertising: A comparison of consumer perception. *Journal of Advertising Research*. 34(5), 191-215.
- Mehrabian, A., & Russel, J. A. (1974). An approach to environmental psychology. Cambridge, MA: The MITpress
- Mohan, G., Sivakumaran, B. & Sharma, P. (2013). Impact of store environment on impulse buying behavior. *European Journal of Marketing*, 47 (10), 1711-1732.
- Morales, L.F., Dasso, S., & Gomez, D.O. (2005). Giving firms an “E” for effort: consumer responses to high effort firm. *Journal of consumer research*, 31(4), 806-812.
- Mortiner, G, & Clake, P. (2010). Geveler differences and store characteristics: a study of supermarket consumer. *International Journal of Retailing Services*, 57(4), 301-322
- Miller, D. (2008). *Retail marketing: A Branding and innovation approach*. Tilde University press, victoria.

- Milliman, R. E. (1982), using background music to affect the behavior of supermarket shoppers. *Journal of marketing*, 46(3), 86-91
- Newman, A. J., Yu, D. K., & Oulton, D. P. (2002). New insights into retail space and format planning from customer-tracking data. *Journal of retailing and consumer services*, 9: 253-258
- Ogden, J. R. (2005). *Retail: Integrated retail management*, Houghton Mifflin, Boston, MA.
- Palacios, L. L., Lopez, R P & Redondo, Y. P. (2016). Cognitive, affective and behavioral responses in mall experience: A qualitative approach, *International Journal of retail and distribution management*, 44 (1): 4-21.
- Pantano, E, & Naccarato, G. (2010); Entertainment in retailing the influences of advanced technologies. *Journal of retailing and consumer services* 17 (3), 200-204.
- Prasad, C. J., & Aryash, A. R. (2011), Effect of shopper attributes on retail format choice behavior for food and grocery retailing in India. *International Journal of Retail and Distribution Management*. 39(1): 68-86
- Seoak, Y. K. (2009). Influence of retail store environmental cues on consumer patronage behavior across different retail store formats. *An empirical analysis of US Hispanic consumers. Journal of Retailing and Consumer Services*, 16(5), 329-339.
- Singh, H. (2006). The importance of customer satisfaction in relation to customer loyalty and retention, UCTI.INP-06-06, May 2006; Kuala Lumpur.
- Titus, P.A. & Everett, P. B (1995); the consumer retail search process: a conceptual model and research agenda. *Journal of the Academy of Marketing Science* 23(2), 106-119.
- Turley, L. & Milliman, R. (2000). Atmospheric effects on shopping behavior: A review of the experimental evidence. *Journal of Business Research*, 49(20), 193-211.
- Tyle, T.R. (1989). The psychology of procedural justice: A test of the group value model. *Journal of personality and social psychology*, 57(5), 830-838.
- Vrechopoulos, A. P., Okeefe, R. M., Doukidi, G. I. & Siomkos, G. J. (2004). Virtual store layout: An experimental comparison in the context of grossary retail. *Journal of retailing*, 80(1):13-22.
- Yoo, C., & MacInnis, D. (2005). The brand attitude information process of emotional and informational ads. *Journal of Business Psychology*, 52(3), 2-22
- Zeithaml, V., Berry, L., & Parasuraman, A. (1996). The behavioural consequences of service quality. *The journal of marketing*, 31-46

Empirical Relationship between International Trade and Economic Growth in Nigeria

¹Agbonkhese Abraham Oni, Ph.D & ²Bashiru Salihu, M.Sc.

¹Department of Economics, Faculty of Arts and Social Sciences, Admiralty University of Nigeria, Ibusa, Delta State, Nigeria. Email: abraham_oni@yahoo.com

²Department of International Relations, Faculty of Arts and Social Sciences, Admiralty University of Nigeria, Ibusa, Delta State, Nigeria. Email: Merotz51@gmail.com

Abstract

Empirical studies have shown contradictory and/or inconclusive findings between international trade and economic growth in Nigeria and this necessitated this study. The study empirically examined the relationship between international trade and economic growth in Nigeria from 1986 to 2021 and used the Autoregressive Distributed Lag Model. Augmented Dickey-Fuller unit root test result established that, at levels and first difference, some variables were stationary while others were not. The Bounds test of co-integration showed a long run equilibrium relationship among the variables. The result further revealed that trade openness had negative and insignificant relationship with economic growth in Nigeria, because of the country's narrow production and export base dominated by low value products such as primary commodities. Foreign direct investment was positively and significantly related to economic growth, implying that foreign direct investment was a major determinant of economic growth in Nigeria. Exchange rate was positively insignificant to economic growth in Nigeria, due to exchange rate volatility. The study recommended that, government should strengthen trade openness by dismantling trade barriers, add value to their exports and provide a level playing field for trading partners to achieve the desired gains from international trade vis-à-vis a sustainable economic growth in Nigeria.

Keywords: *Empirical Relationship, International Trade, Economic Growth, Nigeria and ARDL.*

1. Introduction

In the past thirty years, the global economy has expanded dramatically. This expansion has been aided by the even faster increase in global trade. Trade has expanded as a result of both technological breakthroughs and purposeful efforts to reduce trade barriers. Many emerging economies have yet to open their economies to fully capitalize on the opportunities for economic growth through trade, but some have. The residual trade barriers in the industrialized world are largely in agricultural goods and labor-intensive manufacturing sectors, where developing economies have a competitive advantage. Increased trade liberalization in these

industries would benefit both developed and developing countries, assisting the world's poorest people in overcoming the most severe kinds of poverty (IMF, 2001).

International trade has piqued the curiosity of economists and policy makers. The opportunity to buy goods that are either not producible domestically or are only producible at a greater cost makes international trade relevant. Further, it allows a country to export its domestically produced goods to other countries. However, the performance of an economy in terms of output growth rates and per capita income has been based on both domestic and international transportation of goods and services, as well as local production and consumption. International trade was so highly regarded by classical and neoclassical economists in the development of a nation that they saw it as a growth engine (Jhingan, 2006). It is important to note that trade is frequently seen as a key factor in economic growth and development all over the world. For a developing nation like Nigeria, trade makes a significant contribution to overall economic growth. This is largely due to insufficient domestic supply, the majority of the necessary components for development, such as raw materials, capital goods, and technical know-how, are imported. Although locally produced commodities are gathered for export and imported goods are spread throughout the nation even into the interior, it is vital to keep in mind that internal trade supplements external trade.

Academic scholars and professionals have vigorously debated the impact of trade on economic growth, particularly in developing nations. The widespread consensus is that trade openness fosters an environment where high-quality products may grow the economy (Aradhyula, Rahman & Seenivasan, 2007). As a result, it is believed that global trade contributes significantly to economic growth. Many nations continue to seek international trade despite the fact that it has historically been turbulent and prone to reoccurring trade barriers due to the significant, advantageous externalities connected with it. Trade's role as a driver of economic growth is rapidly becoming critical, particularly in African countries, where natural resources abound but industries to convert them into consumer commodities and other intermediate products are lacking. As a result, external commerce in these resources is required to supplement domestic processing businesses and encourage economic growth (Asiedu, 2013).

Over time, international trade has proven to be effective in encouraging the growth and development of nations, particularly emerging countries such as Nigeria. As a result of globalization, which has transformed the world into a global village, countries can now engage more effectively and efficiently. Nigeria, like many other countries today, values international trade since their economy can no longer run independently. Nations are currently competing through trade to enhance the form, quality, packaging, and quantity of their products. Thus, international trade, or the movement of goods and services across national borders, is here to stay. This has created a fierce debate among academics and researchers on whether international trade stimulates economic growth. As a result, academics in Nigeria and other nations have conducted a variety of empirical studies to determine the impact of global trade on economic growth.

However, many of such studies have investigated international trade and economic growth nexus and came with three strands: positive, negative and non-linear relationship. For example, Emehelu (2021) reported the absence of long run relationship between international trade and economic growth while others revealed that, there was a long run relationship between international trade and economic growth (Ashrafi & Kalaiah, 2020; Mogoe & Mongale, 2014; Lawal & Ezeuchenne, 2017, Bashir 2018 and Lot, 2017). Most of these empirical studies on the relationship between international trade and economic growth have been within the Nigerian economy and other countries, which have been largely cross sectional in nature (Frag, Ab-Rahim & Mohd-Kamal, 2021; Nzabirinda, Ivang & Uwayezu, 2021).

This paper extends the current literature between international trade and economic growth in a number of significant ways. Firstly, this study uses the Autoregressive Distributed Lag (ARDL) model because it shows simultaneously the short run and long run interactions among the variables concerned unlike previous studies like Nzabirinda et. al. (2021); Frag et. al. (2021); Iwuoha and Awoke (2020); Lawal and Ezenchenne (2017); Mogoe and Mongale (2014) employed Cointegration and Vector Error Correction Model (VECM); Ashrafi and Kalaiah, (2020); Nwamuo (2019); and Adeleye et. al. (2015) explored Cointegration, Error Correction Model (ECM) and Granger Causality while Emehelu (2021); Afolabi et. al. (2017), Lot (2017); and Nageri, Ajayi, Olodo and Abina (2013) used the Ordinary Least Squares (OLS); and Iyoha and Okim (2017) utilized the Panel Data model to

ascertain the relationship between international trade and economic growth. Secondly, this study extends its scope beyond those of earlier studies by extending the period from 1986 to 2021 which captures international trade relationship with economic growth in the 80s, 90s, 2000, and beyond.

Some of the empirical studies have shown positive impact of international trade on economic growth while some others reported negative and/or inconclusive impact of international trade on economic growth in Nigeria, Africa and the world. These contradictory and/or inconclusive findings created a knowledge gap to be filled by this study. The paper is organized into five sections. Following the introductory section is section two which provides the literature review. Section three discusses the research methodology while section four presents the empirical results and discussion. Section five concludes the study and makes appropriate policy recommendations.

2. Literature Review

This section reviews related literature in this area of study and is structured into conceptual framework, empirical review and theoretical framework.

Conceptual Framework: International trade, according to Bakari (2017), is the exchange of capital, goods, and services across international borders or territories. In most countries, such trade accounts for a major portion of GDP. Agu, Amuka, and Ugwu (2016) described export trade as the sale of a good or service by citizens of one country to citizens of another in exchange for money, usually in the form of foreign currency. They also defined international trade as a voluntary interchange of commodities and services across international frontiers. Regional integration and international trade appear to be natural ways for an economy to produce at lower unit costs for a broader (regional) market (Ajayi & Araoye 2019). International trade, often known as international or external trade, is defined as commercial activity that takes place between two or more countries (Adeleye, Adeteye, & Adewuyi, 2015).

Empirical Review: Ashrafi and Kalaiyah (2020) examined the relationship between foreign trade and Afghanistan's economic growth from 2002 to 2018 using Johansen Co-integration and Granger Causality tests. The results indicated a long-

term relationship between foreign trade and economic growth in Afghanistan, while the Granger-Causality revealed a unidirectional and bidirectional causal link between foreign trade and economic growth in Afghanistan. Mogoe and Mongale (2014) examined how foreign commerce affected South Africa's economic expansion using co-integrated vector auto regression methodology. The result indicated that all the variables had a long-term economic link with growth in South Africa. Nzabirinda, Ivang, and Uwayezu (2021) investigated how commerce from around the world affected Rwanda's economic development from 1990 to 2017. Descriptive data analysis and the Vector Error Correction Model (VECM) were utilized. The results of the empirical study showed that, Gross Domestic Product and both trade openness and foreign direct investment were positively correlated. In another study, Farag, Ab-Rahim, and Mohd-Kamal (2021) examined the short- and long-term causal links between international trade and economic growth in Libya over the 1990–2017 study periods. Johansen co-integration test, VECM error correcting model, and the Wald test were used to accomplish its objective. The results suggested both a short-term causal relationship between Libya's exports and imports and economic growth as well as a long-term association between foreign trade and that country's economic growth.

Emehelu (2021) ascertained the effects of global trade on Nigeria's economic growth from 1981 to 2018 using the Ordinary Least Squares (OLS) approach. The result revealed the absence of a long-run equilibrium link between exchange rates and economic growth, while exchange rates had a negative and insignificant relationship with economic growth. Lawal and Ezeuchenne (2017) used Co-integration and Vector Error Correction Model (VECM) to investigate how foreign trade affected Nigeria's economic expansion for the period 1985 to 2015. The study found that, there was a long-term relationship between trade and economic growth, that import and trade openness were minor in the short term but significant in the long term, and that export and trade balance were important in both the short and long terms. Similarly, Iwuoha and Awoke (2020) employed Johansen co-integration and Vector Error Correction (VECM) methods to analyze time series data for the years 1981–2017 in order to evaluate the effects of global trade on economic growth in Nigeria. The vector error correction model results indicated that, net export had an insignificant positive impact whereas trade openness, the real exchange rate, interest rates, and foreign direct investment had a significant negative impact on Nigeria's economic growth over the study period. Afolabi, Danladi, and Azeez (2017) examined the effects of global trade on economic

growth in Nigeria over the period 1981 and 2014 using the Ordinary Least Squares (OLS) method. The result revealed that government expenditures, interest rate, import and export were all positively significant, while exchange rate and foreign direct investment were negatively insignificant to the growth process of the Nigerian economy.

Nwamuo (2019) evaluated the effect of global trade on Nigeria's economic growth using annual time series data that span through 1981 to 2018. The result showed that the variables were co-integrated, demonstrating a long-term relationship between them. The regression analysis revealed that while trade openness had a negative effect on Nigerian economic growth, export, import, and exchange rate had favourable effects, while the result of the error correction revealed a quick return to long-run equilibrium. Bashir (2018) examined the impact of international trade on economic growth in Nigeria from 1971 to 2016 using ARDL Bound testing approach. The result establishes that international trade bears positive and significant effect on economic growth in Nigeria over the study period. Lot (2017) analyzed the impact of international trade on the Nigerian economy over the period 1990 to 2016. The ordinary least squares (OLS) technique was used. The result showed that the variables were related over the long term, while in the parsimonious error correction model, import had a negative impact, while export and foreign direct investment had positive effects on economic growth.

Theoretical Framework: This study used Heckscher-Ohlin Theory to drive the theoretical framework. Heckscher-Ohlin's Endowments were the foundation for this idea. This theory incorporates three main trade theories: Eli Heckscher (1919) and Bertil Ohlin (1933) developed the theories of absolute advantage, comparative advantage, and factor endowment. The Heckscher-Ohlin theory of factor endowment predicts that nations will export commodities that heavily rely on locally abundant factors, while she will heavily import goods that significantly rely on locally scarce factors. One of the most significant theories of global trade is the Heckscher-Ohlin theory, generally known as the factor proportions model. By adding a second factor of production, the Richardian model was considerably expanded upon. It is one of the simplest general equilibrium models that allows for simultaneous interactions across factor markets, goods markets, and national markets in its two-by-two-two variation, that is, two goods, two factors, and two

countries. As a result, the Heckscher-Ohlin theory holds that all markets are interrelated, which means that Nigeria's trading relationship with other countries around the world contributes to global economic growth in some way through market activities. The Heckscher-Ohlin hypothesis holds that as all markets are interrelated, trade contacts between Nigeria and other nations of the world contribute in some way to the global economy's expansion through market activities.

3. Research Methodology

Data Source: This study used annual time series data for the period of 1986 to 2021 and sourced from Central Bank of Nigeria and World Development Indicators (WDI). To measure the relationship between international trade and economic growth, this study explores the Autoregressive Distributed Lag Model (ARDL). The ARDL estimation is important because it shows simultaneously the short run and long run interaction among the variables concerned.

Autoregressive Distributed Lag (ARDL) Model: Pesaran and Shin (1999) introduced the ARDL model and was further extended by Pesaran, Shin and Smith (2001). This approach is based on the estimation of an unrestricted error correction model. It has some advantages over the conventional co-integration method of Johansen and Juselius (1990) co-integration test. While the Johansen co-integration methods are sensitive to the size of the sample, the ARDL test is suitable even if the sample size is small (Pesaran, Smith & Shin, 1996b). In addition, with the presence of omitting variables and autocorrelation problems which are very common in time series analysis, the short and long-run components of the model can be estimated at the same time.

Bounds Co-integration Testing Approach: Autoregressive Distributed Lag (ARDL) approach to co-integration or Bounds procedure for a long run relationship is used irrespective of whether the underlying variables are $I(0)$, $I(1)$ or a combination of both. In such situation, the application of ARDL approach to co-integration will give realistic and efficient estimates.

Augmented Dickey Fuller Unit Root Test: An important step in the estimation of the ARDL model is to test for the stationarity of the variables to ensure that none of the variables is integrated of order two. Autoregressive distributed lag model

allows for a mix of I(0) and I(1) variables in an estimation. The Augmented Dickey Fuller test (Dickey & Fuller, 1981) unit root test is used to establish the order of integration of the variables and is generally modelled as:

$$\Delta Y_t = \varpi_1 + \delta Y_{t-1} + \sum_{i=1}^n \alpha_i \Delta Y_{t-i} + \varepsilon_t \dots\dots\dots (1)$$

$$\Delta Y_t = \varpi_1 + \varpi_t + \eta Y_{t-1} + \sum_{i=1}^n \beta_i \Delta Y_{t-i} + \varepsilon_t \dots\dots\dots (2)$$

Where Δ is the first difference of Y , while ϖ_1 and ϖ_t are the intercept term and time trend respectively, while n is the lag value. The Augmented Dickey-Fuller test is taken as superior to the Dickey Fuller because the Dickey Fuller test does not take account of possible autocorrelation in the error process (Uko & Nkoro, 2016).

Model Specification

In view of the synthesis above and particularly following empirical variables in the study, a simple model of Autoregressive Distributed Lag (ARDL) framework is hypothesized to capture the dynamics of the relationship between international trade and economic growth. The relevant variables in the empirical estimation are: Real gross domestic product (RGDP), Trade Openness (TROP), Foreign Direct Investment (FDI), Exchange Rate (EXR), and Inflation (INF). Inflation is included as a conditioning variable. The specification of the model follows the one introduced by Pesaran and Smith (2001) and specified below:

$$\begin{aligned} \Delta \text{LN}RGDP_t = & \beta_0 + \sum_{i=1}^n \beta_1 \Delta \text{LN}RGDP_{t-i} + \sum_{i=1}^n \beta_2 \Delta \text{LN}TROP_{t-i} + \sum_{i=1}^n \beta_3 \Delta \text{LN}FDI_{t-i} + \sum_{i=1}^n \beta_4 \Delta \text{LN}EXR_{t-i} \\ & + \sum_{i=1}^n \beta_5 \Delta \text{LN}INF_{t-i} + \beta_6 \text{ECM}(-1) + \psi_1 \text{LN}RGDP_{t-1} + \psi_2 \text{LN}TROP_{t-1} + \psi_3 \text{LN}FDI_{t-1} + \psi_4 \text{LN}EXR_{t-1} \\ & + \psi_5 \text{LN}INF_{t-1} + \varepsilon_t \dots\dots\dots (3) \end{aligned}$$

Where:

- LN is the log of the variable
- RGDP: Real Gross Domestic Product (measure of economic growth)
- TROP: Trade Openness
- FDI: Foreign Direct Investment
- EXR: Exchange Rate

INF: Inflation Rate

ECM(-1): Error Correction Term

ε_t : Error Term

In addition, β_1, \dots, β_5 are the short-run dynamic parameters of the model and β_6 is the speed of adjustment of parameters while ψ_1, \dots, ψ_5 are the long run parameters.

A priori Expectation: It is expected that trade openness and foreign direct investment should have positive relationship with economic growth, while exchange rate could have positive or negative relationship with economic growth depending on the policy direction of the government and inflation should have an inverse relationship with economic growth.

4. Discussion of Estimated Results

Unit Root Test Results

Table 1: Augmented Dickey-Fuller (ADF) Test Statistic Results at Levels and First Difference

Variables		ADF Test Statistic	Critical Value	Order of Integration	Decision
LNRGDP	Level	-3.718119 (0.0360)**	-3.562882	1(0)	Stationary
	First Diff.	-3.154580 (0.1105)	-3.548490	1(1)	Not Stationary
LNTROP	Level	-6.315419 (0.0000)**	-3.544284	1(0)	Stationary
	First Diff.	-10.06444 (0.0000)**	-3.548490	1(1)	Stationary
LNFDI	Level	-2.415960 (0.3655)	-3.544284	1(0)	Not Stationary
	First Diff.	-7.589890 (0.0000)**	-3.548490	1(1)	Stationary
LNEXR	Level	-2.588280 (0.2875)	-3.544284	1(0)	Not Stationary
	First Diff.	-6.087493 (0.0001)**	-3.548490	1(1)	Stationary
LNINF	Level	-3.570072 (0.0473)**	-3.544284	1(0)	Stationary
	First Diff.	-4.008978 (0.0198)**	-3.574244	1(1)	Stationary

Note: Probabilities are in parentheses. **All the variables are significant at 5% level.

Source: Authors' Estimation Results, 2022.

Table 1 presents the result of the Augmented Dickey-Fuller test at levels and first difference. It shows that none of the variable is integrated of order two and that the variables are not integrated of the same order. The unit root test results have mixed results; hence the use of ARDL Bounds test for co-integration is valid.

ARDL Bounds Test of Co-integration

The result of the test provides the existence of long run relationship among the variables as shown in Table 2.

Table 2: ARDL Bounds Test of Co-integration Result

Computed Value			Critical Value Bounds			Decision
Test Statistic	Value	K	Significance	I(0) Bound	I(1) Bound	
F-Statistic	29.24446	4	10%	2.2	3.09	Existence of a long run relationship.
			5%	2.56	3.49	
			2.5%	2.88	3.87	
			1%	3.29	4.37	

Source: Authors' Estimation Result, 2022

The Bounds' test result as shown in Table 2 indicates two set of critical values for a given level of significance, that is, the lower bound I(0) and the upper bound I(1). Since the computed F-statistic is 29.24446 and it exceeds the upper bound at the 10 per cent significant level, it can be concluded that there is evidence of a long run relationship among the series, implying that the hypothesis of no long run relationship is rejected. Therefore, proceed to estimate both short and long run dynamics using the Autoregressive Distributed Lag model estimation.

Table 3: ARDL Cointegrating and Long Run Form

Cointegrating Form					Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Variable	Coefficient	Std Error	t-Statistics	Prob.
D(LNTROP)	-0.304998	0.361338	-0.844081	0.4139	LNTROP	0.073081***	0.016294	4.485033	0.0006
D(LNFDI)	0.188625***	0.025644	7.355646	0.0000	LNFDI	-0.001184	0.005818	-0.203489	0.8419
D(LNEXR)	0.041785	0.083107	0.502788	0.6235	LNEXR	-0.043443***	0.010271	-4.229637	0.0010
D(LNINF)	-0.340685***	0.083847	-4.063179	0.0013	LNINF	-0.015290***	0.005112	-2.990947	0.0104
CointEq(1)*E									
CT	8.817581***	0.932336	9.457516	0.0000	C	-0.241082***	0.015467	-15.58698	0.0000

$$EC = LNRGDP - (-0.3050*LNTROP + 0.1886*LNFDI + 0.0418*LNEXR - 0.3407*LNINF + 8.8176)$$

Source: Authors' Estimation Results, 2022.

Empirical Relationship between International Trade and Economic Growth in Nigeria

The result in Table 3 shows that in the short run, all the variables are correctly signed except foreign direct investment which is also not significant. Foreign direct investment exerts indirect effect on economic growth in Nigeria in the short-run. This result is against the a priori expectations of the study and this could possibly be as a result of declining foreign direct investment in Nigeria, perhaps due to lack of enabling environment such as macroeconomic stability (relative price and exchange rate stability), and infrastructural development (good road network, steady power supply) and the over-reliance on crude oil. Following the Prebisch-Singer hypothesis, a country specializes and concentrates mainly on mono-product exports due to declining state of her terms of trade. Trade openness, exchange rate and inflation are correctly signed and significant in the determination of growth rate in Nigeria. As expected, the Error Correction Term (ECT) which accounts for the speed of adjustment from short-run disequilibrium to long-run equilibrium is negative and statistically significant. This indicates that the speed of adjustment is more than 24 per cent.

On the long run, all the variables met their a priori expectations except trade openness and exchange rate. Trade openness has negative and insignificant relationship with economic growth in Nigeria. This may not be unconnected with the country's narrow production and export base dominated by low value products such as raw materials and primary commodities, trade barriers, limited access to international market in industrial countries, and overdependence on a monocultural product. However, this result is in tandem with that of Iwuoha and Awoke (2020), Nwamuo (2019) and Lawal and Ezeuchenne (2017) who investigated the impact of international trade on economic growth in Nigeria. This is contrary to the result of Nzabirinda, Ivang and Uwayezu (2021) and Obadan and Okojie (2010) who examined international trade and economic growth in Rwanda and Nigeria respectively; and affirmed that trade openness had positive impact on economic growth.

Foreign direct investment is positively and significantly related to economic growth. This implies that foreign direct investment is a major determinant of economic growth in Nigeria. This result has aligned with Lot (2017) and Nzabirinda *et al.* (2021) who evaluated the effect of international trade on economic growth of Nigeria and Rwanda; and found a positive relationship between foreign direct

Empirical Relationship between International Trade and Economic Growth in Nigeria

investment and economic growth, while Afolabi, Danladi and Azeez (2017), Bashir (2018), Iwuoha and Awoke (2020), and Enu *et. al.* (2013) reported that foreign direct investment had significant negative impact on economic growth.

Exchange rate has a positive and insignificant relationship with economic growth in Nigeria. This is as a result of the exchange rate that has been deteriorating consistently and persistently in value as against major international currencies. This is due to exchange rate volatility. This result is in consonance with Iyoha and Okim (2017), Bashir (2018), Mogoe and Mongale (2014) and Eravwoke and Oyovwi (2012) as against the results of Emehelu (2021) and Usman (2011) who reported that exchange rate has negative and insignificant impact on the growth of the Nigerian economy. Inflation rate is negative and significant to economic growth in Nigeria. This means that inflation has deleterious effect on economic growth in Nigeria. This means that consumers’ price index is high leading to a high cost of living in Nigeria and its attendant effect on economic growth. The result is contrary to Onuorah (2018) and Adelowokan and Maku (2013) who found that inflation had a positive relationship with economic growth. In synopsis, the result indicates that, there are short run and long run relationships between international trade and economic growth in Nigeria.

Residual Tests: In a bid to ensure the reliability, accuracy, and validity of the statistical inferences to be drawn from the study, this section presents the outcome of the robustness tests conducted. The robustness tests are residual and stability tests.

Table 4: Breusch-Godfrey Serial Correlation LM Test and Breusch-Pagan-Godfrey Heteroskedasticity Test Results

Breusch-Godfrey Serial Correlation LM Test Result				Breusch-Pagan-Godfrey Heteroskedasticity Test Result		
F-statistic	4.084474	Prob. F(2,11)	0.0508	0.501472	Prob. F(18,13)	0.9129
Obs*R-squared	8.794700	Pro.Chi-Square (2)	0.0123	13.11365	Prob. Chi-Square(18)	0.7848
Scaled explained SS				4.518058	Prob. Chi-Square(18)	0.9994

Source: Authors’ Estimation Results, 2022.

The Breusch-Godfrey test of serial correlation is based on the null hypothesis that the residuals are not serially correlated. From the result shown in Table 4, the p-value of the F-statistic indicates that there is 10% level of significance, which means that we cannot reject the Breusch-Godfrey test null hypothesis that, there is no serial correlation in the residual. Therefore, there is the absence of serial correlation in the residual. The Breusch-Godfrey-Pagan test of heteroscedasticity is based on the null hypothesis that the error variances are equal (Homoscedasticity). From Table 4, the p-values of the F-statistic are 91.29, 78.48 and 99.94 per cents respectively, which are well above the 10 per cent level of significance. This implies that we cannot reject the null hypothesis, and therefore, the residual has no heteroscedasticity problem but rather homoscedastic.

Stability Test: The method used by Brown, Durbin, and Evans (1975) to examine the short-run stability of the model's parameters was examined in the study. They did this by plotting the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSq). The CUSUMSq test is useful when there is a haphazard and unexpected departure from the constancy of regression coefficients, whereas the CUSUM test is particularly useful for detecting systematic changes in the regression coefficients. The results of the two experiments are depicted in Figures 1A and 1B. Essentially, parameter instability is established if the CUSUM of residuals and CUSUM of squares of residuals fall outside the bands denoted by the two crucial lines (dotted lines). According to the graphs in figures 1 and 2, the CUSUM remains inside the 5% critical line throughout the period under examination, suggesting parameter stability throughout the estimating period.

Parameters Stability Test Result

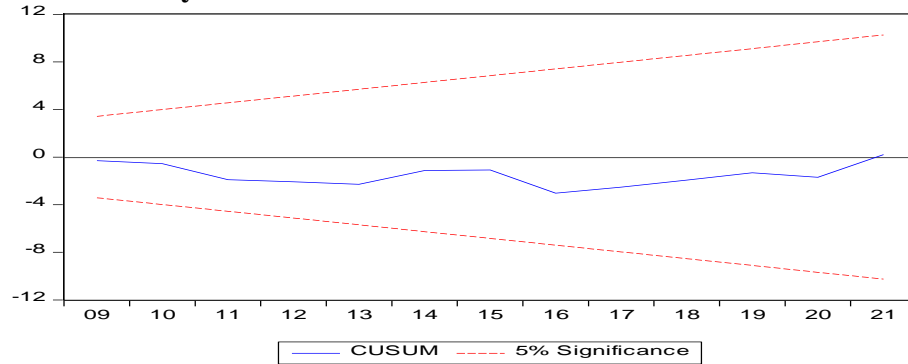


Figure 1: Cumulative Sum of Recursive Residual (CUSUM)

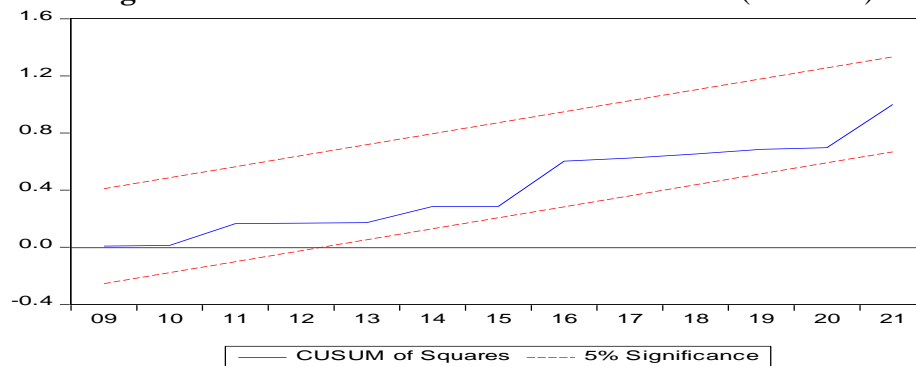


Figure 2: Cumulative Sum of Squares of Recursive Residual (CUSUMSq.)

Source: Authors' Graphs, 2022.

5. Conclusion and Recommendations

The study investigated the relationship between international trade and economic growth in Nigeria from 1986 to 2021. The Augmented Dickey-Fuller (ADF) test for unit root showed that there are mix of I(0) and I(1) variables in the model which justifies the use of Autoregressive Distributed Lag (ARDL) estimation technique. The ARDL Bounds test for co-integration showed that, there is a short run and long run equilibrium relationships among the variables of interest. The Autoregressive Distributed Lag estimation result revealed mixed results in the parameters used. Trade openness has negative and insignificant relationship with economic growth as a result of the country's narrow production and export base dominated by low value products such as primary commodities, while foreign direct investment is positively and significantly related to economic growth in Nigeria, implying that foreign direct investment is a major determinant of economic growth in Nigeria.

Empirical Relationship between International Trade and Economic Growth in Nigeria

Exchange rate has a positive and insignificant relationship with economic growth due to exchange rate volatility, while inflation rate is negatively and statistically significant to the growth of the Nigerian economy, meaning that inflation has deleterious effect on economic growth in Nigeria. In a nutshell, international trade is very important to economic growth and development providing the enabling macroeconomic environment and a level playing field for all trading partners.

Based on the findings, the study makes the following specific policy recommendations:

- (i). Government should strengthen trade openness by dismantling trade barriers, add value to their exports and provide a level playing field for all trading partners to achieve the desired gains from international trade vis-à-vis a sustainable economic growth in Nigeria.
- (ii). Government should provide the enabling environment such as macroeconomic stability (relative price and exchange rate stability) and infrastructural development (good road network, steady power supply) which will lower the cost of doing business in Nigeria and ultimately attract more foreign direct investment inflows into the country.
- (iii). Stable exchange rate is an impetus to economic growth and a way of attracting local and international investors. Therefore, the monetary authorities should have the political will to implement policies that will stem the tide of exchange rate volatility that can enhance the growth of the Nigerian economy. The Central Bank of Nigeria should intervene in the foreign exchange market by way of supplying more foreign currencies especially the United States Dollars to ameliorate its volatility, since the current policy of market determined exchange rate has failed.
- (iv). The Nigerian monetary authority should provide an appropriate inflation rate ideally a single digit rate that will positively impact on the country's economic growth. High inflation rate will adversely affect economic growth leading to rapid deterioration in the value of a nation's currency and erode the confidence of foreign investors thereby discouraging foreign direct investment inflows into the economy. This can be achieved through the amelioration of exchange rate volatility and import reduction.

References

- Adeleye, J. O., Adeteye, O. S. & Adewuyi, M. (2015). Impact of International Trade on Economic Growth in Nigeria. *International Journal of Financial Research*, 6(3), 163.
- Adelowokan. O. A. & Maku, A. O. (2013). Trade Openness, Foreign Investment and Economic Growth in Nigeria: A Long-Run Analysis. *European Journal of Globalization and Development Research*, 7(1), 446-458.
- Afolabi, B., Danladi, J. D. & Azeez, M. I. (2017). International Trade and Economic Growth in Nigeria. *Global Journal of Human-Social Science: Economics*, 17(5), 28-39.
- Agu, A. O., Amuka, J. I. & Ugwu, C. C. (2016). Globalization and Relative Trade of a Developing Country: Evidence from Nigeria. *Journal of International Business and Economics*, 4(2).
- Ajayi, E. O. & Araoye, F. E. (2019). Trade Openness and Economic Growth in Nigeria. *International Journal of Economics and financial Management*, 4(2), 25-45
- Aradhyula, S. V., Rahman, T. & Seenivasan, K. (2007). Impact of International Trade on Income and Income Inequality. *American Agricultural Economics Association*, 520, 43.
- Asiedu, K. M. (2013). Trade Liberalization and Growth: The Ghanaian Experience. *Journal of Economics and Sustainable Development*, 4(5).
- Ashrafi, S. A. R. & Kalaiah, V. (2020). International Trade and Economic Growth in Afghanistan. *Journal of Xi'an University of Architecture & Technology*, XII (VI), 1799.
- Bashir, U.F (2018). The impact of International Trade on Economic Growth in Nigeria: Autoregressive Distributed Lag (ARDL) Bound Testing Approach. *UMYUK Journal of Economics and Development*, Vol 1, no 3. September,
- Brown, R. L., Durbin J. & Evans, J. M. "Techniques for Testing the Constancy of Regression relationships over Time." *Journal of the Royal Statistical Society*, vol. Series B, pp. 149-162, 1975.
- Bakari, S. (2017). Appraisal of Trade: Potency on Economic Growth in Sudan: New Empirical and Policy Analysis. *Asian Development Policy Review*, 5(4), 213-225.
- Dickey, D. A. & Fuller, W. A. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica*, 49, 1057-1072.

- Eravwoke, K. E. & Oyovwi, D. O. (2012). Growth Perspective via Trade in Nigeria: A Co- Integration Approach. *African Research Review* 6(1), 18-26
- Emehelu, C. I. (2021). Effects of International Trade on Economic Growth of Nigeria. *International Journal of Innovative Finance and Economics Research*, 9(1), 144-157.
- Enu, P., Havi, E. D. K. & Hagan, E. (2013). The Impact of Foreign Trade on Economic Growth in Ghana. *International Journal of Academic Research in Economics and Management Sciences*, 2(5), 174-191.
- Farag, F. S., Ab-Rahim, R. & Mohd-Kamal, K. A. (2021). Foreign Trade and Economic Growth Relationship: Empirical Evidence from Libya. *International Journal of Academic Research in Business and Social Sciences*, 11(4), 181-190.
- Heckscher, E. F. (1919). The Effect of Foreign Trade on the Distribution of Income. *Harvard University Press*, Cambridge, MA.
- Iyoha, M., & Okim, A. (2017). The Impact of Trade on Economic Growth in ECOWAS Countries: Evidence from Panel Data. *CBN Journal of Applied Statistical*, 8(1).
- IMF (2001). Global Trade Liberalization and the Developing Countries. *International Trade and the World Economy*.
- Iwuoha, J. C. & Awoke, C. F. (2020). Impact of International Trade on Nigeria's Economic Growth. *UMYUK Journal of Economics and Development (UJED)*, 2(1), 112.
- Jhingan, M. L. (2006). *Money, Banking, International Trade and Public Finance* (7th ed.). New Delhi: Vrinda Publication
- Johansen, S. & Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration-with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.
- Lawal, E. O. & Ezeuchenne, K. (2017). International Trade and Economic Growth in Nigeria. *Journal of Humanities and Social Science*, 22(6), 35-43.
- Lot, M. E. (2017). Effect of International Trade on Economic Growth in Nigeria. *International Journal of Humanities and Social Sciences*, 4(12), 89-102.
- Mogoe, S. & Mongale, I. (2014). The Impact of International Trade on Economic Growth in South Africa: An Econometrics Analysis. *Mediterranean Journal of Social Sciences*, 5(14), 60-66.

- Nageri, K .I, Ajayi ,O; Olodo, H. B; & Abina, B. M. (2013). “An Empirical Study of Growth through Trade”. Nigerian Evidence. *Arabian Journal of Business and Management Review*. 3(5)
- Nwamuo, C. (2019). Impact of International Trade on Economic Growth: The Nigerian Experience. *European Journal of Business and Management*, 11(34).
- Nzabirinda, E., Ivang, A. E. & Uwayezu, S. T. (2021). Econometrics Analysis of Impact of International Trade on Economic Growth in Rwanda. <https://www.researchgate.net/publication/352020085>.
- Obadan, M. I. and Okojie, E. I. (2010): “An Empirical Analysis of the Impact of Trade on Economic Growth in Nigeria”, *Jos Journal of Economics*, 4(1)
- Ohlin, B. (1933). Interregional and International Trade. *Harvard University, MA. Press, Cambridge*
- Onuorah, A.C. (2018). Trade Liberalization and Economic Growth in Nigeria. *International Journal of Advanced Research*, 6(9), 389 – 400.
- Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationship. *Journal of Applied Economics*. 16(3), 289-326.
- Pesaran, M. H., Smith, R. J. & Shin, Y. (1996b). Testing for the Existence of a long run Relationship, *DAE Working paper*, 9622, Department of Applied Economics, University of Cambridge.
- Pesaran, M. H. & Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*, Strom, S. (ed.) Cambridge University Press.
- Usman, O.A (2011), Performance evaluation of foreign trade and economic growth in Nigeria: *Research Journal of Finance and accounting*, 2(2).
- Uko, A. K. & Nkoro, E. (2016). Inflation Forecast with ARIMA, Vector Autoregressive and Error Correction Models in Nigeria, *EJEFAS*, 50.

Deficit Financing, Debt Servicing and Economic Development in Nigeria

Ogwu, Chika Beatrice

Department of Economics, Faculty of Social Sciences, Ignatius Ajuru University of Education, Rumuolumeni, Rivers state, Nigeria

Abstract:

The study empirically investigated the relationship between deficit financing, debt servicing and economic development in Nigeria over the time period from 1981 - 2022. Government External Debt (GED), Government Domestic Debt (GDD), Cost of Servicing Debt (CSD), Inflation rate (INFL) and Interest rate (INTR) were used as dimensions of independent variables, while Human Development Index (HDI) was used as the dependent variable. Annual time series data on the targeted variables were obtained from secondary sources, including the Central Bank of Nigeria annual statistical bulletin, World Bank development indicators. The Unit root test shows that cost of debt servicing, government domestic debt, government external debt, interest rate and human development index are all stationary after first difference $I(1)$, while inflation rate was stationary at level $I(0)$. The data were analyzed using the Autoregressive Distributed Lag (ARDL). The empirical results show that human development index has a negative relationship with the variables of CSD, GED, INF and INTR both in the long run and short run, while GDD is positively signed and statistically significant only in the long run. The study recommends amongst others that the Federal government should reduce the rate at which it results to loans, especially foreign loans as a means of financing budget deficits.

Keywords: Budget deficit, Debt servicing, Economic Development, Nigeria, ARDL

1. Introduction

Government borrowing is the total amount of money borrowed by the federal government to pay for public services and benefits. The government announces an annual borrowing program in the Budget because tax and non-tax revenue is insufficient to fund the government's spending program. Government borrowing becomes necessary, according to, when government revenue sources are insufficient to finance growing government expenditures (Abdulkarim & Saidatulakmal, 2021). One of the keys to accelerating economic growth and development is government's borrowing at a reasonable rate to fund public and infrastructure development. Joy and Panda (2020) asserted that excessive

borrowing without proper investment planning can result in a high debt burden and interest payments, which can have a number of negative consequences for the economy. Most governments have massive outstanding debts as a result of this process over the years. Nigeria has struggled with a higher debt service to revenue ratio since the recession in 2016, as revenues have fallen in direct correlation with the drop in oil prices. In 2019, Nigeria's government spent 2.45 trillion Nigerian Naira on debt service, out of total revenue of N4.1 trillion, for debt service to revenue ratio of 59.6 percent. The rising cost of Nigeria's debt profile breached a new milestone with the country's debt service as a percentage of revenue rising to 83 percent in 2020. This suggests that 83 percent of the revenue generated in 2020 was used to meet debt service obligations and this is worrisome. In 2020, the government spent N1.76 trillion to service domestic debt, compared to a budget of N1.87 trillion. A total of N553 billion was spent on foreign debts, compared to a target budget of N805.47 billion. Lower interest rates on foreign borrowing, as well as very limited borrowing from the foreign debt market during the year, are likely to have contributed to the decrease. Instead of the budgeted N272.9 billion, the government only contributed N4.58 billion to the sinking fund. The sinking fund is required to set aside funds that will be used to pay down other loans in the future, such as bonds. The government's constant borrowing from the domestic market was preventing private businesses in need of credit from obtaining financing for expansion and growth (Ogunjimi, 2019).

A government is deemed to run a budget deficit when its aggregate expenditure exceeds its revenue in the national budget of the fiscal year (Adam, 2019 & Kimberly, 2019). One sagacity drawn from the words of Adam (2019) and Kimberly (2019) is that, deficit incurred in the budget is as a result of excess spending relative to income. In order to remedy budget deficit, government primarily resorts to numerous means. Such means include; cutting down government expenditures, borrowing and/or resorting to financial aids from donor agencies. Amongst these strategies in recent years, borrowing seems to be the easiest and more accessible option to most governments globally. Furthermore, budget deficit can be financed through foreign or domestic borrowing and/or the both. Irrespective of the source, borrowing is at a cost, which may exert positive or negative implication (s) on the economy as a whole. It is on this premise that Keynes (1936) argues that government spending is a stimulant to investment, which triggers rise in income, output and employment. This implies that if properly used, budget deficit has the tendency of improving the level of economic growth and development of any economy. However, it may as well push the economy into

inflationary pressure, which may eventually lead to recession, hence, retarding economic activity (Adam, 2019). This experience is applicable to both developed and developing economies particularly Nigeria.

Therefore, the study examines the relationship between budget deficit, debt servicing and economic development in Nigeria. This article is organized as follows; the introductory part in section one, section two contains the literature reviewed, which includes conceptual clarifications, theoretical framework and empirical review. The methodology, which contains the model design, model specification is in section three and section four presents the empirical results and discussions. The work is concluded with the conclusion and recommendations in section five.

2. Literature Review

2.2 Conceptual Clarification

2.2.1 Government Borrowing

Government Borrowing refers to the government sector's demand for loans obtained through financial markets to fund purchases not covered by taxes. In terms of the circular flow, this is one of two family saving demands that are channeled into financial markets, the other being investment borrowing. Government borrowing is a loan obtained by the government that is recorded as capital receipts in the Budget document. It's the total amount of money borrowed by the federal government to provide government services and benefits. Because tax and non-tax revenue is insufficient to fund the government's spending program, the government announces an annual borrowing program in the Budget (Economic times, 2020). The most common way for government to borrow is to issue securities, such as government bonds and bills. Countries with poor credit ratings may borrow directly from supranational entities (US legal, 2021). The key to accelerating economic growth and development is borrowing at a reasonable rate to support public and infrastructural improvements. Excessive borrowing without sufficient investment planning, on the other hand, can lead to a significant debt burden and interest payments, which can have a number of negative economic implications (Joy & Panda, 2020). The government's capacity to invest more productively in

infrastructure, education, and public health may be hampered by rising debt levels (Soludo, 2003).

2.2.2 Economic Development

Todaro and Smith (2015) conceptualized development as “the sustained elevation of an entire society and social system toward a “better” or “more humane” life. Economic development strategies used to focus on industrialization and infrastructure, but since the 1960s, they've become more concerned with poverty alleviation. Improvements in a range of sectors or indicators, such as literacy rates, life expectancy, and poverty rates, are often associated with economic development (Pritchett, Woolcock, & Andrews 2013). Economic development is the transformation of simple, low-income national economies into modern industrial economies (Myint & Krueger, 2000). The human development index (HDI), which is published on a regular basis by the United Nations Development Programme (UNDP) in its Human Development Report, is the most well-known indicator of development. The HDI is a composite indicator that ranks countries based on how well they perform across three categories. Specifically, life expectancy, education, and GDP per capita in PPP dollars (UNDP, 2011)

2.3 Theoretical Literature

2.3.1 Keynesian Theory of Budget Deficit

The theory of budget deficit was introduced by Keynes (1936). The theory is based on two major assumptions. First, this theory assumed the possibility that some economic resources are unemployed. Secondly, it presupposes the existence of a large number of myopic liquidity constrained individuals. This second assumption guarantees that aggregate consumption is very sensitive to changes in disposable income.

According to Keynes (1936) large public debt is considered as a national asset rather than a liability and that steady deficit spending is necessary to foster rapid growth and development of the economy. This is contrary to the classical view which opposed the intervention of the government in the economy. In other words, Keynesian doctrine conflicts with the liberal assumptions and principles of the classical theory. In response to the challenges of those times, especially the great

depression, the Keynesian doctrine attaches great importance to government whose interventions in the economy is considered helpful in complementing the activities of the free market system. Therefore, the Keynesian economists propose a positive relationship between deficits financing and economic development.

2.3.2 Functional Finance Theory

This theory was propounded by Lerner in 1943. The theory is based on three major assumptions: First, it is the role of government to stave off inflation and unemployment by controlling consumer spending through the raising and lowering of taxes. Secondly, the purpose of government borrowing and lending is to control interest rate, investment levels, and inflation. Lastly, government should print, hoard, or destroy money as it sees fit to achieve these goals. Lerner formulated two principles of functional finance: government should spend more if there is unemployment, and government should supply more money if interest rates are too high. Generally, the theory is based on the idea that in a monetary economy of production the government has no financial impediments to engage in macroeconomic policies in order to adjust effective demand to the level of potential output. Functional finance has influenced many heterodox economists who advocate expansionary macroeconomic policies.

The opponents of the functional finance theory include Greenspan (2009) and Aspromourgos (2015). For Greenspan (2009), public borrowing tends to generate adverse effects on the markets, including labor and financial markets. Similarly, Aspromourgos (2015) posit that debt liabilities raise additional difficulties and constraints, primarily because they involve additional assets that government cannot freely create. However, this study is in accordance with the functional finance theory as it deepens the understanding of the implications of external debt on economic growth and development.

2.3.3 Human Development Theory

Human development theory incorporates concepts from a variety of disciplines, including ecology, sustainable development, feminism, and welfare economics. It avoids normative politics in favor of focusing on how social and instructional capital might be leveraged to maximize the overall value of human capital in an economy. The most well-known human development theorists are Amartya Sen

and Mahbub ul Haq. Democracy and the protection of human rights, according to Sen, are beneficial to development. Freedom of the press, expression, assembly, and other such liberties boost the chance of honest, clean, and good government. The process of human development entails the expansion of human freedom. It is "the expansion of freedoms that enable people to live lives that are meaningful to them." Political freedom, economic opportunity, social opportunities, transparency, and security, according to Sen, are five forms of interconnected freedoms. By providing public education, health care, social safety nets, strong macroeconomic policies, productivity, and environmental protection, the state may help to foster liberties. Freedom entails not just the ability to do something, but also the ability to make it happen. "Economic possibilities, political liberties, social powers, and the enabling condition of good health, basic education, and the support and growth of initiatives" all influence what people can achieve (their potential). Sen has influenced UNDP thinking on human development, including the creation of the human development index (HDI), a composite index that measures a country's average achievement in three basic dimensions of human development: a long and healthy life, as measured by life expectancy at birth; knowledge, as measured by the adult literacy rate and the combined gross enrolment ratio for primary, secondary, and higher education (Sen, 2001).

2.4 Empirical Literature

Abdulkarim and Saidatulakmal (2021) evaluated the influence of government debt on Nigeria's economic growth. Using annual data from 1980 to 2018 and the Autoregressive Distributed Lag approach, Real GDP, domestic debt, external debt, debt service payment, foreign reserve position, interest rate, gross fixed capital creation, and foreign direct investment were the variables of research. External debt was found to be an obstacle to long-term growth, while having a growth-enhancing effect in the short run. Domestic debt had a large favorable long-term influence on growth, while having a negative short-term impact. Debt service payments slowed growth both long and short term, proving the debt overhang effect. According to the conclusions, the government should invest the borrowed monies in diversifying the economy's productive base. Igudia (2021) examined the impact of external debt servicing on human capital development in Nigeria for the period of 1960 to 2019 using OLS regression technique for the empirical data analysis. The results of the study revealed that external debt servicing has an inverse relationship with HCD, whereas external debt stock has a significantly positive impact on HCD. The study concluded that though expenditure in education and health services (HCD) may

have improved because of external borrowing, such an increase may have been as a result of its contribution to the payment of salaries of workers in both the education and health sectors rather than in real terms. The study recommended that non-politicised feasibility studies should precede every request for funds that would require external or internal financing at both levels of government with non-partisan project monitoring units that will involve the communities where the projects are sited to supervise the execution of such projects.

Okoro and Oksakei (2020) studied the impact of fiscal deficits on macroeconomic variables in Nigeria from 2000 to 2015 using the Autoregressive Distributed Lag (ARDL) as the estimation model. The results of the study revealed that federal government deficits have significant impact on external debt and inflation in Nigeria. The study concluded that fiscal deficits play important role in shaping macroeconomic performance in Nigeria. The study recommended that, the fact an upward trend of inflation is expected in a period of expansionary fiscal policy, borrowing by government, therefore, which may be the starting point of increasing fiscal deficit, should be anchored on infrastructure or other projects that may likely increase economic growth and development of the country.

Emefiele, *et al* (2019) studied the deficit budget and its effect on the growth of Nigeria economy from 1990 to 2016, using multiple regression analysis to analyze the sourced data. The results of the study revealed that budget deficit has negative impact economic growth in Nigeria. The study concluded that the negative impact of the budget deficit on the economic growth is because governments are short of resources to meet their expenses in the long run. Their savings as well as revenues are not enough to meet their expenses. The study recommended that the Government should strive to finance budget deficit by improving on the present revenue base rather than resulting to domestic borrowing. This can be achieved by improving its revenue sources and efficient pursuit of tax reforms

Aero and Ogundipe (2018) carried a study on fiscal deficit and economic growth in Nigeria for the period of 1981 to 2014, using Threshold Autoregressive Model to analyze the sourced data. The empirical analysis of the study revealed that fiscal deficit has significant negative impact on economic growth in Nigeria. The study concluded that the Nigerian economy has been characterized by continuous fiscal deficits, which has not positively contributed to economic growth. The study

therefore, recommended that the government should increase capital spending and ensure that an optimal fiscal deficit bracket level of 5% is maintained.

Drawing support from Okun's law and Phillips curve theoretical frameworks, Onwe (2014) carried out a study on the impact of deficit financing on economic growth in Nigeria for the period of 1970 to 2013, using the regression analysis technique. The study applied econometrics method in the analysis of the secondary data. The results of the study revealed that deficit financing has a negative implication on economic growth in Nigeria. The study concluded that deficit financing through Banking System Source of Deficit Financing (BSF) and Ways and Means Source of Deficit Financing (WM) will reduce economic growth thereby causing instability in the economy. The study, therefore, recommended that deficit financing in Nigeria should be focused on the productive sectors of the economy. This is because deficit financing has merely resulted in economic instability indicating that sound policies are needed to achieve economic stability in Nigeria.

3. Methodology

Model Design

The research design adopted is the quasi-experimental design called correlational research design which according to Hassan (1995), aims at establishing relationships between variables and to know if the relationship that exist is significant. Another justification for the use of quasi-experimental research design is that the study is descriptive and analytical.

Model Specification

Human development index (HDI)

The mathematical form of the model is expressed as

$$\text{HDI} = F(\text{GDD}, \text{GED}, \text{CSD}, \text{INTR}, \text{INFR}) \dots \dots \dots 1$$

Where HDI = Human development index

HDI is the dependent variable

The linear regression models based on the above functional relation is expressed as:

$$\begin{aligned}
 & \text{HDI} = \beta_0 + \beta_1 \text{GDD} + \beta_2 \text{GED} + \beta_3 \text{CSD} + \beta_4 \text{INTR} + \beta_5 \text{INFR} + \text{U} \dots \dots \dots 2 \\
 & \Delta \text{HDI}_t = \alpha_{0i} + \beta_{1i} \text{HDI}_{t-1} + \beta_{2i} \text{GDD}_{t-1} + \beta_{3i} \text{GED}_{t-1} + \beta_{4i} \text{CSD}_{t-1} + \beta_{5i} \text{INTR}_{t-1} + \beta_{6i} \\
 & \text{INFR}_{t-1} + \sum_{i=1}^q \alpha_1 \Delta \text{HDI}_{t-1} + \sum_{i=1}^{p^1} \alpha_2 \Delta \text{GDD}_{t-1} + \sum_{i=1}^{p^2} \alpha_3 \Delta \text{GED}_{t-1} + \sum_{i=1}^{p^3} \alpha_4 \Delta \text{CSD}_{t-1} \\
 & + \sum_{i=1}^{p^4} \alpha_5 \Delta \text{INTR}_{t-1} + \sum_{i=1}^{p^5} \alpha_6 \Delta \text{INFR}_{t-1} + \text{et} \dots \dots \dots 3
 \end{aligned}$$

ECM model is also specified as:

$$\begin{aligned}
 \Delta \text{HDI}_t = & \alpha_{0i} + \sum_{i=1}^q \alpha_{1i} \Delta \text{HDI}_{t-1} + \sum_{i=1}^{p^1} \alpha_{2i} \Delta \text{GDD}_{t-1} + \sum_{i=1}^{p^2} \alpha_{3i} \Delta \text{GED}_{t-1} + \sum_{i=1}^{p^3} \alpha_{4i} \Delta \text{CSD}_{t-1} \\
 & + \sum_{i=1}^{p^4} \alpha_{5i} \Delta \text{INTR}_{t-1} + \sum_{i=1}^{p^5} \alpha_{6i} \Delta \text{INFR}_{t-1} + \lambda \text{ECT}_{t-1} + \text{et} \dots \dots \dots 4
 \end{aligned}$$

$$B_1 \geq 0, \beta_2 \geq 0, \beta_3 \geq 0, \beta_4 \geq 0, \beta_5 \geq 0, \beta_6 \geq 0$$

All other variables and parameters are previously interpreted.

4. Empirical Results and Discussions

Table 1: Augmented Dickey Fuller and Philips Perron Unit Root Test for HDI Model

Variable	ADF					PP				
	Level Coeff.	5% CV	1 st Diff Coeff.	5% CV	I(.)	Level Coeff.	5% CV	1 st Diff Coeff.	5% CV	I(.)
CSD	-3.113	-3.524	-4.922	-3.563	I(1)	-3.058	-3.524	-12.841	-3.527	I(1)
GDD	-1.171	-1.952	-3.269	-1.951	I(1)	-2.863	-1.950	-1.976	-1.950	I(1)
HDI	-1.488	-3.524	-5.560	-3.526	I(1)	-1.643	-3.524	-5.560	-3.527	I(0)
GED	-1.550	-3.527	-3.778	-3.527	I(1)	-1.046	-3.524	-3.638	-3.527	I(1)
INTR	-1.950	-1.538	-2.676	-1.950	I(1)	-2.070	-3.524	-7.318	-3.527	(1)
INFL	-3.506	-2.946	--	--	I(0)	-3.099	-2.941	--	--	(0)

Table 1, shows the result of unit root test conducted using both Augmented Dickey Fuller Test (ADF) and Philips Perron Test (PP). To get a robust result for this empirical study, we adopted the outcome of Philip Perron statistics, due to the robustness of the result in point of structural breaks. In line with the preposition of Jenkins and Box (1970). Variable that are not stationary at levels would be made stationary after first difference. The following variables in the model were made stationary after first difference, CSD, GDD, HDI, GED, and INTR, while INFL was stationary at level.

ARDL model Result

The ARDL Bound Test, Short-run and Long-run Results for **HDI** Model

Table 2: Bound Test for HDI Model

F-Statistics	7.522385		
K	5		
Significant levels	Critical Bound I0	Critical Bound II	
10%	2.26	3.35	
5%	2.62	3.79	
2.5%	2.96	4.18	
1%	3.41	4.68	

Source: Computed from E-views 10

The result presented in table 2 shows that the calculated F-statistics of 7.522385 is higher than the upper bound critical value of 3.79 at 5% significant level. Based on this result, it is concluded that a long run relationship exists among the variables of **HDI** model. So, there is a long run co-integration amongst the variables in the model.

Table 3: ARDL-ECM Short-run Results for HDI model

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(CSD)	0.005593	0.002711	2.062915	0.0539
DLOG(CSD(-1))	-0.004951	0.002335	-2.120873	0.0481
DLOG(GDD)	0.005954	0.009221	0.645623	0.5267
DLOG(GED)	-0.001791	0.001443	-1.240980	0.2305
D(INFL)	0.000211	0.000129	1.635630	0.1193
D(INFL(-1))	-0.000054	0.000145	-0.368504	0.7168
D(INFL(-2))	0.000253	0.000107	2.358936	0.0298
D(INTR)	-0.000570	0.000484	-1.178098	0.2541
D(INTR(-1))	-0.000984	0.000534	-1.843428	0.0818
D(INTR(-2))	0.001355	0.000418	3.240655	0.0045
CointEq(-1)	-0.261618	0.072624	-3.602392	0.0020

$$\text{Cointeq} = \text{HDI} - (0.0468*\text{LOG}(\text{CSD}) - 0.0269*\text{LOG}(\text{GDD}) - 0.0068*\text{LOG}(\text{GED}) - 0.0010*\text{INFL} - 0.0045*\text{INTR} + 0.5774)$$

Source: Computed from E-views 10

The result of the short run dynamic regression for Human development index model is presented in table 3, the result indicates that in the short run, the variables of cost of servicing debt coefficient in lag 1 and interest rate coefficient lag 2 have negative relationship with the coefficient of human development index and are all statistically significant in the short run. It thus means that CDS and INTR coefficients impact negatively on HDI in Nigeria. Government domestic debt coefficient and inflation rate coefficient positively and insignificantly impact on human development index in Nigeria in the short run.

The ECM coefficient has a negative value of -0.261618 which suggests 26% speed of adjustment. This means that correction towards the long run equilibrium will be restored at approximately 26% speed of adjustment.

Table 4: Estimated long run ARDL result

Variables	Coefficient	Std. Error	t-statistics	Prob.
C	0.577365	0.053120	10.869027	0.0000
Log (CSD)	-0.046819	0.010409	-4.497753	0.0003
Log (GDD)	0.026889	0.011093	2.423914	0.0261
Log (GED)	-0.006844	0.005416	-1.263599	0.2225
INFL	-0.001021	0.000728	-1.403701	0.1774
INTR	-0.004540	0.001825	-2.488173	0.0229

Source: Computed from E-views 10

The result of the long run regression estimates for human development model is presented in table 4. The regression estimates indicate that cost of servicing debt coefficient is negatively signed and it is also significant in the long run. Government domestic debt coefficient is positively signed and statistically significant in the long run. While all other variables are negatively signed, however, coefficient of interest rate is statistically significant in the long run.

The finding showed that domestic debt is positively signed and has a statistically significant effect on economic development), external debt has a negative and non-significant effect on economic development of the nation. The poor performance of the external debt could be attributed partly to payment of principal and interest that is usually repatriated outside the country, whenever payment is made and partly to poor management of the loan obtained. On the other hand, cost of servicing debts has been rising, thereby leading to budget deficits and more borrowing to finance the budget. These findings are in line with previous findings by Abdulkarim and Saidatulakmal (2021) and Igudia (2021).

Residual Diagnostics Test for HDI

TESTs	F-Statistics (Prob)	R-Square (Prob)
Heteroskedasticity test: Breusch-Pagan-Godfrey	1.225 (0.3374)	17.172 (0.3087)
Serial Corr. LM test: Breusch-Godfrey	3.033 (0.0764)	9.3474(0.0993)

Source: Computed from E-views 10

The null hypothesis states that there is no heteroskedasticity. Since each of the F-statistics probability value is greater than 5%, we cannot reject the null hypothesis of no heteroskedasticity. It thus means that the result of the model can be taken seriously, that is the set of explanatory variables included in the model do not suffer the problem of heteroskedasticity.

On the other hand, the null hypothesis of LM test for serial correlation stated that there is no serial correlation. Since each of the F-statistics probability value is greater than 5%, we cannot reject the null hypothesis of no serial correlation.

Stability Tests for HDI

The test is meant to test the appropriateness and stability of the estimated model. This is to check if the coefficient of the model are stable and can be used for prediction. The stability test was conducted using the cumulative sum (CUSUM) and cumulative sum of square (CUSUMSQ) tests. If the plot of the CUSUM and CUSUMSQ for the model lies within the 5 percent critical bound, it is suggestive that the model is stable. From figure 1 and 2 below, the model is stable.

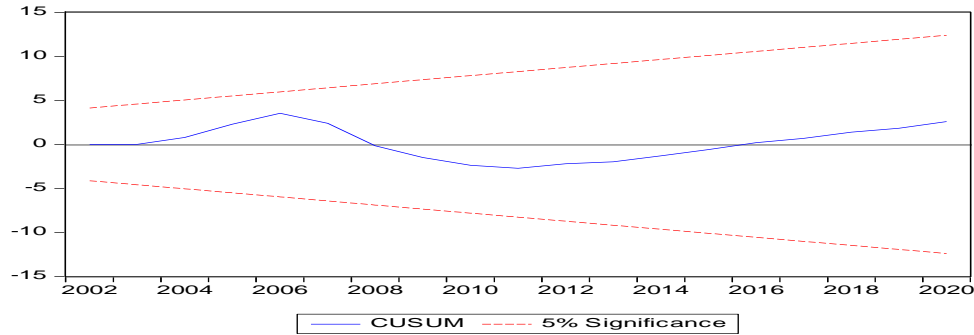


Figure 1. Cumulative sum for HDI Model

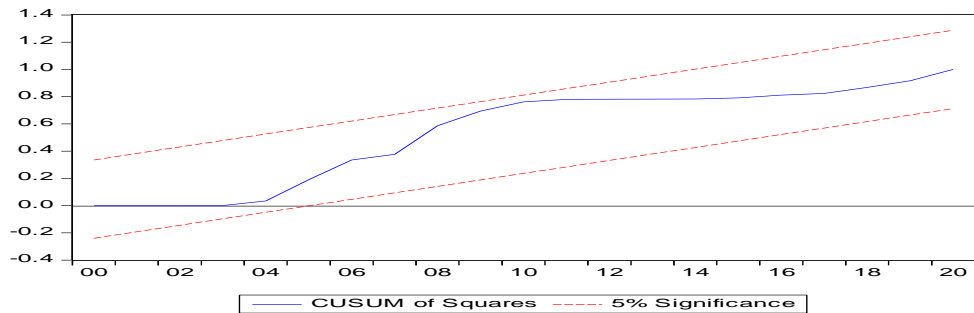


Figure 2. Cumulative sum of Square for HDI Model

5. Conclusion and Recommendations

This study examined the impact of budget deficit, debt servicing on economic development in Nigeria from the period 1981 – 2022. The study investigated the long run and short run relationship between the variables using Autoregressive Distributed Lag (ARDL). The empirical results show that human development index has a negative relationship with the variables of CSD, GED, INF and INTR both in the long run and short run, while GDD is positively signed and statistically significant only in the long run. Based on the findings, the study makes the following recommendations: Since government domestic borrowings are positively and statistically significant to Nigeria's development, the government should direct borrowed monies to sectors/areas of the economy that will spur growth and

development, such as education, health, industry, and transportation. The education and health sectors can be enhanced with enough funding and equipment. To stimulate investment, the interest rate should be modest. At the very least, interest rates should not exceed single digits, borrowers should be able to obtain loans, and the repayment period should be extended, so that consumers do not feel trapped each time they obtain a loan. The Federal government of Nigeria should reduce the rate at which it results to loans, especially foreign or external loans as a means of financing budget deficits.

References

- Abdulkarim, Y., & Saidatulakmal, M. (2021). The impact of government debt on economic growth in Nigeria. DOI: [10.1080/23322039.2021.1946249](https://doi.org/10.1080/23322039.2021.1946249)
California
- Adam, B. (2019). *Budget deficit*. <https://www.investopedia.com/contributors>.
- Aero, O., & Ogundipe, A. A. (2018). Fiscal deficit and economic growth in Nigeria: Ascertaining a feasible threshold, *International Journal of Economics and Financial Issues*, 8(3), 296-306.
- Aspromourgos, T. (2015). There is no alternative. The financial crisis and the problem of bail-outs. *AQ-Australian Quarterly*, 81(1), 4-9.
- Emefiele, C., E. N. & Obim, R. I. (2019). Deficit budget and its effect on the growth of Nigeria economy. *IIARD International Journal of Banking and Finance Research*, 5(1): 44-52.
- Greenspan, A. (2009). The fed didn't cause the housing bubble. *Wall Street Journal*, 11(1), 1-3.
- Hassan, T. (1995). *Understanding research in education*. May field publishing company.
- Igudia, P. O. (2021). Impact of external debt servicing on human capital development in Nigeria. *International Journal of Business & Law Research*, 9(3), 38-55.
- Jenkins, G. M. & Box G. E. P. (1970). *Time series analysis, forecasting and control*: San Francisco, Holding-Day.
- Joy, J., & Panda, P. K. (2020). Pattern of public debt and debt overhang among BRICS nations: An empirical analysis. *Journal of Financial Economic Policy*, 12(3), 345– 363.
- Keynes J. M., (1936). *The general theory of employment, interest and money*, Palgrave Macmillan, ISBN 978-0-230-00476-4

- Kimberly, A. (2019). *Budget deficits and how to reduce them: Causes and effect. The Balance.* www.thebalance.com
- Myint, H., & Krueger, A. O. (2000). *Economic development. encyclopedia Britannica.* <https://www.britannica.com/topic/economicdevelopment>.
- Ogunjimi, J. A. (2019). The impact of public debt on investment: Evidence from Nigeria. Development Bank of Nigeria. *Journal of Economic and Sustainable Growth*, 3(2), 1–28.
- Okoro, A. S., & Oksakei, Y. P. (2020). Impact of fiscal deficits on macroeconomic variables in Nigeria. *International Journal of Accounting Research*, 6(1),1-13.
- Onwe, B. U. (2014). Implication of deficit financing on economic growth in Nigeria, *European Journal of Accounting, Auditing and Finance Research*, 2(10), 122-135.
- Pritchett, L., Woolcock, M., & Andrews, M. (2013). Looking like a state: Techniques of persistent failure in state capability for implementation. *Journal of Development Studies*, 49:1, 1–18.
- Sen, A (2001). Development: which way now? *Economic Journal*. 93 (372): 745–62. doi:10.2307/2232744. JSTOR 2232744.
- Soludo, C.C. (2003). Debt poverty and inequality in Okonjo Iweala, Soludo, and Muntar (Eds), *The Debt Trap in Nigeria*, Africa World Press NJ, 23(74).
- Todaro, M.P.& Smith, S.C. (2015). *Economic development*. Pearson education limited, Edinburgh gate, Harlow CM 20 2JE.
- Trading Economics (2020). *Nigeria – human development index (HDI).*<https://tradingeconomics.com/nigeria/human-development-index-hdi-wb-data.html>.
- United Nations Development Programme (2011). Exploring human development indicators. *Human Development*, 167.
- US legal (2021). Government borrowing law and legal definition. [+https://definitions.uslegal.com/g/government-borrowing](https://definitions.uslegal.com/g/government-borrowing)
- Walgenbach, P. H., Dittrich, N. E., & Hanson, E. I. (1973). *Financial accounting*, New York: *Harcourt Brace Javonovich, Inc.*, 429.

Forecasting Inflation and Exchange Rates under Financial Uncertainty: New Evidence from Nigeria

***Bukola ODEKUNLE⁴, Eunice Oluganna⁵ & Ebenezer Adesoji OLUBIYI⁶**

¹Department of Economics, Kwara State University, Malete, Kwara State

²Department of Accounting & Finance, Kwara State University, Malete, Kwara State

³Department of Economics, Federal University of Agriculture, Abeokuta;
Researcher African Economic Research Consortium (AERC), Nairobi Kenya;
Research Fellow, Trade Policy Research and Training Programme, Department of Economics, University of Ibadan

¹Odekunlebukola2015@gmail.com*, ²olugannaeunice@gmail.com,
³olubiyiea@funaab.edu.com

Abstract

The increasing dealing of professional exchange rate forecaster in the financial market exposes the decision of the financial investor to financial uncertainty. Thus, this paper examines the impact of financial uncertainty on professional exchange rate forecast in Nigeria using a monthly data from the period January, 2006 to June, 2022. The paper considers monetary policy and financial uncertainty to account for different dimensions of uncertainty. Based on the Bayesian liner regression utilized, it is observed that stock market activities proxied by stock price index, improves economic performance in Nigeria. The forecasting performance is evaluated by comparing two of the most common measures to judge forecasting accuracy, Root Mean Square Errors (RMSE) and Mean Absolute Error (MAE). The result of the RSME, MAE and MAPE indicate a good accurate prediction of the model, hence, the model is perfect and no error. Therefore, the model has a good forecasting performance. However, interest rate and stock price are predicted to fall. The study concludes that past values of inflation rate, interest rate and stock market price are significant determinant for forecasting professional exchange rate in Nigeria. Policy implication from this result is that government should be prepared to combat high rate of inflation because of its negative

impact on the welfare of the populace. The investors can take advantage of future low interest rate and stock price by planning to expand their businesses. Since stock market activities improves economic performance, increasing investment will lead to increase in demand and increase in profit. Since the exchange rate is predictable, the professionals will also take advantage of this to increase their profits.

Keywords: *uncertainty, heteroskedasticity, forecast, professionals.*

1. Introduction

Exchange rate forecast plays a pivotal role in open economy macroeconomic models as it informed the decision process of financial market investors and of importing or exporting firms. The decision of financial market is largely exposed to uncertainty due to changes in exchange rate (Beckmann & Czuday, 2016). Financial uncertainties is financial related phenomenon that is beyond control, but still affect the decision of financial agents as they are a strong measure of the behaviour of professional forecasters (Stavrakeva & Tang, 2020). Professional forecasters are the economic agents who take the responsibility of foreseeing prices, especially in the financial market, that is, what the price likely to be in the financial markets which determine the reaction of investors in the same market. So, whatever the speculators in the financial say, will definitely inform the decision of the investors whether to invest or not. However, if speculators are expecting high level uncertainty, it will discourage investors which will in turn have a negative effect on the economy.

Theoretical and empirical evidence clearly show that studies on financial uncertainty on inflation and exchange rate forecast are still scanty and limited and most evidences in this regard is largely from developed economy (Ajayi & Mougoue, 1996, Bofinger & Schmidt, 2003, Beckmann & Czuday, 2016, Norira & Bush, 2019; Stavrakeva & Tang, 2020), but they do not provide unified information. Hence, their conclusion cannot be generalized and objectively relied on to inform policy for the Nigeria financial market investors. More so, studies on uncertainty either focused on trade or on growth (Norira & Bush, 2019); but do not consider the possibility of financial and monetary policy uncertainty on exchange rate forecast (Beckmann & Czuday, 2016). The study contributes to the literature by analyzing the role of uncertainty in exchange rate changes and professional

forecast. Also, the study seeks to unravel the link between financial uncertainty and professional exchange rate forecast, in the context of important variables in Nigeria, namely; interest rate, inflation rate. From a theoretical perspective, unexpected change in exchange rate is a result of unexpected information or changes in fundamentals. In fact, Beckmann and Czuday, (2016) opined that exchange rate forecast requires an understanding of fundamentals. This will draw attention of policy makers and government to see the need to establish strategies and policies with the sole aim of reducing changes in exchange rate.

Following this introductory part, section two deals with the literature review, methodology is in section three, result and discussion is captured in section four and finally, conclusion and recommendations.

2. Literature Review

2.1. Theoretical Review

2.1.1 Keynesian uncertainty theory

According to Keynes, uncertainty concerning the future enters into the economic scheme in two ways; first, uncertainty concerning the future of the rate of interest and second, uncertainty concerning the effect of the future course of events on the yield of investment in as-sets. While these are distinct elements of uncertainty about the future, they have analogous functions in determining, respectively, the actual rate of interest and the marginal efficiency of capital. Uncertainty concerning the future is one of the major factors determining the expectations of prospective yields of assets, and the prospective yield is one of the factors of the marginal efficiency of capital, which in turn is a factor of the rate of investment. In *The General Theory*, confidence is “when what we expect but turning out other way.” (p.148), and it depends on agents’ experience, which might not be enough for accurate mathematical expectation (p.152). Subsequently, future is uncertain and it cannot be predicted accurately. Also, the lapse of time between moment of taking the decision and the outcome of the choice made is another source of uncertainty, due to unforeseen circumstances which might likely occur during the gap (Keynes, 1936).

In the same vein, the environment where decision is made also has effect the behavior of the agents. In the Post Keynesian tradition, individual interact with

environment as well as the agents, they always find a way to manage uncertainty in form of animal spirits. For Keynes (1936, p. 161) decision is not when you multiply the weighted average of utilities by probabilities in quantitative terms, but they are obsessed by animal spirit, which signifies lack of trust and confidence in their own knowledge. Specifically, when people stage expectation about future happening, they consider other people's opinion, thereby leaving them with lack of confidence in oneself. According to Keynes, he called this "Beauty contest paradigm" (Keynes, 1936, ch.13). It is seen as it occurs and it depends on the level of belief of someone that it will occur, this is what Keynes was saying about agent's confidence. How expectation is been describe here metamorphose into focus-values conception, in which individuals the decision of individuals is based on the whether there would be profit or loss in future. Individuals' focus on future benefits shows their desire for expected outcome, while their focus on any possibility of loss is link to their potential surprise.

2.1.2 Objective vs subjective probability theory

According to Keynes, probability should be seen as a statistical frequency. Probability should consider the level of belief from every evidenced that are available, but the frequencies should be treated as a unique case of evidence (1921, p. 109). The level of the argument includes the level of the relevant evidence, the completeness level of the evidence and the balance of level of relevant knowledge and ignorance (Runde, 1990). Decision-making under uncertainty depends on how relative degree of different expected outcome are been interpreted (Fontana, and Gerrard, 2004). Therefore, mathematical expectations should not be used as a judging criterion for decision making concerned. Thus, according to Post Keynesian postulation, objective probability theory is only a welcome approximation but cannot be taken as a general theory, as it implies that people in the same situation and condition would make the same conclusion and judgment (Dow, 2014).

2.1.3 Disaster myopia hypothesis

The disaster myopia hypothesis has been introduced by Guttentag and Herring (1986) to explain why crises are a recurrent event. Under very optimistic circumstances, investors disregard any relevant information concerning the

increasing degree of risk. Disaster myopia is seen a way of underestimate shocks probability, which goes up as time unfolds since the last shocks took place (Guttentag and Herring, 1986). For instance, the 2007-2008 financial crises can be taken as a case of disaster myopia in both housing and bonds markets. Disaster myopia occurs during trade cycle in the economy, when economy is not stable. In this situation, markets are control by unrealistic good expectation about prices of asset; and investors are over confidence in their own ability about trade. It is interpreted by two behavioral heuristics; the availability heuristic and the threshold heuristic. The availability heuristic concerns with the calculation of the probability of a shock, which depends on information that is available with the occurrence and what individual can think first in their minds. The threshold heuristic occurs when probability gets a particular level, and at that level, it is been treated as zero (Guttentag & Herring, 1986). If higher market participants underestimate the probability of a low frequency but of high importance crisis, then economic system becomes more exposed (Guttentag & Herring, 1986).

2.1.4 Bayesian theory

On the other hand, the Bayesian theory refers to uncertainty as a notion that can be captured by subjective probabilities, which are adjusted for decision-weights. The theory allows individuals to incorporate their perception of reality, depending on the context. Subjective probability theory could provide a better understanding of uncertainty, but still the incorporation of the notion of weight is insufficient (Neal, 1996). The future possibilities might not be known, and therefore it would be impossible to assign subjective probabilities that sum up to 1 (Dow, 2015). Moreover, Bayesian theory assumes that individuals possess the capacity to make subjective probability estimates, so that immeasurable risk remain irrelevant, while fundamental uncertainty remains a disturbance factor (Dow, 2015).

2.2 Empirical review

2.2.1 Exchange rate forecast and monetary policy

Lutz and Mark (2000) used a nonlinear econometric model to explain the observed volatility and changes in the nominal and real exchange rate over time. However, they found out that there is strong exchange rates predictability for about two to three years, but not at short range. They concluded that predictability of nominal exchange rates improves at a longer horizon. Ronald and Menkhoff (2014)

demonstrate that good exchange rate forecasts are related to a proper understanding of fundamentals, specifically good interest rate forecasts. They concluded that interest rate increase relates to a currency appreciation, but only good forecasters get expected interest rates right. Bofinger and Schmidt (2003) analyses the characteristics of professional exchange rate forecasts for the €/US-\$ rate and they found that quality of forecasts produced by professional economists is rather poor and incompatible with the rational expectations hypothesis. Eze and Okotori (2021) show that there is a significant link between exchange rate forecast and monetary policy uncertainty and the link is more pronounced in the short run.

2.2.2 Exchange rate expectations and macroeconomic uncertainty

Obstfeld and Rogoff (1996) build a model which presents exchange rates as an asset price. The price of exchange rate shows the expectation about economic fundamentals from the perspective of fiscal and monetary policies. Similarly, Engel, Mark, and West (2007) concluded that when there is high level of economic uncertainty, economic agents adjust their expectation up, causing exchange rates to fluctuate. Baker, Bloom and Davis (2013) found out that increased in uncertainty from economic policy significantly reduces the level of real GDP, level of investment and employment level in the United States. Because the level of risk in the state will increase, greater economic policy uncertainty will have a negative impact on the level of investment and hiring in the economy. Hina and Qayyum, (2015) argued that nominal exchange rate forecasting has always been one of the most tedious tasks in economics. They used the Frankel (1979) monetary model of exchange rate to analyse the behavior of Pakistan rupee per unit of US dollar over the period of the first quarter of 1982 to last quarter of 2012. Their study shows that there is a long run cointegrating vector between fundamentals. Kandil (2004) examined the influence of exchange rate fluctuation on the growth rate of output and inflation, using the sample of 22 developing nations. He introduced rational theoretical expectation model that represent the movement in exchange rates expected and unexpected components. The study revealed that exchange rate depreciation reduces the real output growth and raises price inflation.

Haidar and Ndan (2022) found in Australia that exchange rate uncertainty plays important role in influencing inflation expectation. Reported consumer expectation rises when consumers' exchange rate outlook is uncertain. If the consumers predict

high exchange rate, inflation rate will also rise. Garcia and Iskrev (2019) explore into the inflation forecast of respondent's survey of professional forecast in the Euro areas. The result indicates that oil price uncertainty plays important role in the forecast of exchange rate and inflation rate expectations.

2.2.3 Professional exchange rate forecast and stock market

Ajayi and Mougoue (1996) examined the relationship between prices of stock and exchange rates for the developed nations and found a negative short run impact on the value of domestic currency. They concluded that there is an increase price of stock. In another study, Habib and Stracca (2012), focused on increase in value of domestic currency through the US dollar in the face of uncertainty. They found that expectation from markets are exposed and significantly influenced by uncertainty which represent a change in the variable and result to forecast error even if expectation about the mean and the possible variance of the shock are correct.

3. Methodology

This study employs the Bayesian linear regression, because it is commonly utilized for prediction of stochastic process such as exchange rate uncertainty. Starting from the basic statistical specification as shown in equation 1, the Bayesian model is generated thereafter.

$$Y = X'\beta + \mu \dots \dots \dots (1)$$

- Where Y = dependent variable ($n \times 1$)
- X = the matrix of independent variable ($n \times (p + 1)$)
- β = vector of regressors' parameters ($(p + 1) \times 1$)
- ε = vector of error ($n \times 1$)
- X = (X_1, X_2, \dots, X_{np})

In the Bayesian approach there is *a-prior*, likelihood distribution and posterior distribution. Parameter estimation by Bayesian approach is done by processing posterior distribution which multiplies the prior distribution with likelihood. In linear regression model using OLS estimation method, there is normal distributed error assumption that is $\varepsilon \sim N(0, \sigma^2)$. Since the error is normally distributed, the variables $(Y|X, \beta, \sigma^2)$ are also normally distributed. Thus, the variables $(Y|X, \beta, \sigma^2) \sim N(X\beta, \sigma^2)$ and probability density function (pdf) of these variables are as follows:

$$p(Y|X, \beta, \sigma^2) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left[-\frac{1}{2\sigma^2} (Y - X'\beta)^T (Y - X'\beta) \right] \dots\dots\dots(2)$$

Based on the probability density function above, the likelihood function of these variables are as follows:

$$p(Y|X, \beta, \sigma^2) = \prod_{i=1}^n \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left[-\frac{1}{2\sigma^2} (Y - X'\beta)^T (Y - X'\beta) \right] \dots\dots\dots(3)$$

$$p(Y|X, \beta, \sigma^2) = (\sigma^2)^{-n/2} \exp \left[-\frac{1}{2\sigma^2} (Y - X'\beta)^T (Y - X'\beta) \right] \dots\dots\dots(4)$$

$$p(Y|X, \beta, \sigma^2) \delta(\sigma^2)^{-\frac{v}{2}} \exp \left[-\frac{vS^2}{2\sigma^2} \right] \times (\sigma^2)^{-n/2} \exp \left[-\frac{1}{2\sigma^2} (Y - X'\beta)^T (Y - X'\beta) \right] \dots\dots(5)$$

There are several prior distributions that can be used in Bayesian approach of linear regression model, one of which is the distribution of prior conjugate. Estimation of regression model with Bayesian approach can be done by iterating at Marginal posterior. Posterior is calculated by multiplying the prior distribution and likelihood function.

Posterior δ Likelihood \times Prior

$$p(\beta, \sigma^2 | Y, X) \delta P(Y|X, \beta, \sigma^2) p(\sigma^2) p(\beta | \sigma^2) \\ (\beta, \sigma^2 | Y, X) \delta (\sigma^2)^{-n/2} \exp \left[-\frac{1}{2\sigma^2} (Y - X'\beta)^T (Y - X'\beta) \right] \times (\sigma^2)^{-\left(\frac{v}{2} + 1\right)} \\ \exp \exp \left(-\frac{vS^2}{2\sigma^2} \right) \times (\sigma^2)^{-k/2} \exp \left[-\frac{1}{2\sigma^2} (\beta - \mu)^T \pi (\beta - \mu) \right] \dots\dots\dots(6)$$

The process of obtaining the estimation of regression model parameters with Bayesian approach can be done by using MCMC (Markov Chain Monte Carlo) algorithm. One of the commonly used algorithms in MCMC is Gibbs Sampling. In other not to run a spurious regression, interest rate, price, inflation and exchange rate are subjected to various tests, such as the heteroskedasticity test, residual test and LM test.

Explanation of variables in the Bayesian linear regression model

The Bayesian linear regression model was formulated using the probability distribution. The response, $(Y|X, \beta, \sigma^2)$ is not an estimation from a single value, but an assumed value that is drawn from a probability distribution. The Bayesian linear regression model with the response sampled from the normal distribution is $(Y|X, \beta, \sigma^2) \sim N(\mathbf{X}\beta, \sigma^2)$. The main aim of Bayesian is not to find the single best value but to determine the posterior distribution for the model parameters.

Priors: A prior knowledge and idea about what the model parameter entails was included in the model. However, this is against the frequentist approach which assumed that necessary information about the parameters should be known or gotten from the data. Thus, if there is no useful information ahead of time, we can use non-informative priors for the parameters such as a normal distribution.

Posteriors: The essence of Bayesian linear regression is a distribution of possible model parameters according to the data and the priors. This help to measure our uncertainty in the model.

The likelihood of β_1, \dots, β_n represent the product of each likelihood

$$p(\beta, \sigma^2 | Y, X) \propto P(Y|X, \beta, \sigma^2) p(\sigma^2) p(\beta | \sigma^2), \beta_1 \text{ is the independent from each other.}$$

Combination of two conditional probability:

$$p(\beta, \sigma^2 | Y, X) \propto P(Y|X, \beta, \sigma^2) p(\sigma^2) p(\beta | \sigma^2)$$

Combining the two using conditional probability, we will get the same joint prior distribution.

Monthly data on the nominal bilateral exchange rate (naira-dollar), inflation rate, interest rate and other variables are obtained from the Central Bank of Nigeria online databank available at www.cenbank.org. The dataset span 2006M01 to 2022M10. Exchange rate is measured as rate of dollar to naira, interest and inflation rates are measured in percentage, while stock market price is measured as millions of naira. Data employed were analyzed using linear regression modelling with Bayesian approach estimation.

4. Results and Discussion

4.1. Descriptive Statistics

Prior to conducting regression analysis of the model specified in equations 4, 5 and 6, it is vital to have an understanding of the characteristics of the series.

Table 1 provides the summary of the descriptive statistics of the series. The average naira-dollar exchange rate was 225.05 within the period under investigation. The minimum and maximum exchange rate was around 116.79 and 436.12 respectively. This implies that Naira exceeded hundred-naira mark for an exchange of one dollar between 2006 and 2022, while the peak was over 300 naira. This outcome has important implication for forecast professional because it implies that the professional may likely find it easy to profess that exchange rate will be on the high side in the future. However, by how much higher may not be easily speculated and that is the essence of this research work.

Unlike large variation between the minimum and maximum exchange rate, there was a slight variation in interest rate as the minimum was 14.6 and maximum was 19.6 percent.

Table 1: Summary of the Descriptive Statistics

Variables	Mean	Max	Min	Std. Dev.	Skew	Kurt	J-Bera	Obs
Exchange Rate	225.05	436.12	116.79	98.93	0.68	1.98	24.40*	202
Interest Rate	16.05	19.66	11.13	2.02	-1.08	3.64	42.60*	202
Inflation Rate	11.97	21.09	3.00	3.71	0.07	2.60	1.48	202
Stock Price	33372.95	65652.38	19851.89	9917.96	0.87	3.17	26.02*	202

Note: Exchange Rate is the price quotation of dollar in terms of naira, interest rate is the monetary policy rate while inflation rate is the percentage change in consumer price index. Stock price is the index of prices of stocks quoted on the floor of Nigeria Stock Exchange.

* $p < 0.01$

However, similar behaviour to exchange rate can be observed in the case of interest rate, inflation rate and stock price index where the respective minimum and maximum were 11.13 and 19.66, 3.00 and 21.09 and 19851.89 and 65652.38. What this implies for this study is perhaps to check whether the maximum-minimum variation in variables such as interest rate, inflation rate and stock price index can

be responsible for the maximum-minimum variation in exchange rate. If this is true, then these two variables may likely predict variation in exchange rate more than interest rate. Nevertheless, there appears not to be large dispersion around the mean as the standard deviation is less than the mean in the case of each variable. This absence of large dispersion around the mean provides possibility to employ the Bayesian linear regression. However, it is noted that the Jacque-Bera values indicate that all the variables except inflation rate are not normally distributed. This should not be a problem because the technique of estimation employed is capable of dealing with series that are not normally distributed.

Next is to examine possible association between pairs of these variables. The correlation matrix presented in Table 2 suggests that although these series are associated in some sense, the association is not strong. Meanwhile, it must be noted that inflation rate and exchange rate are negatively associated, while stock price and inflation rate are negatively association, albeit weak. Since there is no strong association among the variables, it is possible to include all the independent variables in the model at once.

Table 2: Pairwise correlation

	Exchange Rate	Inflation Rate	Interest Rate	Stock Price
Exchange Rate	1.00			
Inflation Rate	-0.66*	1.00		
Interest Rate	0.67*	-0.39*	1.00	
Stock Price	0.13	-0.37*	-0.13	1.00

Note: Exchange Rate is the price quotation of dollar in terms of Naira, interest rate is the monetary policy rate, while inflation rate is the percentage change in consumer price index. Stock price is the index of prices of stocks quoted on the floor of Nigeria Stock Exchange.

** $p < 0.01$*

4.2. Preliminary tests

Owing the fact that data on the variables are obtained from the secondary source, it is inevitable that the series will not be stationary at level. The method to be adopted is grounded on the assumption that the series are stationary so as to ensure the efficiency of the parameters. Hence the first step is to examine the level at which each of the variables is stationary.

There are a least four approaches available to test for the unit root of a series. These approaches are Dickey-Fuller (DF), Augmented Dickey Fuller (ADF), Phillip-Peron (PP) and KPSS. Experience has shown that in most cases the approaches give similar result. Consequence upon this, and owing to limited space, the ADF and PP results are presented. The results of the tests indicate that, the ADF test and the PP test both show a close order of integration, with the only difference being the interest rate and stock price which have a separate integration order, but still at acceptable order. Trending variable (exchange rate) was evaluated with trend and intercept, while other variables were better tested with intercepts because of no trend which evidences fast reversal during the study period. The result shows that exchange rate and inflation rate are stationary at first difference, that is, they are integrated of order 1 (I(1)).

Table 3: The Result of Stationarity Tests

Test Type		Augmented Dickey-Fuller			Phillips-Perron		
Variable		Level (t-Stat)	1 st Diff (t-Stat)	Decision	Level (t-Stat)	1 st Diff (t-Stat)	Decision
Exchange Rate		-0.281	--9.677***	I(1)	0.291	-7.681***	I(1)
Interest Rate		-0.906	- 17.919***	I(1)	- 1.209	- 17.678***	I(0)
Inflation Rate		-1.815	-7.941***	I(1)	- 1.349	- 11.820***	I(1)
Stock Price		-3.072**		I(0)	- 2.324	- 12.381***	I(1)
Critical Values	1 % level		-3.463			-3.463	
	5 % level		-2.876			-2.876	
	10 % level		-2.575			-2.574	

Note: Exchange Rate is the price quotation of dollar in terms of naira, interest rate is the monetary policy rate while inflation rate is the percentage change in consumer price index. Stock price is the index of prices of stocks quoted on the floor of Nigeria Stock Exchange. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The unit root test decision, however, is inconclusive for interest rate and stock price since both tests of ADF and PP performed different integrating order, but still at integrated order one. Since the maximum integration order for the series are one, we then apply the Bayesian approach method. The Bayesian approach views parameters as a random variable, so that the value is not a single value (Permai & Tanty, 2018).

4.4. Bayesian Linear Regression

The purpose of the BVAR models is to improve forecasting performance by allowing some tradeoff between oversimplification and over fitting (Todd, 1984, Litterman, 1984). The problem of oversimplification arises when trying to forecast the macroeconomic series as univariate processes (ARMA processes, random walks). In this research, multiple linear regression modeling analysis with Bayesian parameter estimation is used. The prior distribution used in this study is the student's t distribution for the β parameter and the Gamma inverse distribution for the parameter. Gibbs Sampler using the Markov Chain Monte Carlo (MCMC) method was employed as the algorithm. Iteration used as many as 10000 with Burn in at 500 and thin of 1.

Table 5: Linear regression model using Bayesian approach

	Coefficient	Std. Error	z-Statistic	Prob.
Exchange rate(-1)	0.991	0.007	141.571	0.000
Interest Rate(-1)	-0.001	0.0008	-1.252	0.265
Inflation Rate(-1)	0.002	0.001	2.187	0.029
Stock Price(-1)	-0.007	0.008	-0.869	0.385
Constant	0.128	0.099	1.289	0.198
R-squared	0.896	Mean dependent var		5.328
Adjusted R-squared	0.825	S.D. dependent var		0.420
S.E. of regression	0.027	Sum squared resid		0.138
Durbin-Watson stat	2.049			

Table 5 shows statistically significant coefficients of the lagged value of exchange rate at 1 percent level. This suggests that, in Nigeria, the exchange rate value of the past years has a significant impact on the current period. Specifically, if exchange rate depreciates last year, there I it is the case that exchange rate will depreciate further this year. It turns out that a 1% depreciation this year will lead to almost 1|% depreciation next year. Lagged interest rate does not affect current exchange rate, even though a negative effect is shown. This could imply that the monetary policy rate set by the Central Bank has no effect on exchange rate. It could also suggest that change in interest rate does not influence those factors that could cause changes in exchange rate. Such factors include foreign direct investment and portfolio investment.

The past value of inflation rate is a significant predicting determinant of the current value of exchange rate in the country. Therefore, as inflation rate increases, the current value exchange rate will increase, holding other determinants constant. The resultant effect of this is that, there will be a general rise in the price of commodities and services if exchange rate increases, thus it erodes the real wage of the people and in turn increases poverty rate and hinder the achievement of sustainable economic growth and development in the long run. This finding is consistent with Frimpong and Adam (2010), Sheefeni and Ocran (2013) who found that there is positive and significant long run relationship between domestic prices and exchange rate exist; implying that long run exchange rate pass-through in Nigeria is zero indicating that the purchasing power parity theory does not hold, with regard to the price level, in the context of Nigeria.

Furthermore, the Keynesian money demand theorist observes that, as interest rate grow, more costs are incurred to keep money, and therefore, less money is used for idle balances; potentially leading to an increase in the exchange rate. But the past value of interest rate is negative and insignificant predicting determinant of the current value of exchange rate in Nigeria. At the same time, the coefficient of stock price is negatively insignificant which implies that stock price negatively predicts exchange rate. This is inconsistent with financial market theory of development that stock markets will improve economic growth to the degree based on how integrated they are into an ‘institutional matrix’ such as exchange rate that sends signals to decision makers who would look for growth opportunities.

Table 5: Forecast Evaluation

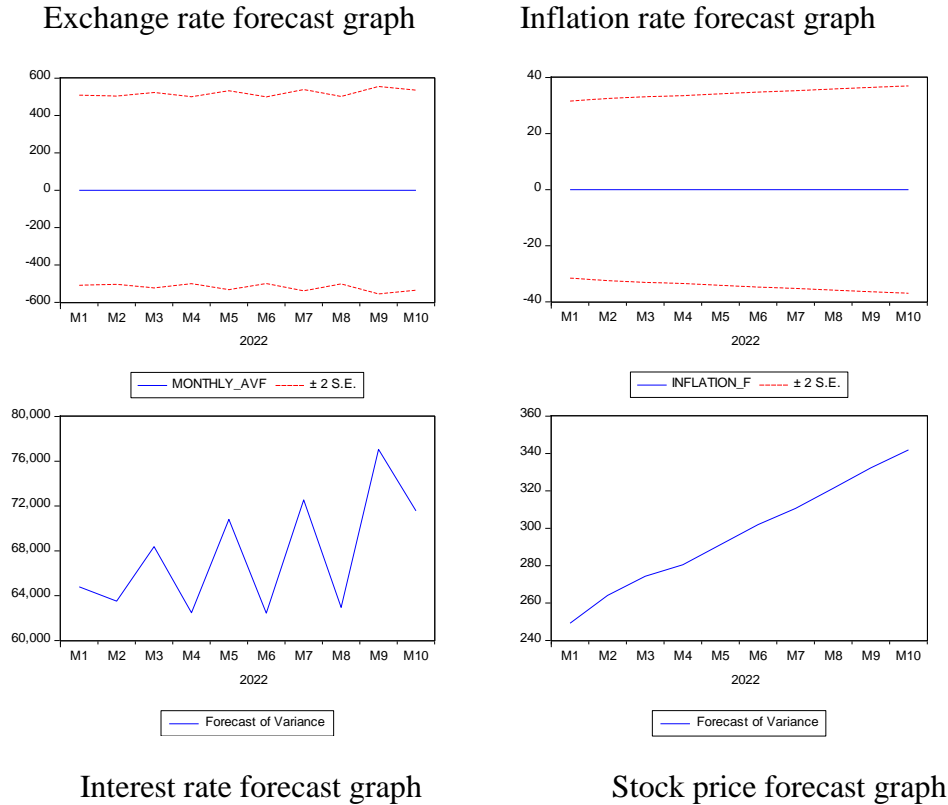
Variable	Inc. obs.	RMSE	MAE	MAPE	Theil
Exchange rate	10	419.25	419.19	100.00	101.31
Inflation rate	10	18.35	18.24	100.00	25.97
Interest rate	10	12.01	12.01	100.00	81.96
Stock price	10	49027.95	48957.66	100.00	21.02

Note: RMSE: Root Mean Square Error; MAE: Mean Absolute Error; MAPE: Mean Absolute Percentage Error; and Theil: Theil inequality coefficient

This estimation checks the model in term of forecasting performance. The forecasting performance is evaluated by comparing two of the most common measures to judge forecasting accuracy, root mean square errors (RMSE) and mean

absolute error (MAE). The result of the RSME, MAE and MAPE indicate a good accurate prediction of the model, hence, the model is perfect and no error. Therefore, the model has a good forecasting performance.

Figure 1: Actual and Forecast values arising from the model



Forecasting Inflation and Exchange Rates under Financial Uncertainty: New Evidence from Nigeria

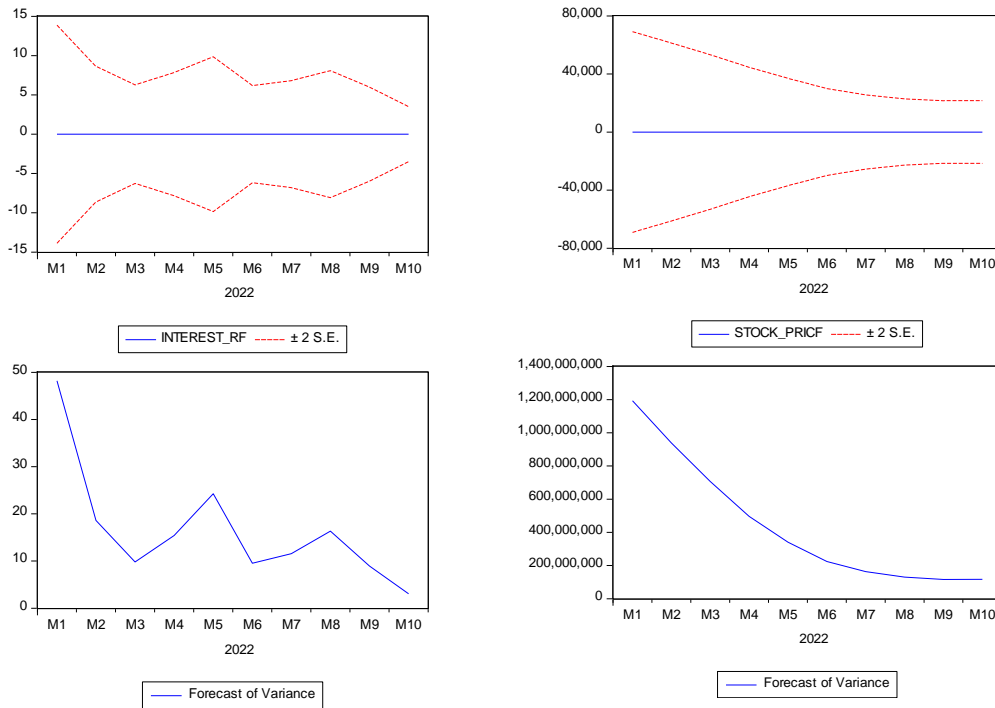


Figure 1 shows a large deviation between the forecast and actual values. The essence of this is to forecast what the future will be for each variable. Hence, exchange rate and inflation rate are forecasted to continue to increase in the country, while interest rate and stock price will continue to decrease.

5. Conclusion and Policy implications

Financial uncertainty is financial related phenomenon that are beyond control, but still affect the decision of financial agents; that is, affect the decision of business owners, government as well as how it affect the financial speculators. However, professional forecasters are the economic agents who take the responsibility of foreseeing prices, especially in the financial market that is, what the price likely to be in the financial market which determine the reaction of investors in the same market. Thus, this study examined how financial uncertainty is affected by unstable

exchange rates, stock prices, inflation rates and interest rates. Theoretical arguments, however, suggests that future is uncertain and it cannot be predicted accurately. Also, the lapse of time between moment of taking the decision and the outcome of the choice made is another source of uncertainty, due to unforeseen circumstances which might likely occur during the gap. This study, thus, contributes to the literature by empirically investigating the impact of financial uncertainty on professional exchange rate forecast in Nigeria. On the basis of these findings in previous subsection, the study concludes that the past value of inflation rate, interest rate and stock market price are significant determinant for forecasting professional exchange rate in the country. Stock price has been identified by this study as one of the proxies of financial uncertainty, which serves as a major determinant of professional exchange rate forecast, thus, to maintain stable stock price, monetary authorities can best promote financial stability and economy growth by making a firm commitment, in order to maintain price stability.

Hence, the recommended that the financial market must reflect market realities to ensure that exchange rate rates forecast is relatively stable, so as to promote efficiency in distribution and allocation of resources, as well as promote productivity and growth in Nigeria. The purpose of professional forecasters is to achieve accurate value with what they forecast or predicts. Additionally, this research work suggests that exchange rate has to be competitive to attract foreign investors in Nigeria. That is, exchange rate should, and indeed, must reflect market realities to promote efficiency in resource allocation and productivity growth.

References

- Bacchetta Philippe & Eric van Wincoop (2000). Business cycle and exchange rates regime: some international evidence. *Journal of Monetary Economics*. 23(May):377-400
- Bacchetta P, & van Wincoop E. (2006). Can information heterogeneity explain the exchange rate determination puzzle? *American Economic Review* 96: 552–576.
- Baker SR, Bloom N, & Davis SJ. (2013). Measuring economic policy uncertainty. *Chicago Booth Research Paper* No. 13-02.
- Beckmann J, & Czudaj R. (2016). Exchange rate expectations and economic policy uncertainty. *European Journal of Political Economy* forthcoming.

- Beckmann J, & Schussler R. (2016). Forecasting exchange rates under parameter and model uncertainty. *Journal of International Money and Finance* 60: 267–288.
- Blake D, Beenstock M, & Brasse V. (1986). The performance of UK exchange rate forecasters. *Economic Journal* 96:986–999.
- Bofinga, peter and Robert (undated). Should we rely on professional exchange rates forecast? An empirical forecast for Eur/Us-\$ rate
- Branch W.A. (2007). Sticky information and model uncertainty in survey data on inflation expectations. *Journal of Economic Dynamics and Control* 31: 245–276.
- Canova F. & Marrinan J. (1993). Profits, risk, and uncertainty in foreign exchange markets. *Journal of Monetary Economics* 32: 259–286.
- Cavusoglu N. & Neveu A.R. (2015). The predictive power of survey-based exchange rate forecasts: Is there a role for dispersion? *Journal of Forecasting* 34: 337–353.
- Eze, G & T. Okotori (2021). Exchange rate volatility and monetary policy uncertainty. *Macroeconomic Analysis for Economic Growth*. Available at intechopen.com/chapters/79907.
- Folawewo & Osinubi (2006). Monetary policy and macroeconomic instability in Nigeria: A Rational expectation Approach. *Journal of Social Sciences*, 12, 93-100.
- Garcia, J & N. Iskrev (2019). Inflation expectation in the survey of professional forecasts: an explanatory analysis. Availabke at www.bportugal.pt.re201908-e.
- Haidari, Y & G. Nolan (2022). Constraints, uncertainty and households' inflation expectations. *Reserve Bank of Australia*, Sept. 2022 *Bulletin* (4050).
- Joscha Beckmann & Robert Czudaj. The impact of uncertainty on professional exchange rate forecast. *Ruhr Economic papers* #637
- Meese RA, Rogoff K. (1983). Empirical exchange rate models of the seventies: Do they fit out of sample? *Journal of International Economics* 14: 3–24.
- Magda Kandil (2004). Exchange rates fluctuations and economic activity in developing countries: Theory and evidence. *Journal of economic Development* 29(1):85-108. January, 2004.

- Mueller P, Tahbaz-Salehi A, Vedolin A. (2016). Exchange rates and monetary policy uncertainty. *Mimeo* : <http://www.columbia.edu/~at2761/FXUncertainty.pdf>.
- Rime D, Sarno L, Sojli E. (2010). Exchange rate forecasting, order flow and macroeconomic information. *Journal of International Economics* 80: 72–88.
- Rossi B. (2013). Exchange rate predictability. *Journal of Economic Literature* 51: 1063–1119. Sarno L, Sojli E. 2009. The feeble link between exchange rates and fundamentals: Can we blame the discount factor? *Journal of Money, Credit and Banking* 41: 437–442.
- Sarno L, Valente G. (2009). Exchange rates and fundamentals. Footloose or evolving relationship? *Journal of the European Economic Association* 7: 786–830.

Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria (1981-2020)

¹Thankgod Tonye, PhD & ²Igbinovia Beauty, PhD

^{1,2}Department of Economics, Faculty of Social Sciences, Ignatius Ajuru University of Education, Rumuolumeni, Rivers State, Nigeria

Abstract

This research discourse critically investigates monetary policy instruments and growth of small and medium scale enterprises in Nigeria spanning from 1981 to 2021. Secondary data were obtained from Central Bank of Nigeria (CBN) statistical bulletin. Augmented Dickey Fuller unit root test was adopted to ascertain the stationarity of the variables. The ADF unit root test revealed that the variables have mixed order of integration $I(1)$ and $I(0)$. This situation makes it necessary for the study to adopt Autoregressive distributive lag to ascertain long-run relationship between the variables using bound test. The result from ARDL establish that in the long-run only broad money supply contribute significantly to the growth of medium scale enterprises in Nigeria. It equally established that monetary policy rate (MPR) had negative, but significant relationship with proportion of service sector to gross domestic product (SGDP) in Nigeria in the short-run. The ARDL result further showed an insignificant correlation between cash reserve ratio (CRR), treasury bill rate (TBR) and the proportion of service sector to gross domestic product (SGDP) in Nigeria. The implication of this result is that if more funds in the guise of money supply is directed to small and medium scale enterprises in the country, unemployment rate and prices of goods and services would reduce. However, increase in other variables such as TBR, MPR, and LR would not enhance the growth of small and medium scale enterprises in Nigeria. The study recommended amongst others that the monetary authority should mandate deposit money banks to direct bulk of its loans to registered small and medium scale enterprises to enable them expand on their productive activities and help reduce unemployment and stable price level in the country.

Keywords: Monetary Policy Instruments, Money Supply (MS), Service Sector Gross Domestic Product.

1.0 Introduction

Rapid and potential growth of an economy (developed, developing or less developed) is largely dependent on the viability of small and medium scale enterprises. Therefore, small and medium-sized firms are businesses with a limited

amount of labour and capital available for production. Small and medium-sized businesses, as defined by Aginah *et al.* (2013), are organisations with an asset base of at least \$5 million and at least 100 workers. Small and medium-sized businesses (SMEs) are a crucial element of the economy's growth and development, especially in less developed nations like Nigeria. It is impossible to overstate the significance of the subsector of small and medium-sized businesses. It is crucial to mention that the small and medium-sized company sector has significantly boosted the GDP, business expansion, and job creation in the nation. This is shown by the fact that during the last five years, Nigeria's small and medium-sized firms (SMEs) have created more than 84% of the nation's employment, contributed 48.5% of the nation's GDP, and exported roughly 7.27% of the products and services produced there (Ministry of Industry, Trade and investment, 2020).

This is why small and medium scale enterprises (SMEs) is regarded as the life blood of a nation, the oil that lubricates the wheels of a nation's economy. This is believed to be true based on the illustration above. Small and medium scale enterprises ensure creation of jobs, generate revenue for the economy and develop both rural and urban areas of the country economy. In-line with this observation, the Central Bank of Nigeria (CBN) governor, Emefiele in his presentation in the national Economic council meeting in Abuja, 2020 noted that, bank has helped 120,290 small scale farmers in about three states under Anchor Borrowers Programme launched by President Muhammad Buhari, creating more than 500,000 jobs in the process. It was also observed that the present administration by President Muhammad Buhari, has formulate other programmes such as trader monie to support small and medium scale enterprises in the country, as a policy measure to reduce the rate of unemployment. It was further observed that this programme favoured mostly the unskilled labourers in the country, particularly the market men and women.

However, it has been observed that these laudable programmes, have not reflected the current situation of the country. Take for instance, citizens find it very difficult to meet up with their basic human requirement of life (food, clothing & shelter). A pilot survey of markets in Rivers State shows that, the prices of second hand clothes cost between #2000 and #2500 as at September, 2022, as new ones are very expensive to afford. The situation is worse for accommodation and food. The survey further showed that the cost of a one bedroom flat goes for minimum of #300,000 in an isolated area without security, electricity, good road and other basic

facilities. Food as the chief in the scale of preference should be a source of concern. For instance, in 2022, the prices of goods and services have increased four times. It would be recalled that earlier this year inflation rate was about 16.8%, this rate alone is more than enough to dehumanise the citizens particularly the active poor, but the rate increased to 17.71% in the same year, making life very difficult. Between July and September, 2022 inflation rate increased to 19.64% and now 20.5% (CBN, 2022). This situation has resulted to immense hardship leading to all sort of crime in the country.

It is therefore, imperative to note that the viability and contributions of small and medium scale enterprises is largely dependent on policy framework such as monetary and fiscal policy. However, this study dwells on monetary policy. Monetary policy refers to measures designed to regulate the flow of funds to achieve macroeconomic objectives of full employment favourable balance of payment, price stability etc. According to Thankgod and Igbinovia (2022) monetary policy are tools, techniques or mechanisms adopted by the government through the monetary authority (CBN) to regulate the flow of funds in the economy. According to Amadi and Amadi (2014), monetary policy refers to actions taken to control the amount of credit available to the economy, in order to accomplish certain macroeconomic goals. In order for an economy to grow and flourish, especially one that is still in its early stages like Nigeria's, monetary policy is crucial. For instance, during the last four years, the price of goods and services (inflation) has consistently increased in the Nigerian economy, 11.40%, 13.2%, 15.50% , 17.71%, 19.64% and 20.5% respectively (2019, 2020, 2021, & 2022: NBS, 2022). This situation has resulted to high unemployment rate of about 33.3% in 2021 (NBS, 2022).

As a result, it suggests that Nigeria's small and medium-sized firms (SMEs) have fallen short of expectations in terms of their contribution to the creation of jobs, the generating of money, and the development of both rural and urban parts of the nation. This research article examines how monetary policy tools in Nigeria affect the development of small and medium-sized firms in response to this terrible circumstance. The research is broken into five portions to do this. Section two, which examines theoretical and empirical literatures, follows the introduction. Methodology is covered in Section 3, while Data Analysis, Findings, Conclusion, and Recommendation are covered in Sections 4 and 5.

2.0 Literature Review

2.1 Conceptual Framework

2.1.1 Monetary Policy

Monetary policy is one of the prime economic management tools that governments use to shape economic performance. Monetary policy is said to be quicker at resolving economic shocks. Therefore, monetary policy refers to those actions taken by monetary authority, such as the apex bank of a nation, to regulate the value of money; supply and cost of money in the economy with the aim of achieving predetermine macroeconomic objectives. Monetary policy is defined by the Central Bank of Nigeria (CBN) as mixture of processes intended to regulate value supply and interest rate as fees for money in a financial transaction, in agreement with the status of economic accomplishments (Nwoko *et al.*, 2016; Central Bank of Nigeria, 2018).

Nwoko *et al.* (2016) defined monetary policy as the blend of procedures taken by monetary authorities (e.g. the central bank of Nigeria and the Ministry of Finance) to influence directly or indirectly both the supply of money and credit to the economy and the structure of interest rate for economic growth, price stability and balance of payment equilibrium. The experts added that the central bank of Nigeria is empowered by Decree 25 of 1991 Act, to formulate and implement monetary policy in Nigeria, in consultation with the ministry of finance subject to the approval of the President. Ufoeze *et al.* (2018) summed it up when they asserted that monetary policy is therefore applied to influence the availability and cost of credit in order to control the money supply policy. The Central Bank of Nigeria (2011) defined monetary policy as the specific actions taken by it to regulate the value, supply and cost of money in the economy with a view to achieving predetermined macroeconomic goals. Thus, to achieve predetermined economic goals, the CBN embarks on monetary controls. In doing this, it classified money into Narrow Money (M1) and Broad Money (M2). Narrow money (M1) is made up of currency in circulation with the non-bank public; and demand deposits (current accounts in the banks). This category of money represents money used for daily transactions and short-term monetary needs. The broad (M2) consists of narrow money and savings as well as time deposits (that is, call money). It also includes foreign currency-denominated deposits. This categorization measures the total

volume of money in supply in the economy. It is via the broad money that liquidity and inflation issues are tackled by the central bank of Nigeria.

2.1.2 Small and Medium Scale Enterprises

The pursuit of economic development has been a major goal of many nations particularly less developing countries like Nigeria. The Nigerian economic has been confronted with numerous problems such as high rate of poverty and unemployment which have continued to hinder the attainment of socio-economic development. However, the medium scale enterprises sub sector of the economy holds the key to the nation's quest for economic growth and development. Today, notwithstanding of the level of growth and development the world over, countries continue to embark on viable policies and programs that would create and pave way for the sustainable development of their economies through small and medium scale enterprises development.

Therefore, medium scale enterprises are necessary tools adopted to attain socio-economic development. In recent time, medium scale industrial sector is considered to be the backbone of modern day economy. Medium scale enterprise are engine to the growth and development of a country, they are the oil that lubricate the wheels of a nation's economy. Medium scale enterprises are regarded as organizations whose productive capacity are small in terms of assets, and capital employed (human and material). According to Imoughele and Ismaila (2014), an enterprise that has an asset base (excluding land) of between N5 million and N500 million and labour force of between 11 and 300 belongs to the small or medium scale enterprise sub-sector Fasanya *et al.* (2012), noted that a business with turnover of less than N100 million, asset base of N1.5 billion (excluding land and working capital) with no lower or upper limit of staff is regarded as small or medium scale enterprise.

The Central Bank of Nigeria Monetary Policy Circular No. 22 of 1996 defines a small and medium scale business enterprises as any manufacturing or service enterprise whose business turnover does not exceed N500,000 (including land and working capital) and or the annual turn-over did not exceed N5 million. It is believed that small and medium scale enterprises makeup the largest proportion of

businesses all over the world and are hence the engine that drives world financial system and the stepping stone to industrialization, both for developing and developed Nations. According to Gbandi and Amissah (2014), small and medium scale enterprises represent about 90% of manufacturing/industrial sector in terms of number of enterprises in Nigeria. Also in the view of Imeokparia and Ediagbonya (2014), small and medium scale enterprises in Nigeria make up about 97% of the economy, hence they play a very important and major role in the development of the economy through job creation, poverty alleviation and foreign exchange conservation. Although small and medium scale enterprises are smaller in size, they are the most important enterprise in the economy, due to the fact that when all the individual enterprises are combined, they exceed that of the larger companies.

2.2 Review of Past Empirical Studies

Thankgod and Igbिनovia (2022) looked on how Nigeria's real sectors performed in relation to monetary policy tools. Utilizing yearly time series data for 40 years, the ARDL regression method was utilised to ascertain the link between monetary policy instruments and the performance of the real sectors in Nigeria from 1981 to 2020. The results of the ARDL showed that the variables exhibited a sustained connection. It also shows that Nigeria's real sector output is affected temporarily by the monetary policy instruments (MPR, CRR MS, & TBR) (AGDP & MGDP). In order to achieve some of the macroeconomic objectives of price stability and full employment, the study recommends, among other things, that monetary targeting be employed by the central bank (CBN) as a tool for monetary policy. Similar to this, Abere, *et al.* (2020) examined how Nigeria's monetary policy affected the distribution of loans and advances to small and medium-sized businesses from 1992 to 2017. The research found that commercial bank loans and advances to small and medium-sized firms were positively correlated with the monetary policy rate and exchange rate using the Ordinary Least Square regression approach. On the other hand, commercial banks' loans and advances to SMEs in Nigeria are adversely impacted by the money supply, liquidity ratio, and inflation rate. According to the study's findings, the government should work to lower the monetary policy rate so that small and medium-sized businesses in Nigeria may obtain commercial banks' loans and advances.

*Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria
(1981-2020)*

Salihu (2020) used secondary yearly data ranging from 1981 to 2019 to examine the efficacy of monetary policy in controlling inflation in Nigeria between 1981 and 2019. The factors employed in the research to control inflation were the money supply, the rate on Treasury bills, the rate on monetary policy, and the exchange rate. A long-term link between the variables was found via the Johansen cointegration test. The money supply, Treasury bill rates, and the monetary policy rate all had a beneficial impact on inflation in Nigeria, according to the empirical results of the OLS test. whereas a decline in the exchange rate causes inflation to rise. This outcome is in line with what economic theory predicts. Therefore, the study came to the conclusion that the amount of money in circulation, the rate of Treasury bills, monetary policy, and exchange rates all had an impact on inflation during the time period under consideration. It also suggests that since open market operations using the annual Treasury bill rate as a proxy have not been successful in controlling inflation, strategies to improve their effectiveness be adopted, perhaps by offering competitive rates and the monetary authority should reevaluate their assessment of monetary policy's effectiveness.

Hussaini, *et al.* (2020) conducted study in 2020 to examine the effects of monetary policy tools on Nigerian economic development. The long run and short run dynamic link between each of the policy variables—Monetary supply, Interest rate, and Exchange rate—and the goal variable—Gross domestic product—was examined using the Autoregressive Distributed Lag Model (ARDL). The projected long run model demonstrates that the log of money supply has a positive influence on the log of GDP, the exchange rate has an inverse relationship with the target variable in the present period, but a positive relationship with the target variable one period later. Additionally, the interest rate at its present level has a beneficial and considerable effect on Nigeria's economic growth. Similar to this, the target's one period lag has a short-term positive effect on its present value, but the exchange rate strongly affects economic growth in both its current and one period lag conditions. The error correction mechanism coefficient reveals that the short-run speed of variable adjustment to equilibrium is 19%. As a result, the research draws the conclusion that monetary policy tools are crucial in illuminating Nigeria's economic expansion.

*Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria
(1981-2020)*

Nwosu (2020) looked on how Nigeria's fiscal and monetary policies influenced small businesses and entrepreneurship. When the study first started working with SMEs, it used an action research technique with a qualitative approach to data collection. an AR strategy built on coalitions and several sites. First-level interviews with 19 participants are conducted as part of the first research stage to gather qualitative data utilising in-depth one-on-one interviews. The ensuing AR emphasis improved interaction between SME operators, SME umbrella organisations, and policy makers within the government agencies taking part in the study.

Furthermore, Adongo *et al.* (2020) investigate the effects of monetary policy on Kenya's agricultural sector's GDP. The research used an OLS regression model to perform empirical analysis to ascertain the association between monetary policy and agricultural domestic product using yearly data for the years 1981 to 2019. The broad money supply (M2), central bank rates (CBR), cash reserve ratio (CRR), and exchange rate were chosen as the monetary policy tools (ER). The variables' stationary status was verified using the ADF and Philip-Perron unit root tests, and the short- and long-term associations between the variables were verified using the Johansen Co-integration test. The empirical results showed that although the exchange rate has a negative effect on the performance of the agricultural sector, the overall money supply has a favourable influence on agricultural GDP. To fully fulfil the potential of the agricultural sector, the government must strengthen budgetary assistance for agriculture and sustain exchange rate volatility via the monetary policy commission.

Osakwe, *et al.* (2019) looked at how Nigeria's manufacturing sector performed in relation to monetary policy. The dependent variable is the output of the Manufacturing (MANU) sector, while the explanatory variables are the monetary policy rate, Treasury bills rate, cash reserve requirement, and money supply. The study employed secondary data from the CBN Statistical Bulletin and an ex-post facto research approach. 32 years were covered by the research (1986 to 2017). For model estimate, the Autoregressive Distributive Lag (ARDL) was used. The findings show that monetary policy instruments only have a major short-term impact on Nigeria's manufacturing sector production. According to the research, treasury bills and the money supply may be utilised as short-term policy tools to preserve macroeconomic stability in Nigeria with a focus on the industrial sector.

*Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria
(1981-2020)*

The effect of the money supply on the expansion of the Nigerian economy is examined by Odumusor (2019). The classical quantity theory served as the study's foundation. EVIEWS version 9.0, an econometric programme, was used for all estimates. Empirically, the outcome shown that the short-term importance of the money supply is negligible. Long-term money supply is crucial, yet it hinders economic expansion. The causality test revealed that money and economic growth are unrelated, indicating that neither the money supply nor the economy's growth can be predicted. Therefore, increasing the money supply won't lead to economic development in Nigeria. The result is that in order to promote economic development, the government shouldn't focus as much on the money supply as a key instrument of monetary policy. Additionally, investment (GFCF) is substantial in the anticipated outcomes over the long term but not over the short term, which is to be expected given that capital accumulation takes time to generate returns. The government should promote capital investments in the productive areas of the economy, such as agriculture, education (which will assist to improve the quality of labour), transport, electricity, health, etc., since labour is important both in the long and short terms.

Garba (2019) examined the impact of the investment environment on the expansion of small and medium-sized businesses in Makurdi Metropolis. The Neoclassical Approach, Financial Growth Theory, and Theory of Diffusion of Innovation served as the study's foundations. 250 respondents were selected from the study locations using a well-structured questionnaire, and the researcher employed both primary and secondary sources from this group. In Makurdi Metropolis, Nigeria, the results of the regression analysis show a negative relationship between access to credit (ACTC) and the growth of small- and medium-sized businesses (SGT), although this relationship is not statistically significant ($p > 0.05$) and does not correspond to a priori expectations. The growth of small and medium-sized businesses in Makurdi Metropolis, Nigeria, was positively correlated with the availability of power (PWSP). This correlation is statistically significant ($p < 0.05$) and consistent with a priori expectations. Information and communication technology (ICT) and small- and medium-sized business growth in Makurdi Metropolis, Nigeria (SGT) are positively correlated, and the association is statistically significant ($p < 0.05$) and consistent with presumptive expectations. It

*Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria
(1981-2020)*

It was determined that in order to accomplish this development, the investment environment needed to be addressed and made favourable for company startup and expansion. It was advised that the government control the electricity industry properly, since there are still unresolved issues with invoicing, tariffs, and metering procedures after privatisation.

In Nigeria between 1985 and 2016, Charisma *et al.* (2018) look at the effects of the money supply on macroeconomic variables. Descriptive statistics and the ex post facto study methodology were utilised to observe the variables after the fact. The data were solidified using the Augmented Dickey Fuller test to prevent erroneous findings, which incorporated at first difference I (1). The size and direction of the variables in the models were determined using the ordinary least squares method. It was shown that the real gross domestic product and inflation are positively and significantly impacted by the narrow money supply, but these outcomes are not significantly impacted by the wide money supply. Furthermore, empirical data indicated that the exchange rate had little effect on actual GDP and inflation. On the other hand, the influence of the inflation rate on Nigeria's actual gross domestic product is inverse and statistically negligible. *Ceteris Paribus*, the findings imply that the money supply (limited money supply) and exchange rate in Nigeria are related to economic growth and inflation. The study suggests that measures be taken to improve the naira's exchange rate with other currencies. This will lessen the impact of foreign inflation on domestic products and services.

Opuni and Edward (2017) examined how tax burdens and loan interest rates affected the development and performance of SMEs in Ghana. A structured questionnaire was used to gather data for the research from 153 respondents (SMEs). Data analysis techniques included both qualitative and quantitative approaches. With employment growth as the dependent variable and loan rates, power availability, business length, company kind, tax burdens, owner gender, and educational background as independent variables, a multiple regression model was built. The research discovered that monetary policy had a significant impact on company performance in terms of employment growth. Therefore, even though Ghana's interest rates are typically high, businesses who are able to get slightly lower financing rates have better employment growth. The relationship between fiscal policy and corporate performance in terms of tax pressures or perceptions is weaker. To improve businesses and economic development, policymakers should

regularly monitor the financial sector to reduce significant spreads in lending rates in an environment of high rates.

Anowor and Okorie (2016) used the Error Correction Model technique to evaluate how Nigeria's monetary policies affected economic development. It made use of secondary time series data that covered the years 1982 to 2013. The findings indicated that a unit rise in Nigeria's Cash Reserve Ratio (CRR) caused an increase in economic growth of almost seven units. The outcome was consistent with economic theory since, among other things, monetary policy aims to achieve the macroeconomic goals of steady economic growth and price stability. As a result, the study suggests that monetary authorities gave the CRR monetary policy tool their undivided attention, because it will produce the desired results in terms of economic stabilisation. Additionally, a combination of fiscal policy measures is needed to achieve the complementary balance needed to move an economy in the desired direction.

Marisa (2013) seeks to determine if other policies are responsible for Thailand's rising service sector employment, or whether monetary and fiscal policies are to blame. In the research, multiple regression analysis was used. The outcome demonstrates that socioeconomic variables and supply-side policies, as opposed to fiscal and monetary policies, are what influence employment in Thailand's service industry. Industrialization, trade openness, and the minimum wage all have favourable effects on employment in the service industry.

In Osuala (2012), the impact of monetary policy factors on banks' provision of credit to small and medium-sized companies (SMEs) in Nigeria was investigated. The CBN statistics bulletin and the financial accounts of five commercial banks were used to elicit time series data that was gathered on a quarterly basis. Fully modified ordinary least square (FMOLS) was used to analyse the data, which encompassed the years 1995 to 2010. According to the FMOLS results, interest rate and liquidity ratio policies were, respectively, negative and significant at a 1% probability level. Based on the findings, it was advised that the government, via the Nigerian Central Bank (CBN), improve current policies on the adjustment of

interest rates and the liquidity ratio in order to boost and stabilise the supply of credit to SMEs.

Nwankwoeze (2012) investigated how Nigeria's money supply affected economic growth. For the years 1981 to 2010, information was gathered from the CBN statistical Bulletin. Using the Stata 10 software programme, the common least squares statistical method was employed for the study. Real interest rates and real exchange rates in Nigeria throughout the study period did not have an impact on real GDP, according to the research, whereas the broad money supply, the only significant regressor, had an impact on real GDP at that time. Time delays have been shown to be the main obstacle to the low effectiveness of monetary policy tools in impacting real GDP in Nigeria. As a result, every government policy now takes several months to fully take effect. As a result, given that the wide money supply is statistically significant, it may be more beneficial to focus on it than on monetary target factors in order to influence real gross domestic product in Nigeria.

After an in-depth review of empirical literature, this paper evaluated the related literature and found an inconclusive result. For instance, (Thankgod & Igbinovia, 2022; Abere *et al.*, 2020; Salihu, 2020; Hussaini *et al.*, 2020; Nwosu 2020; Adongo, *et al.*, 2020; Ogugua 2019; Osakwe, *et al.*, 2019; Odumusor, 2019; Garba, 2019; Charisma *et al.*, 2018; Opuni & Edward, 2017; Anowor & Okorie, 2016; Marisa, 2013; Osuala, 2012; & Nwankwoeze, 2012), all reposted existence of relationship between monetary policy instruments and small and medium scale enterprises. However, these studies failed to agree on the direction of the relationship. For instance, Thankgod and Igbinovia, (2022); Abere *et al.* (2020); Nwosu (2020); Hussaini *et al.* (2020); Salihu (2020); Osakwe *et al.* (2019); Charisma *et al.* (2018); Opuni and Edward, (2017); Anowor and Okorie (2016); and Marisa, (2013) reported positive relationship between the dependent and independent variables while, Odumusor (2019); Garba, (2019); and Osuala, (2012), revealed negative relationship between the variables. The reviewed studies equally reported that most of the literature used econometric techniques (Thankgod & Igbinovia, 2022; Abere *et al.*, 2020; Salihu, 2020; Hussaini *et al.*, 2020; Odumusor, 2019; Osakwe *et al.*, 2019; Ogugua, 2019; Garba, 2019; Charisma *et al.*, 2018; Anowor & Okorie, 2016; Marisa, 2013; Osuala, 2012; & Nwankwoeze, 2012) while, (Nwosu, 2020 & Opuni and Edward, 2017) utilized survey method. The present study also found out that, different estimation techniques were employed to analyse the variables. For

instance, Thankgod and Igbinoia, (2022); Hussaini, *et al.*, (2020); and Osakwe *et al.* (2019) used Auto-Regressive distributive lag (ARDL) techniques while, Abere *et al.* (2020); Salihu, (2020); Charisma *et al.* (2018); and Osuala, (2012), used ordinary least square (OLS) method, therefore , a gap exist in literature which deserved to be filled

2.3 Theoretical Literature

2.3.1 Monetarist Theory

Friedman was the one who introduced the monetarist hypothesis (1968). This idea states that inflation is a universally occurring financial phenomena. According to Friedman (1968), increasing the money supply temporarily may lower unemployment, but it can also lead to inflation, thus monetary authorities should proceed cautiously. Based on this, the monetarist adds a new variable—price expectations—to the equation used to determine interest rates. An rise in the money supply has a liquidity impact on income and price effects. The monetarist theory of the money transmission mechanism may be summed up symbolically as follows:

$$\uparrow\text{OMO} \rightarrow \uparrow\text{MS} \rightarrow \text{Spending} \rightarrow \uparrow \text{GNP}$$

The classic quantity theory of money lies at the heart of the monetarist argument. Variations in the money supply will have a direct impact on prices and production or income if the velocity of money in circulation remains constant. The monetarist hypothesis holds that changes in the money supply directly affect changes in the amount of money that exists in reality. According to Friedman and Schwartz (1963), who described this transmission mechanism, the Central Bank's expansive open market operations increase the money stock, which also increases commercial banks' reserves and their capacity to extend credit, both of which have the knock-on effect of increasing the money supply.

2.3.2 Keynesian Theory of Money

John Maynard Keynes developed the Keynesian General Theory of Employment, Interest, and Money (1936). According to the notion, the best way to combat the

Great Depression was to boost the economy by combining two measures: - A decrease in interest rates and - Government investment in infrastructure. The consequence of this is that the government is telling commercial banks to treat consumers better by lowering the interest rate at which the central bank loans money to them. Government investments in infrastructure help the economy grow by generating demand, jobs, and business opportunities, while also correcting the impacts of the aforementioned imbalance. According to the Keynesians, government spending boosts aggregate demand, which improves the profitability of private investments and encourages greater levels of investment to take advantage of the economy's better aggregate demand.

According to Keynes's reasoning, the supply and demand for money determine the rate of interest, which is what causes it to fluctuate. A radically different perspective is held by contemporary monetary theory. They contend that since the public portfolio comprises of a diverse range of assets, including bonds, shares, savings, mortgages, etc., when the central bank acquires securities on the open market, substitution and wealth effects are triggered. In the end, these impacts will boost overall money demand and boost production. This theory's implications for the research suggest that government spending is a crucial tool for accelerating economic growth, since it will support the development of small and medium-sized businesses that have the potential to employ a sizable portion of the population. Both in the short and long terms, this scenario will raise the average living standard of the populace and expand the economy.

3.0 Methodology

This paper utilized secondary data obtained from Central Bank of Nigeria (CBN) statistical bulletin. The variables included are; share of service sector to gross domestic product (SGDP), as a proxy for growth of small and medium scale enterprises, while Monetary policy rate (MPR), Cash reserve ratio (CRR), treasury bill rate (TBR), Broad money supply (Ms), and liquidity ratio (LR) are proxy for monetary policy instruments spanning from 1980 to 2020. The service sector was used because it involves, trade, accommodation and food services, transport, information and communication, education, health etc. which directly or indirect deals with the basic requirements of human being.

3.1 Model Specification

Investigating the effects of monetary policy tools on real sector performance in Nigeria, Thankgod and Igbinovia (2022) modified their model, which served as the foundation for this research. Their model is stated below:

$$\Delta \text{LAGDP}_t = \beta_0 + \Delta \text{LAGDP}_{t-1} + \Sigma \beta_{1t} \Delta \text{LMPR}_{t-1} + \Sigma \beta_{2t} \Delta \text{LCRR}_{t-1} + \Sigma \beta_{3t} \Delta \text{LMS}_{t-1} + \Sigma \beta_{4t} \text{LTBR}_{t-1} + U_t$$

$$\Delta \text{LMGDP}_t = \beta_0 + \Delta \text{LMGDP}_{t-1} + \Sigma \beta_{1t} \Delta \text{LMPR}_{t-1} + \Sigma \beta_{2t} \Delta \text{LCRR}_{t-1} + \Sigma \beta_{3t} \Delta \text{LMS}_{t-1} + \Sigma \beta_{4t} \text{LTBR}_{t-1} + U_t \quad \text{Where;}$$

Where: AGDP = share of agricultural sector to gross domestic product, MGDGP = share of manufacturing sector to gross domestic product, MPR = monetary policy rate, CRR = cash reserve ratio, TBR = Treasury bill rate, and MS broad money supply, b_0 is the constant, while b_{1-4} are the coefficients of the explanatory variables (MPR, CRR, TBR, and MS). ϵ is the error term. The model above will be modified by introducing liquidity ratio as a new variable, thus:

$$\text{MGDP} = f(\text{MPR}, \text{CRR}, \text{TBR}, \text{MS}, \text{LR}) \dots \dots \dots 3.1$$

The mathematical model could be symbolically expressed as;

$$\text{SGDP} = b_0 + b_1 \text{MPR} + b_2 \text{CRR} + b_3 \text{TBR} + b_4 \text{M2} + b_5 \text{LR} \dots \dots \dots 3.2$$

Equation (3.2) above is transformed into an econometric model by incorporating the disturbance term (ϵ) as follows;

$$\text{SGDP} = b_0 + b_1 \text{MPR} + b_2 \text{CRR} + b_3 \text{TBR} + b_4 \text{M2} + b_5 \text{LR} + \epsilon \dots \dots \dots 3.3$$

Logarithmic transformation are also a convenient means of transforming a highly skewed variable into one that is more approximately normal (Kenneth ,2011). The modified version of the model adopted for this study now take the form of:

$$\text{LSGDP} = b_0 + b_1 \text{LMPR} + b_2 \text{LCRR} + b_3 \text{LTBR} + b_4 \text{LM2} + b_5 \text{LLR} + \epsilon \dots \dots \dots 3.4$$

Where:

Where: SGDP = share of service sector to gross domestic product, MPR = monetary policy rate, CRR = cash reserve ratio, TBR = Treasury bill rate, MS

„broad money supply, and LR=Liquidity ratio, b_0 is the constant while b_{1-5} are the coefficients of the explanatory variables (MPR, CRR, TBR, MS & LR) and ε is the error term.

3.2 Method of Data Analyses

3.2.1 Unit Root Test

The study employed the Augmented Dickey Fuller (ADF) unit root test to identify the order of integration of the variables under study to select appropriate methodology in order to avoid spurious regression.

3.2.2 The ARDL Methodology

The study employed the autoregressive distributive lag model (ARDL) proposed by Pesaran, Shin and Smith (2001) to estimate the relationship between the variables. The model is therefore specified in unrestricted error correction form to test for cointegration relationship as follows:

The Autoregressive Distributed Lag (ARDL) Model is specified as follows:

$$\Delta \text{LSGDP}_t = \beta_0 + \Delta \text{LSGDP}_{t-1} + \sum \beta_{1t} \Delta \text{MPR}_{t-1} + \sum \beta_{2t} \Delta \text{LCRR}_{t-1} + \sum \beta_{3t} \Delta \text{LTBR}_{t-1} + \sum \beta_{4t} \Delta \text{LMS}_{t-1} + \sum \beta_{5t} \Delta \text{LLR}_{t-1} + \Delta \text{LSGDP}_{t-1} + \sum \Phi_{1t} \Delta \text{MPR}_{t-1} + \sum \Phi_{2t} \Delta \text{LCRR}_{t-1} + \sum \Phi_{3t} \Delta \text{LTBR}_{t-1} + \sum \Phi_{4t} \Delta \text{LMS}_{t-1} + \sum \Phi_{5t} \Delta \text{LLR}_{t-1} + U_t \dots \dots \dots 3.5$$

The inference here is that, if the computed F-statistics is greater than the upper bound critical value at 5%, there is said to be cointegration. If the computed F-statistics is less than the lower bound critical value at 5% there is no cointegration. however, if the value of the computed F-statistics lies between the upper and the lower critical values, then the inference is said to be inconclusive. Once cointegration relationship exists, the long-run model would be estimated as specified:

$$\Delta \text{LSGDP}_{t-1} + \sum \Phi_{1t} \Delta \text{MPR}_{t-1} + \sum \Phi_{2t} \Delta \text{LCRR}_{t-1} + \sum \Phi_{3t} \Delta \text{LTBR}_{t-1} + \sum \Phi_{4t} \Delta \text{LMS}_{t-1} + \sum \Phi_{5t} \Delta \text{LLR}_{t-1} + U_t \dots \dots \dots 3.6$$

Similarly, the short-run model of the error correction specification would be estimated to ascertain the short-run dynamic behaviour of the variables in the model as;

$$\Delta \text{LSGDP}_t = \beta_0 + \Delta \text{LSGDP}_{t-1} + \Sigma \beta_{1t} \Delta \text{LMPR}_{t-1} + \Sigma \beta_{2t} \Delta \text{LCRR}_{t-1} + \Sigma \beta_{3t} \Delta \text{LTBR}_{t-1} + \Sigma \beta_{4t} \Delta \text{LMS}_{t-1} + \Sigma \beta_{5t} \Delta \text{LLR}_{t-1} + \text{ECT}_{t-1} + U_t \dots \dots \dots 3.7$$

Where the ECT in the above equation is specified as;

$$\text{ECT}_t = \Delta \text{LSGDP}_t - \beta_0 - \Delta \text{LSGDP}_{t-1} - \Sigma \beta_{1t} \Delta \text{LMPR}_{t-1} - \Sigma \beta_{2t} \Delta \text{LCRR}_{t-1} - \Sigma \beta_{3t} \Delta \text{LTBR}_{t-1} - \Sigma \beta_{4t} \Delta \text{LMS}_{t-1} - \Sigma \beta_{5t} \Delta \text{LLR}_{t-1} \dots \dots \dots 3.8$$

Finally, the study diagnosed the model by conducting test for serial correlation, Ramsey reset test and heteroskedasticity.

4.0 Empirical Data Analysis

Table 4.1: Unit Root Test using Augmented Dickey Fuller (ADF)

Variable	Levels			First Difference			Order of integration	Prob
	ADF statistics	1% critical value	5% critical value	ADF statistics at First Difference	1% critical value	5% critical value		
LSGDP	-1.258988	-3.610453	-2.938987	-2.968856	-3.615588	-2.941145	1(1)	0.0388
LMPR	-3.178519	-3.610453	-2.938987				1(0)	0.0290
LCRR	-1.404027	-3.610453	-2.938987	-5.452456	-3.615588	-2.941145	1(1)	0.0001
LMS	-0.734114	-3.615588	-2.938987	-10.13053	-3.615588	-2.941145	1(1)	0.0000
LLR	-3.214715	-3.610453	-2.938987				1(0)	0.0266
LTBR	-2.928358	-3.610453	-2.938987	-6.428410	-3.615588	-2.941145	1(1)	0.0000

Source: Extracts from E-view 10. * Level of significance at 5%

The variables included in the study were put through Augmented Dickey Fuller (ADF) Tests to assess if they are stationary series or non-stationary series, according to the results from table 4.1 above. The stationarity test results show that LSGDP, LCRR, LPSC, LMS, and LTBR were stationary at initial difference 1(1), whereas LMPR and LLR are stationary at level 1(0). Therefore, the variables exhibit mixed order of integration or stationarity at level and first differences. For the data analysis, the Autoregressive Distributive Lag (ARDL) method, which can handle both stationary at level I(0) and first difference I(1), was used. The ARDL

test, which takes into account both short- and long-term trends when examining the connection between the dependent and independent variables, is therefore the most appropriate analytical technique.

Table 4.2: ARDL Bound Test

Test Statistics	Value	K
F-statistics	5.740141	5

Significance	I (0)	1(1)
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Authors computation from E-view 10 Output

Table 4.2 presents the results of the bound test, which compared the F-statistics with the critical bound values. The value of the F-statistic is 5.740141. The outcome demonstrated that, at a significance level of 0.05, the F-statistic is bigger than both the lower and upper limits of the critical values, which are 2.62 and 3.79, respectively. It follows that there is a degree of co-integration between monetary policy tools and the expansion of small and medium-sized businesses in Nigeria. As a consequence, the projected results of the long-run and short-run Auto-Regressive Distributive Lag (ARDL).

Table 4.3: ARDL Long-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
LMPR	-3.012400	1.802761	-1.670993	0.1096
LCRR	0.286001	0.386877	0.739257	0.4679
LMS	0.984001	0.080257	12.26066	0.0000
LTBR	0.538027	1.030015	0.522344	0.6069
LLR	2.021604	1.365237	1.480771	0.1535

$$\text{EC} = \text{LSGDP} - (3.01240 * \text{LMPR} + 0.2860 * \text{LCRR} + 0.9840 * \text{LMS} + 0.5380 * \text{LTBR} = 2.0216 * \text{LLR})$$

Source: Authors computation from E-view 10 Output

Table 4.3 of the Autoregressive Distributive Lag (ARDL) long-run result demonstrate that the log of broad money supply (LMS) reported a positive (0.984001) relationship with the contribution of service sector to gross domestic product (SMGDP). This implies that when CBN increase money supply (MS) in the country, the contribution of the service sector will increase by 98.4 percentage. The p-value of 0.0000 revealed that increase in broad money supply had significant impact on the proportion of service sector to GDP in the long-run. The economic insinuation of this result is that, if the monetary policy authority (CBN) continues to increase the money supply in the country, it will send signal to deposit money banks to reduce their lending rate, which will enable investors in the service sector to access sufficient loans for investment purposes. This will mean expansion to the service sector leading to job creation, generation of more profit, stable prices of goods and services etc. This result conforms to earlier study by Thankgod and Igbinovia (2022); and Adongo *et al* (2020). However, the log value of monetary policy rate (LMPR) is negative and has little impact on the contribution of service sector to gross domestic product (SMGDP). This implies that when the monetary policy rate (MPR) rises over time, the proportion of the service sector in GDP will decline by about 3.01 percentage. The p-value of 0.1096 revealed, however, that the decline in monetary policy had no obvious effect on the contribution of the service sector to gross domestic product (SMGDP). The implication of this is that, the predicted contribution of the service sector to gross domestic in terms of job creation, provision of raw materials, finished and semi-finished goods to other sectors, generation of revenue and development of rural and urban areas would be uncertain. While, the ARDL long-run result indicated that the log of cash reserve ratio (CRR), Treasury bill rate (LTBR) and liquidity ratio (LLR) is positive with an insignificant relationship with the proportion of the service sector to the GDP.

Table 4.4: ARDL Short-run Result

Variables	Coefficient	Std. Error	t-Statistics	Prob
D(LMPR)	0.025980	0.082655	0.314322	0.7564
D(LMPR(-1))	-0.264200	0.079365	-3.328945	0.0032
D(LCRR)	-0.008847	0.034988	-0.252855	0.8028
D(LCRR(-1))	-0.001289	0.034134	-0.037755	0.9702
D(LMS)	-0.018888	0.021582	-0.875174	0.3914
D(LMS(-1))	0.018629	0.018685	0.996991	0.3301
D(LTBR)	-0.027696	0.052107	-0.531534	0.6006
D(LTBR(-1))	-0.071417	0.056817	-1.256965	0.2226
D(LLR)	0.038790	0.058712	0.660677	0.5160
D(LLR(-1))	0.096344	0.054504	1.767654	0.0916
ECM(-1)	-0.113949	0.017450	-6.530011	0.0000

Adj R² =0.603944, F-statistics = 6.129203 (0.000072), DW =2.255290

Source: Authors computation from E-view 10 Output

The short-run model results are shown in table 4.4. It demonstrates that the log of monetary policy rate (LMPR) is negative, but significant to influence the contribution of service sector to gross domestic product (SGDP) in the preceding lag period. However, the log of cash reserve ratio (LCRR) revealed a positive relationship with the proportion of service sector to GDP (SGDP) in both current and previous year lag periods, but insignificant to influence the share of service sector to gross domestic product. Similarly, the coefficient of the log of broad money supply (LMS) reported a negative relationship with the share of service sector to GDP (SGDP) at the most current and preceding year lag period. The p-value of 0.3914 and 0.3301 indicates that broad money supply (MS) is statistically insignificant to cause any effect on the proportion of service sector to GDP (SGDP).

Furthermore, the coefficient of the log of Treasury bill rate (LTBR), reported a negative and insignificant correlation with the contribution of service sector to gross domestic product (SGDP) both in the current and previous year lag period. Finally, the log of liquidity ratio (LLR) revealed a positive but negligible relationship with the contribution of service sector to GDP (SGDP). The coefficient estimates for the error correction component, ECM (-1), is negative and significant at the 1 percent level of significance. It shows that the model will move at a 0.9 percent yearly rate towards long-run equilibrium. This implies that a yearly adjustment speed of 9.0 percent may be used to correct the distortion from the prior year.

According to the corrected R-square (R²) value, the independent variables (MPR, CRR, MS, TBR & LR) account for 60% of all the variance in the dependent variable (SGDP). The whole model is significant according to the F-statistics, which is statistically significant at 5.0 percent level. The lack of serial correlation in the model is shown by the Durbin-Watson statistics of 2.255290.

Diagnostic Test

Table 4.1.5: Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Results

	F-Statistic	Prob.Value
Ramsey Reset Test	3.765668	0.0609
Breusch-Godfrey Serial Correlation LM Test	0.445250	0.6472
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.317942	0.9885

Source: Author's Computation using E-view 10

According to Table 4.1.5 above, the results of the diagnostic test reveal that the Ramsey reset test's linearity test revealed that the f-statistic (3.765668) with a computed p-value of 0.0609, which is greater than the 5 percent (0.05) critical value, indicates that the model is correctly specified. The study therefore rejected the null hypothesis. Breusch-Godfrey Serial Correlation LM Test results for the serial or autocorrelation test indicate that the f-statistic is 0.445250 and the Chi-Square probability value is 0.6472. The result demonstrates that there is no serial correlation in the model, with a probability value of roughly 65 percent (0.6472) being more than the 5 percent (0.05) threshold value.

The outcome of the Breusch-Pagan-Godfrey test for heteroscedasticity reveals that the f-statistic is 0.317942, and the Chi-Square probability value is 0.9885. Since the probability Chi-square value is more than 5% ($P > 0.05$), the result shows that there is no indication of heteroskedasticity in the model. Therefore, residuals are homoscedastic, because they have constant variance, which is desired in regression.

Figure 4.1: Normality Test

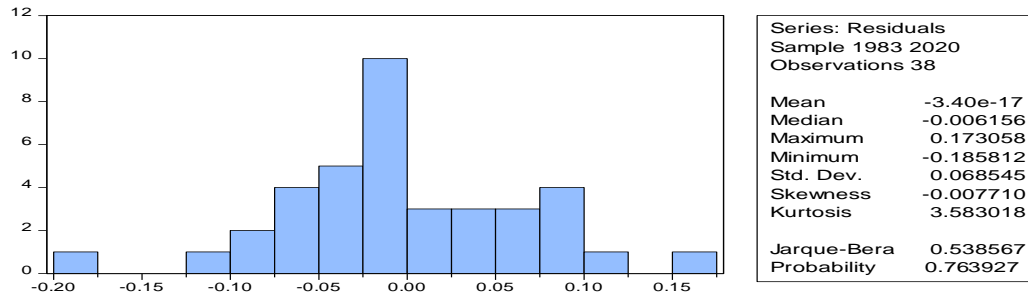


Figure 4.1, shows summary of the normality test with Jarque-Bara value of 0.538567 and a corresponding probability value of 0.763927 more than 0.05 level of significance, indicating that the residuals are normally distributed.

Figure 4.2: Stability Test

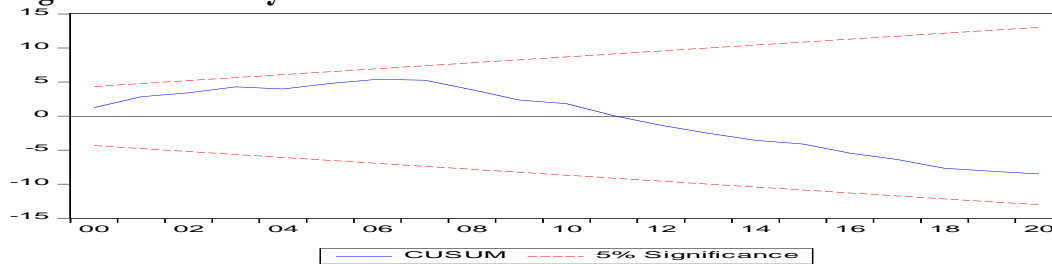


Figure 4.2, shows summary of the stability test, the result showed that the model is stable. This is evident to the fact that the blue line is in-between the two red (-5 & +5) or less than 0.05 level of significance.

5. Conclusion and Recommendation

The study concludes that broad money supply (LMS) had a positive and significant impact on growth of small and medium scale enterprises in Nigeria, which is also in line with the findings of Thankgod and Igbinovia (2022); Salihu (2020); and Husaini (2020). Monetary policy rate (MPR) indicated a negative but significant relationship with growth of small and medium scale enterprises in Nigeria in the short-run, while cash reserve ratio (CRR), treasury bill rate (TBR) and liquidity ratio (LR) indicated an insignificant relationship with growth of small and medium

scale enterprises in Nigeria over the study period. The recommendations of this research discourse are based on the findings arising from the analysis of data. Thus,

In-line with the findings of this study, broad money supply and monetary policy rate should be adopted by the central bank of Nigeria (CBN) as a monetary policy measures or tools to achieve predetermined macroeconomic objectives. Specifically the monetary authority should mandate deposit money banks to direct bulk of its loans to registered small and medium scale enterprises to enable them expand on their productive activities and help reduce unemployment rate in the country, and to ensure stable price level. While other policy instruments (TBR, CRR & LR), should be re-examined by the CBN and make them viable to stabilize the economy.

References

- Abere, M. A., Obarafo, S. A., & Adewole, A. O. (2020). Impact of monetary policies on allocation of loan and advances to small and medium scale enterprises in Nigeria. *International Journal of Economics, Commerce and Management United Kingdom*, 8(8), 78 – 91.
- Adongo, S. O., John, S. O., Zeph, P., & Muyima, R. N. (2020). Impact of monetary policy on the performance of agricultural sector in Kenya. *International Journal of Research and Innovation in Social Science (IJRISS)*, 6(7), 90 – 112.
- Aginah, C., Oguguo, B., & Nwokocha, E. (2013). *Essentials of entrepreneurship development in Nigeria*. Great Stars Publication.
- Amadi, C., & Amadi. N. N. (2014). *Monetary economics: A functional approach*. Rodi Printing and Publication Company.
- Charisma, G. E., Ebikila, S., Lucky, T., & Matthew, B. (2018). Impact of money supply on some macroeconomic variables on the Nigerian economy. *Journal of Business Management and Economic Research*, 2(5), 32-46.
- CBN. (2018). *Monetary policy framework*. CBN Press.
- Friedman, M. (1968). The role of monetary policy. *American Economic Review*, 58(1), 1-17.

*Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria
(1981-2020)*

- Fasanya, I. O., Onakoya, A. B., & Agboluaje, M. A. (2012). does monetary policy influence economic growth in Nigeria. *Asian Economic and Financial Review*, 3(5), 635-646.
- Garba, A. (2019). Effect of investment climate on small and medium scale enterprises growth in Makurdi metropolis, Benue State Nigeria. *Journal of Advance Research in Business Management and Accounting*, 5(7.) <https://doi.org/10.53555/nbma.v5i7.783>
- Gbandi, E. C., & Amissah, G. (2014). Financing option for small and medium enterprises (SMEs) in Nigeria. *European Scientific Journal*, 10(1), 78 -89.
- Hussaini, D., Gylych, J., Abdurrahman, I., & Murat, A. (2020). Monetary policy instruments and economic growth in Nigeria: Realities. *The Journal of Middle East and North Africa Sciences*, 6(10), 45 - 65.
- Imeokparia, P., & Ediagbonya, K. (2014). Small and medium scale enterprises (SMEs): A catalyst in promoting economic development in Nigeria. *Journal of Education and Practice*, 5(33), 92-94.
- Imoughele, L. E., & Ismaila, M. (2014). The impact of commercial bank credit on the growth of small and medium scale enterprises: An econometric evidence from Nigeria (1986-2012). *Journal of Educational Policy and Entrepreneurial Research (JEPER)*, 1(2), 67 - 90.
- Keynes, J. (1930). *Treatise on money*. Macmillan.
- Keynes, J. M. (1936). *The general theory of employment, interest and money*. The University of Adelaide Press.
- Marisa, L. (2013). *The impacts of fiscal and monetary policies on service sector employment: A study of Thailand from 1986-2011*. <http://www.doi:10.7763/IPEDR>.
- Modigliani, F. (1963). The monetary mechanism and its interaction with real phenomena. *Review of Economic and Statistics, Supplement*, 4(1),79-107.
- Nwankwoeze, I. (2012). *The impact of money supply on economic growth in Nigeria (1981-2010)*. A project bachelor of science (B.Sc) degree in economics, University Amorji – Nike Press.
- Nwoko, N. M., Ihemeje, J. C., & Anumadu, E. (2016). the impact of monetary policy on the economic growth of Nigeria. *African Research Review: An International Multi-disciplinary Journal, Ethiopia*, 10(3), 192-206.
- Nwosu, K. O. (2020). Government fiscal and monetary policy framework: Challenges for SMEs and entrepreneurship in Nigeria's developing

*Monetary Policy Instruments and Growth of Small and Medium Scale Enterprises in Nigeria
(1981-2020)*

- economy. Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor of Business Administration
- Odumisor, C. J. (2019). Impact of money supply on the growth of the Nigerian economy, 1976 – 2015. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 10(1), 30-46.
- Ogugua, O. C. (2019). Monetary policy instruments and manufacturing sector output in Nigeria. *International Journal of Innovative Finance and Economics Research*, 9(2), 85-100.
- Onouorah, A., Shaib, I. O., Oyathelemi, E., & Friday, O. I. (2011). The impact of monetary policy on micro-economy and private investment in Nigeria. *Research Journal of Finance and Accounting*, 2(6), 65 - 78.
- Opuni, A., & Edward, A. (2017). Monetary versus fiscal policy effects on SMEs growth in Africa: Evidence from Ghana. *International Research Journal of Finance and Economics*, 5(164), 1450-2887.
- Osakwe, A., Ibenta, S. N., & Ezeabasili, V. N. (2019). Monetary policy and the performance of the manufacturing sector in Nigeria (1986-2017). *International Journal of Academic Research in Business and Social Sciences*, 9(2), 399–413.
- Salihu, T. Y. (2020). *The effectiveness of monetary policy in controlling inflation in Nigeria (1981-2019)*. Bachelor of science (B.sc) degree in economics, Baze University Press.
- Thankgod, T., & Igbinovia, B. (2022). The impact of monetary policy instruments on real sector output in Nigeria. *International Journal of Intellectual Discourse (IJID)*. 5(2), 172-187.
- Tobin, J. (1978). A proposal for international monetary reform. *Easter Economic Journal*, *Easter Economic Association*, 4(3), 153-159.
- Ufoeze, L. O., Odimgbe, S. O., Ezeabalisi, V. N., & Alajekwu, U. B. (2018). Effect of monetary policy on economic growth in Nigeria. An Empirical Investigation, 5(1), 123-140.

The Nexus between the Abuja Environmental Protection Boards' use of Communication Media and Change in Public Behaviour on Drainage Sanitation

Suleiman Haruna

Department of Theatre and performing Arts, Ahmadu Bello University, Zaria,
Nigeria

Email: sulaimanharuna@yahoo.com

Abstract

Poor drainage sanitation is a prevalent problem in many peri-urban communities across Nigeria and this has been blamed for the spread and persistence of perennial diseases like malaria, cholera, guinea worm, and elephantiasis, accounting for high levels of morbidity and mortality and a drawback to national health outcomes. Research has blamed the situation on poor choice of media of communication. Abuja Environmental Protection Board (AEPB) has handled drainage sanitation for over 20 years in the Federal Capital Territory, Nigeria, but, observation and windshield survey revealed that the problem still persists, especially among peripheral, informal settlements. Two study locations with these characteristics were chosen for this study, these are Nyanya and Dakwa. This study appraised the communication media used by the Board, interrogating reasons for its failure to achieve behaviour change. Using the Health Belief Model as theoretical framework, the study establishes that the respondents, who are at different levels of understanding of the dangers of poor drainage sanitation, can be influenced to change their negative practices through the knowledge of barriers and benefits. With a sample population of 1000 obtained via systematic and stratified sampling techniques, this study used quantitative methods to gather relevant data. Thereafter, key findings from the study revealed that 570 respondents, representing 57.8% receive their information regarding drainage sanitation from the AEPB through the radio, 156 others or 15% through television, and 42 others or 4.3% through Information, Education and Communication (IEC) materials. Findings from the study reveal that the Board's concentration on the use of radio to reach citizens rather than deploying a mix of communication methods, played a huge part in awareness creation, but not behaviour change. The study recommends the use of a mix of media methods including participatory communication, and appropriate messaging to facilitate behaviour change regarding drainage sanitation.

Keywords: Behaviour Change; Communication; Communication Strategy; Drainage Sanitation; Wastewater

Introduction

Lack of clean water is a leading causative factor of morbidity and mortality in Nigeria (Olowoporoku 2017, NWRP 2016) and this is accentuated by poor sanitation of the living environment through indiscriminate littering, improper wastewater discharge, and poor sewage disposal (Sadiq, Ezeamaka, Daful, Anjide, Sani & Ogbale, 2018). Wastewater discharged into rivers that people use for drinking, cooking, washing and other functions promote unsanitary living conditions and results in the breeding of communicable diseases ((Sadiq *et al.* 2018). This is increasingly recognized as a major threat to social and economic development, and above all, a major threat to human survival. The impacts of environmental deterioration are more severe on developing countries such as Nigeria. (Sadiq *et al.* 2018). Research has revealed that 2.4 million people lack access to basic sanitation (WHO/UNICEF 2010, WHO 2004). Yearly, more than 2 million people die from diarrheal diseases, of which an estimated 150,000 to 200,000 are children. Ninety percent (90%) of these deaths are blamed on poor hygiene and unsafe water (Sadiq *et al.* 2018), while over 6 million others are stricken with Onchocerciasis (WSSP, 2012).

In Nigeria, the World Malaria Report (2017) has indicated that malaria kills an average of 300,000 people annually, accounting for 25% of the global figures (World Malaria Report, 2017) and through increasing cost of prevention, treatment, hospitalization, and reduced income, malaria is increasing the burden of poverty among families. Other fatalities according to www.unitingtocombatntds.org, are associated with Onchocerciasis (50.57m needing treatment), *lymphatic filariasis* (134.55m needing treatment), Guinea worm (650,000 people affected and an annual loss of 400 million Naira in rice production alone) and cholera (292,000 deaths). All these were principally blamed on the problem of poor drainage of domestic wastewater and storm water as well as poor defecation practices. Owing to this problem, several efforts have been made at the global level to prioritize the issue of clean water and sanitation.

The United Nations (UN) included water and sanitation as goal number 7 of the Millennium Development Goals or MDG (2000 – 2015) and goal number 6 of the Sustainable Development Goals or SDG (2015 - 2030). Danbaba, Nabegu, and

Mustapha, (2016) had noted that when sanitation and hygiene were added to the MDGs in 2002, the focus was restricted to the provision of latrines/toilets, rather than the whole spectrum of sanitation activities. Even then, the target did not receive the required attention and moved “tortoise-like”, as observed by Langford, who chided the designers of the target for not understanding that toilets are not the most immediate issue for many ‘slum dwellers’ (Langford, 2010). This development led to the restriction of the scope of sanitation to the ‘management of defecation’ (Cairncross & Valdmanis 2003, Fewtrell, Prüss-Üstün, Bos, Gore, & Bartram 2007, WHO/UNICEF, 2000), and government policies and programmes came to be guided as such, affecting the planning and implementation of sanitation programmes.

Sanitation attracted a lot of research to identify the causative factors, postulate opinions, and proffering solutions. However, most of the research centred on the safe management of human excreta in general and open defecation in particular (GLAAS 2012, IYS 2008, Fewtrell *et al.* 2007, Cairncross & Valdmanis, 2003). Several campaigns have indeed been run on open defecation (PHAST, CLTS, SARAR, IBM-WASH, etc.), therefore, safe management of human excreta received more attention than garbage disposal and wastewater removal (IYS, 2008). Programmes and funds earmarked for sanitation excluded blocked drainages and stagnant puddles (PEWASH, 2016). This is even though the provision of improved systems for drainage of wastewater and storm-water runoff does not just serve health purposes, but has been identified as an important component of urban upgrading initiatives (Parkinson, J., Tayler, K. & Mark, O., 2007).

Cairncross and Valdmanis (2003) concurred that poor drainage sanitation, alongside refuse disposal, are seen as part of municipal infrastructure and services, rather than being health-related, and because of this, the two services suffered considerable neglect. This neglect festered, leading to poor public attitude towards the issue; as highlighted by Sadiq *et al.* (2018:178), respondents disposed of their refuse indiscriminately in open spaces and drainages without minding the effect. This took its toll on health outcomes among the citizens.

It is however important to note that national policies on Water Resources, Environment, Health, and Environmental Sanitation have adequately covered sanitation, even though they may not specifically refer to drainage sanitation. These policies provide elaborate instructions on what implementing agencies must do to

control the problem. Implementing agencies such as the National Environmental Standards and Regulations Enforcement Agency (NESREA), state's environmental agencies, roll back malaria programmes, water, sanitation and hygiene (WASH), primary health care units, and urban planning agencies have their establishment Acts and statutes that mirror the provisions of the national policies. Judging from what Ubleble and Kpae (2017) have noted as factors that contribute to poor policy implementation of hygiene programs by different government agencies, it may be safe to say that bad public attitude to sanitation issues, lack of proper public awareness as well as inadequate enforcement may have led to the inertia among both agencies and citizens. Since the three factors are all communication-related, we can assume that communication is key in determining successful policy implementation.

Communication within the context of this study refers to the system (MacBride *et al.* 1981) employed by agencies (governmental or nongovernmental) to transmit information about a development intervention to beneficiary publics to create awareness, secure buy-in, and ultimately gain a paradigm shift. In the case of the problem of sanitation, this has not happened. As Shannon and Weaver (1949) noted, a sender has communicated when their message can limit the receiver's choices and the receiver knows the sender's choices with a reduced amount of uncertainty.

Lisa Howard-Grabman (2007) believes that one of the critical success factors for a development intervention is communication, "through communication we raise awareness, foster commitment, and strengthen community capacity for response". It is not in doubt that communication has led to a paradigm shift in areas like open defecation, polio eradication, breastfeeding, and immunization; the problem of drainage sanitation can therefore benefit immensely from effective communication strategies to turn the tide around. Designing interventions to yield behaviour is best done with an understanding of behaviour change theories and an ability to use them in practice (Glanz, Lewis, & Rimers 2015).

Some scholars (Mefalopulos & Kamlongera 2004, Bessette,2004) held the belief that communities lacked information that can accelerate their development; as such, information must be transferred through communication, to increase knowledge and improve attitudes and practices which would ultimately lead to behaviour

change. It is with behaviour change, that the practice of drainage sanitation will improve and the high rates of morbidity and mortality as a result of poor sanitation will reduce. In Bessette (2004: 6), Nora Quebral defined communication as the interaction that must happen between facilitators and the people “if some common ground is to be reached by which their objective can be achieved”.

The question then arises as to whether the agencies mandated to convey this health and environmental information have done the needful and whether they have created the necessary awareness required to encourage behaviour change among the populace. We need to assess the communication strategies they employed to achieve this to identify reasons for their failure.

Over time, it has been the practice of government agencies to deploy the diffusion model to this task, using radio and television jingles, drama, documentaries, interviews with experts, and even newspaper reports (Heggenhougen, Hackethal & Vivek 2003, Bessette, 2004). Many studies have revealed that the diffusion approach is disseminative and does not engage the people; therefore, it is unlikely to lead to behaviour change, let alone sustainable development. Herek (1986) too, has suggested that effort should be made to change negative perceptions and attitudes regarding interventions, recommending the use of multiple methods. Inagaki (2007: 24) also advised that such agencies need to design and implement a communication message or system of information flows that would trigger reactions leading to the adoption of desirable behavioural patterns. Bessette (2004) explains these to include participatory processes, traditional and modern media as well as interpersonal communication.

In a study conducted by Yoder, Zheng, and Zhou, (1991: 38), cited in Morris (2003) on a childhood immunization campaign in Zaire that used print media and radio for their campaign, it was revealed that “no evidence was found that radio spots or programs about immunization influenced people to have their children immunized.” Researchers queried the process and argued that people need to be convinced that they can change things and that they refuse to be victims of any situation (Bessette 2004: 18). This can only be achieved through participatory communication, which Freire (1970) observed conscientizes the people and leads to dialogue.

Vilanilam (cited in Nair and White 1993) also observed that disseminating targeted information through media does not itself make people willing participants in the change process. Once there is no participation, there can be no buy-in from the communities for whom development interventions are targeted, and once there is no buy-in, there can be minimal or no impact. (Nair and White 1993: 83) and that people's behaviour is more likely to change if they are not just passive recipients of messages but are more actively involved in the process: discussion is better than listening (Warnock, Schoemaker, & Wilson 2007).

Bhattacharya believes that self-reliance and self-help are the main factors that can save peasants from a dismal plight (Bhattacharya, 1976: 49 as cited in Haruna 2014), the peasants, therefore, need to understand that they have a problem in the first place. Melkote believes that communication will conscientize them to their needs and problems... and serve as a tool for diagnosis of the problems and serve as an important vehicle in bringing about community participation" (Melkote 1991: 176).

Rogers (Melkote, 2006) defined participation as a "widely participatory process of social change in society, intended to bring about both social and material advancement for the majority of the people through their gaining greater control over their environment". White (1999) argued that the most important outcome of participatory communication for the people is consciousness-raising through critical reflection about their condition which will lead to a significant voice in social action. As Simone St. Anne observed, we enter into collective relationships for two reasons: "to achieve that which cannot be achieved individually and to transcend the limitations of the self through the experience of human interaction" (St. Anne, in Nair & White 1999: 69). She is also convinced that whenever people come together to collaborate, "There is a very real sense in which they have a group Intelligence Quotient (IQ) – the total of the talents and skills of all those involved" (St. Anne, in Nair & White 1999: 70).

Based on this discourse, this study investigated the connection between the prevailing negative drainage sanitation practices and how agencies communicate drainage sanitation to communities, interrogating the design and implementation of their communication strategies. This study focused on two satellite towns of the

FCT, which are peri-urban, and have variously been described as informal and unplanned, and, as slums (Uwejamomere, 2008). These are Dakwa and Nyanya. They are located in Bwari and Abuja Municipal Area Council respectively, at distances between 15 to 20 kilometers from Abuja, and were chosen for this research due to the prevalence of poor drainage sanitation in those two communities.

Theoretical Literature Review

The subjects of this research are people who live with wastewater drainages in their homes and periphery and do not keep them clean, thereby making the drainages breeding grounds for mosquitoes, flies, and harmful pathogens. These in turn spread diseases that affect them all year round. Kurt Lewin has stated that perceptions of reality, rather than objective reality, influence behaviour. "It is not the actual world, but the person's perceptions of it that influence their behaviour" (Rummel, 1975). It could be that these citizens believe that the drainages do not harbour any dangers and have no serious consequences, as such, cleaning them may be a waste of time and resources. The Health Belief Model (HBM) developed by Hochbaum (1958) and Rosenstock (1974) is a good fit for addressing problem behaviours that induce health concerns like the problem of poor drainage sanitation. Together, the six constructs of the HBM provide a useful framework for designing both short-term and long-term behaviour change strategies.

The six constructs are *Perceived Susceptibility*, which refers to one's opinion of susceptibility to a condition; *Perceived Severity*, understanding of the seriousness of a condition and its consequences; *Perceived Benefits*, one's belief in the benefit of reducing the negative behaviour;

Perceived Barriers, the perceived costs of changing the behaviour; Cues to Action coming up with strategies to activate the readiness of citizens, and Self-Efficacy which refers to the acquired confidence in one's ability to take action.

In terms of drainage sanitation, strategies must draw attention to people's susceptibility to frequent bouts of malaria, the intensity and frequency of the sickness, and the benefits of curbing this problem. Barriers to drainage sanitation, including cost of refuse evacuation and drainage construction, may be a hindrance

to people with low incomes and the system may provide more encouragement, create demand or approve subsidies, until self-efficacy is achieved.

This work, therefore, explored how the target population responds to communication activities to establish whether these have impacted their perceptions and attitudes as they live with poor drainage sanitation; and whether they believe communication can reduce the threat at an acceptable cost.

For people to understand the objective reality that drainage sanitation is beneficial, there must be consciousness-raising and this is in the field of communication. Oso (2002) agrees and posits that common people are intelligent and can be active agents of change, and development efforts should be based on people's capacity to contribute and participate actively in the task of transforming their society. According to him people can face their problems with resources or ideas emanating from within without relying on external help.

The rapid urbanization process of Abuja has its consequences such as overcrowded dwellings, informal settlements, pollution, inadequate household facilities, and carefree attitude of people toward poor environmental conditions which have led to deteriorating environment (Ezeamaka 2015). As noted by Oyadiran and Adesina, 2014:

Parts of the city and mostly the informal settlements are usually dirty. In most cases, gutters or drainages (open or closed) are clogged or blocked and many compounds are hemmed in by solid waste, posing health threats to residents, especially children who live and play around the area (Oyadiran & Adesina 2014).

The two locations (Dakwa and Nyanya) are clear evidences of this scenario and they suffer from neglect and lack of basic infrastructure, good roads, potable water, good drainage, and waste disposal systems (Abubakar & Doan 2017, Eerd 2008). They are mostly populated by the middle or lower class, many of whom cannot afford the high-cost residence in Abuja and whose socioeconomic characteristics are associated with these kinds of environments. Both settlements are characterized by the problem of poor drainage and the consequent susceptibility to diseases that

emanate from the stagnation of water. Despite the rampant cases of diseases like malaria and the efforts of government in the areas of communicating public and environmental health, perceptions and attitudes of residents regarding sanitation remain unchanging. Since communication is aimed at changing perceptions, attitudes, and behaviours, it is the aim of this study to investigate where communication has gone wrong and why drainage sanitation remains poor in these communities.

Research methodology

The study deployed stratified and systematic sampling for the selection of households in the study areas; stratified to capture the more urbanized and the less urbanized parts of the settlements. In Nyanya, direct observation was applied to select Area C and Phase 4 New extension as the more organized parts of the study area, while the rest, areas A, B, D, and F were considered as a slum. For Dakwa, Mai Uke and Anguwan Fulani, were more slum than EFAB and Ebira Quarters which were better planned. This classification does not indicate that any of the locations were free of dirty drains; but there were slight differences. This study also applied systematic sampling to select every second household ($k = 2$), except in cases of absence or decline, where the next household was administered.

The sample size is defined as the sub-set of the total population to be studied, and it is expected to be a representation of the population (Singh & Masuku 2014). According to 1991 census, Dakwa has a population of 171,672 (2011, at 9% growth rate), while Nyanya has a population of 186,399 using the same principle. The average household population of the FCT is 4.2 and this equals a sample frame of 40,874 for Nyanya, and 44,380 for Dakwa. The applicable sample size for each of the study locations is 380, following the Yamane (1967) formula, and because the sample size does not change much for populations larger than 20,000 (Conroy, 2016). However, to accommodate a margin of error, 30% more instruments were administered, making it 500 units each for the two study areas but adjusted 60/40 for Nyanya/Dakwa respectively, considering the difference in population (600 for Nyanya and 400 for Dakwa).

Likert scale, dichotomous and multiple-choice questions were represented in the questionnaire, which covered profile of respondents, who in this case are the household heads, including their age, marital status, level of education, and

characteristics of the households including size, occupation, income, availability, and use of kitchen, toilet, and drainage. The questionnaire also had to do with the frequency of health education about the risks of poor drainage sanitation as received from the AEPB, media used, satisfaction of respondents with the health education they receive. The questionnaire also reflects whether they believed health education would ensure better sanitation of their drainages and what their media preference would be for receiving information about drainage sanitation as well as their suggestions for solutions.

Data analysis

The study sample covered both study areas in the administration of the questionnaire and was administered in both elite and slum parts of the residential areas. The categories of data collated were analysed and presented using frequency, tables, and percentages for the questionnaire data. The first table provides socio-demographic information on the respondents.

Table 1a: Socio-demographic characteristics of Respondents

S/N	Variable	Characteristics	Frequency	Percentage%
1.	Gender	Male	562	57.0
		Female	424	43.0
		Total	986	100.0
2.	Age	25 years and below	546	55.4
		26-35 years	52	5.3
		36 - 45 years	270	27.4
		46 – 53 years	98	9.9
		55 years and above	20	2.0
		Total	986	100.0
3.	Level of education	Primary school	112	11.4
		Secondary school	364	36.9
		Post-secondary school	452	45.8
		None of the above	58	5.9
		Total	986	100.0
4.	Marital Status	Single	360	36.5
		Married	598	60.6
		Separated/Divorced	12	1.2
		Widowed	16	1.6
		Total	986	100.0
5.	Number of Persons in the Household	Less than 3	152	15.4
		3-6	542	55.0
		7-10	98	9.9
		11 and above	194	19.7
		Total	986	100.0
6.	Estimated Monthly Income	N 18,000- N25,000	372	37.7
		N 26,001- N35,000	306	31.0
		N 36,001- N45,000	170	17.2
		N 46,001- N55,000	46	4.7
		Above N 55,000	92	9.3
		Total	986	100.0

Source: Researcher's field survey, 2021

The table shows that 562 (57%) of the respondents were male, while 424 (43%) were female. This level of participation by the women is significant, as they may indicate a change in social trend.

The table also reported that 546 (55.4%) of the respondents were under 25 years of age; 52 (5.3%) were between the ages 26 and 35; 270 (27.4%) were between 36 and 45, 98 (9.9%) were between 46 and 55; while only 20 (2%) were above 55. This indicates that more young people participated in the survey either as heads of households or merely tenants and this corroborates the earlier research conducted by Bako, (2018). Another high category constitutes those in the range of 36 and 45, which covers more heads of families.

The table also provided a distribution of educational attainment among the respondents. 112 (11.4%) held primary school certificates; 364 (36.9%) held secondary school certificates; 452 (45.8%) went beyond secondary education; while 58 (5.9%) did not attend any formal education. The results indicate that over 90% have some level of literacy, with those who studied beyond secondary school as the majority. The instrument intended to establish the minimal literacy relating to sanitation and hygiene awareness, which does not require high education levels.

On marital status, the table revealed that 360 (36.5%) respondents were single; 598 (60.6%) were married; 12 (1.2%) separated/divorced; and 16 (1.6%) are widowed. The table shows that most of the respondents are married and are therefore responsible for the issue of sanitation in their homes. The size of households of the respondents was also highlighted; 152 (15.4%) respondents reveal they have less than 3 members; 542 (55%) indicate that they have 3 - 6 members; 98 (9.9%) have 7 – 10 members; while 194 (19.7%) had 11 members and above. Out of 986 respondents, only 152 reported they had less than 3 members and this included those who were single. This implies that 834 respondents had more than 3 family members, with the highest number of respondents (542) having 3 – 6 members. Even the category of families with 11 members and above are significant at 194.

Table 1b: Socio-demographic characteristics of Respondents

S/N	Variable	Characteristics	Frequency	Percentage%
7.	Duration of living in neighbourhood	Less than 5 years	406	41.2
		Beyond 5 years	580	58.8
		Total	986	100.0
8.	Status of Accommodation	Rented	672	68.2
		Owned	314	31.8
		Total	986	100.0
9.	Number of Rooms	1-4 rooms	672	68.2
		More than 4 rooms	314	31.8
		Total	986	100.0
10.	Length of Stay in the Neighbourhood	Less than 5 years	406	41.2
		More than 5 years	580	58.8
		Total	986	100.0

Source: Researcher's field survey, 2021

The table also captured the income levels of the respondents. 372 (37.7%) earn N18,000 - N25,000; 306 (31%) earn N26,000 – N35,000; 170 (17.2%) earn N36,000 - N45,000; 46 (4.7%) earn N46,000 - N55,000; while 92 (9.3%) earn above N55,000. This reveals that most of the respondents are low income earners, as less than 10% earn N55,000 per month.

On the status of accommodation, 672 (68.2%) admit they rented houses, while 314 (31.8%) owned their houses. Information on the number of rooms in their houses reveals that 672 (68.2%) admit there are 1 – 4 rooms in their houses; while 314 (31.8%) admitted that their houses have more than 5 rooms. As for the length of stay in the neighbourhood, 406 (41.2%) said they have been in the neighbourhood for less than five years; while 580 (58.8%) said they have been there for more than five years. Most of the respondents (68.2%) admit to being tenants, while the same number (68.2%) admits to living in houses that have 1 – 4 rooms. Incidentally, the landlords form 31.8% of the respondents and the same number of respondents (31.8%) admitted to living in houses with more than four rooms.

Table 2. Respondents' views on existing communication media of Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT.

S/n	Variable	Characteristic	Frequency	Percentage%
1.	Media environmental message is received	Radio	570	57.8
		TV	156	15.8
		Home visitation	116	11.8
		Newspapers	0	0.0
		Social media	86	8.7
		IEC materials	42	4.3
		Town hall meeting	4	0.4
		Announcement (Town Crier)	4	0.4
		Drama	0	0.0
		Worship centers	8	0.8
		No of the above	0	0.0
		Total	986	100.0
2.	Nature of environmental message	Environmental cleanliness	580	58.8
		Personal hygiene	214	21.7
		Refuse disposal	142	14.4
		Waste management water	50	5.1
		Total	986	100.0
3.	Frequency of message	Weekly	304	30.8
		Monthly	236	23.9
		Quarterly	130	13.2
		Yearly	316	32.0
		Total	986	100.0

Source: Researchers field survey, 2021

Table 2, reveals respondents views on existing communication media of Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT. On the media through which environmental messages are received, 285 (57.8%) claim radio, 78 (15.8%) admit to television, 58 (11.8%) to home visitation, none for newspapers and drama, 43 (8.7%) for social media, 21 (4.3%) for IEC materials,

2 (0.4%) admit to town hall meetings, another 2 (0.4%) to town crier announcements, and 4 (0.8%) for worship centres. On the nature of the message, 290 (58.8%) admit to receiving messages on environmental cleanliness, 107 (21.7%) on personal hygiene 71 (14.4%) on refuse disposal and 25 (5.1%) on waste water management. On the frequency at which they received these messages, 152 (30.8%) respondents indicate that they receive the messages weekly, 118 (23.9%) monthly, 65 (13.2%) quarterly, and 158 (32%) a year apart.

Table 3: Respondents appraisal of environmental messages through existing communication media by Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT.

S.N	Variables	Variables		Σf	Σfx	\bar{x} Mean	Ranking	Remark
		Yes	No					
1.	Messages adequately sensitized on environmental sanitation	422	564	986	1408	1.43	4 th	No
2.	Messages effectively sensitized on appropriate water usage and disposal	458	528	986	1444	1.47	2 nd	No
3.	Messages sensitized on appropriate disposal of refuse	462	524	986	1448	1.47	2 nd	No
4.	Messages sensitized on the importance of environmental protection	484	502	986	1470	1.49	1 st	No
5.	Messages effectively sensitized on drainage construction and maintenance	410	576	986	1396	1.42	5 th	No
6.	AEPB Communication strategy involved members of the community in their sanitation campaigns in your area	254	732	986	1240	1.26	9 th	No

The Nexus between the Abuja Environmental Protection Boards' use of Communication Media and Change in Public Behaviour on Drainage Sanitation

7.	AEPB utilized community events like festivals and ceremonies to propagate sanitation	260	732	986	1246	1.26	9 th	No
8.	Members of the community were involved in knowledge sharing on drainage sanitation	346	640	986	1332	1.35	6 th	No
9.	There have been communal inspection of drains in your area	308	678	986	1294	1.31	7 th	No
10.	There have been any punitive action on those who do not maintain their drainages	242	744	986	1228	1.25	6 th	No
11.	AEPB conducted inspection and enforcement exercises alongside the community	280	706	986	1266	1.28	11 th	No
12.	Other members of the community received training on drainage sanitation	206	780	986	1184	1.22	12 th	No

Source: Researchers field survey, 2021

Table 3, reveals respondents' appraisal of environmental messages through existing communication media by Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT. 422 respondents agreed that messages adequately sensitized them on environmental sanitation, while 564 did not agree. 458 respondents agreed that the messages they received effectively sensitized them on appropriate water usage and disposal, while 528 did not agree. 462 agreed that the messages they received sensitized them on appropriate disposal of refuse, while 524 did not agree. 484 agreed that the messages sensitized them on the importance of environmental protection, while 502 disagreed. 410 agreed that the messages effectively sensitized them on drainage construction and maintenance, while 576 did not. 254 agreed that AEPB Communication strategy involved members of the

community in sanitation campaigns, while 732 disagreed. 260 agreed that AEPB utilized community events like festivals and ceremonies to propagate sanitation, while 732 disagreed. 346 agreed that members of the community were involved in knowledge sharing on drainage sanitation, while 640 disagreed.

A total of 308 respondents agreed that there has been communal inspection of drains in their area, while 678 disagreed. Another 242 agreed that there have been any punitive action on those who do not maintain their drainages, while 744 did not. Furthermore, 280 agreed that the AEPB conducted inspection and enforcement exercises alongside the community, while 706 did not. For 206 respondents, other members of the community received training on drainage sanitation, while 780 did not. The overall remark is that the respondents disagreed with the issues raised.

Table 4, reveals respondents' views on the nature of awareness campaigns and messages conveyed by AEPB's Communication media. Seven hundred and thirty six (736) respondents strongly agreed that poor drainage sanitation practices could have health implications. 198 agreed, none were undecided, 16 disagreed, while 36 strongly disagreed. The overall remark is that the respondents are agreed. 716 mosquitoes could breed from poor drainage sanitation. 228 agreed, 7 were undecided, 816 disagreed, and 20 strongly disagreed. The overall remark is that the respondents are agreed. 630 strongly agreed that poor drainage sanitation could be caused by improper disposal of refuse. 222 were agreed, 6 were undecided, 20 disagreed and 8 strongly disagreed. The overall remark is that the respondents are agreed. 630 strongly agree that poor drainage sanitation could be caused by improper disposal of wastewater, 304 agreed, 4 were undecided, 36 disagreed and 12 strongly disagreed. The overall remark is that the respondents are agreed. 748 strongly agreed that poor drainage sanitation could pollute the environment, 212 agreed, none were undecided, 22 disagreed, and none disagreed. The overall remark is that the respondents are agreed. 558 strongly agreed that it is their responsibility to maintain clean drainages. 284 also agreed, 16 were undecided, 78 disagreed and 50 strongly disagreed. The overall remark is that the respondents are agreed.

Table 4: Respondents views on Nature of awareness campaigns and messages conveyed by AEPBs Communication media

S/ n	Statement	Degree of Agreement					Σf	Σfx	Mean	Overall Remark	Ranking
		Strongly agree	Agree	Undecided	Disagree	Strongly disagree					
1.	Poor drainage sanitation practices could have health implications	736	198	0	16	36	986	4540	4.61	Strongly agreed	4 th
2.	Mosquitoes could breed from poor drainage sanitation	716	228	6	16	20	986	4561	4.63	Strongly agreed	3 rd
3.	Poor drainage sanitation could be caused by improper disposal of refuse	730	222	6	20	8	986	4604	4.67	Strongly agreed	2 nd
4.	Poor drainage sanitation could be caused by improper disposal of wastewater	630	304	4	36	12	986	4462	4.53	Strongly agreed	5 th
5.	Poor drainage sanitation could pollute the environment	748	212	0	22	4	986	4636	4.70	Strongly agreed	1 st
6.	It is your responsibility to maintain clean drainages	558	284	16	78	50	986	4180	4.24	Agreed	6 th
Aggregate Mean									4.56	Strongly agreed	

Source: Researcher's field survey, 2021

Discussion of findings

Respondents expressed their views on existing communication media used by the Abuja Environmental Protection Board (AEPB) regarding drainage sanitation in the FCT (see table 1, above). The most popular media through which they claim to receive messages was radio, at 57.8%, out of 10 channels, with Television, recording 15.8%. 58.8% claim that the media messages they received were on environmental sanitation, and only 5.1% recall receiving any messages on drainage of wastewater. 32% of the respondents reported that they receive these messages once a year; this is a subtle way of admitting that the messages never came. The remaining responses are spread too thin to specify whether the messages came regularly or not.

The study then appraised the impact of the communication media by Abuja Environmental Protection Board (AEPB); in terms of influence, inclusion, community action and enforcement; the respondents said no in all cases (Table 2). Respondents indicated that they were not adequately sensitized by media messages on environmental sanitation (564/986), appropriate water usage and disposal (528/986), appropriate disposal of refuse (524/986), the importance of environmental protection (502/986), and drainage construction and maintenance (576/986). Members of the community were not involved by the AEPB in designing or executing sanitation campaigns (732/986), did not utilize community events like festivals and ceremonies to propagate sanitation (732/986) or involve members of the community in knowledge sharing on drainage sanitation (640/986). There has also not been communal inspection of drains in their area (678/986), and no punitive actions on those who do not maintain their drainages (744/986). AEPB have not conducted inspection and enforcement exercises alongside the community (706/986), and there was never a training session on drainage sanitation at the community (780/986).

This data showed radio as the media of choice by AEPB, and the regularity of its messaging was more on environmental cleanliness and not specifically on drainage sanitation. The study also provides evidence that communicating drainage sanitation was not a priority. The data indicate that restricting communication activities to radio through jingles and media appearances by management was not an effective way of communicating drainage sanitation for behaviour change.

The survey proved that the highest category of respondents admitted a high level of awareness among respondents on issues related to poor drainage sanitation (see table 3). This category also agreed that poor drainage sanitation practices have health implications (736/986), that mosquitoes breed from poor drainage sanitation (716/986), that poor drainage sanitation is caused by improper disposal of refuse (730/986), that poor drainage sanitation is caused by improper disposal of wastewater (630/986), that poor drainage sanitation pollutes the environment (748/986) and that they (respondents) are responsible for maintaining clean drainages (558/986). The high level of awareness, however, did not influence positive behaviour change of respondents, indicating the need for the use of a mix of media. Less than 30% of respondents agreed they or their communities were involved in the campaign, they were mere receivers of radio and TV messages.

Conclusion and Recommendation

The study notes that agencies of government like the Abuja Environmental Protection Board must realise the need to conscientize the people and appeal to their sensibilities beyond just awareness creation. As the study has revealed, awareness in itself is not enough to engender behaviour change. Deliberate strategies are required to change negative practices and behaviour of citizens, especially practices like poor drainage sanitation that promote negative health outcomes. These communication strategies must apply a mix of communication methods, must be participatory, dialogic, and horizontal in application and not just disseminative and vertical.

The study established that the media employed by the AEPB has not impacted on their drainage sanitation practices over the period of 20 years since inception; most respondents say they receive messages through the radio but also admitted that the messages were too few and far between and not targeted specifically at drainage sanitation. There is therefore the need for the media engagement to be more targeted, wider, more frequent, and consistent to strengthen its ability to elicit positive behaviour change. The study also calls attention to the vast empirical literature that recommended people's engagement and participation in implementing behaviour change communication campaigns. The respondents in the

study have suggested the use of theatre, town announcers (town criers) and worship centres as additional communication channels.

References

- Abubakar I. R. & Doan P. L. (2017). Building new capital cities in Africa: Lessons for new satellite towns in developing countries, *Journal of African Studies*, DOI: 10.1080/00020184.2017.1376850
- Bessette G. (2004). *Involving the community: A guide to participatory development Communication*. Penang, Malaysia, Southbound and International Development Research Centre
- Cartwright, D., ed., (1951), *Field Theory in Social Science: Selected theoretical papers by Kurt Lewin*. New York. Harper & Brothers Publishers. accessed at https://scholar.google.com/scholar?cluster=4764350132135418232&hl=en&as_sdt=0,5
- Cairncross S., and Valdmanis V. (2003). *Water Supply, Sanitation, and Hygiene Promotion*. Disease Control Priorities in Developing Countries, 2nd edition.
- Conroy, R. (2016). *The RCSI Sample size handbook: A rough guide*. <https://www.researchgate.net/profile/Ronan-Conroy/post/How-to-determine-sample-size2/> accessed on 03/09/21, 06:24
- Danbaba G, Nabegu A. B, Mustapha, B. A. (2016). Assessment of Implementation of the Environmental Sanitation Policy in the Federal Capital Territory (FCT) Abuja, Nigeria. *Global Journal of Social Sciences Studies Vol. 2, No. 1, 1-13, 2016*
- Eerd, van M. (2008). *Access to housing, land, and basic services in Abuja, Nigeria*. Rotterdam, Netherlands. Cordaid/Institute for Housing and Urban Development Studies
- Elephantiasis (Lymphatic filariasis). Uniting to combat neglected tropical diseases <https://unitingtocombatntds.org/ntds/lymphatic-filariasis/> accessed on 22nd August 2021. 10.55a.m
- Ezeamaka C. K. (2015). *Land administration in Abuja, The federal capital City of Nigeria from 1999 to 2010*. (Unpublished M. Sc Dissertation), Department of Geography, Nigerian Defense Academy, Kaduna, Nigeria.
- Federal Ministry of Water Resources, Nigeria. (2016). *National Water Resources Policy*. Abuja. Federal Government Press
- Federal Ministry of Water Resources., Nigeria (2016). *Partnership for Expanded Water, Sanitation and Hygiene (PEWASH)* Abuja. Federal Government Press
- Fewtrell L., Prüss-Üstün A, Bos R, Gore F, Bartram J, (2007). *Water, sanitation, and hygiene: Quantifying the health impact at national and local levels in countries with an incomplete water supply and sanitation coverage*. Geneva. WHO Environmental Burden of Disease Series No. 15

- Freire, P., (2005) *Pedagogy of the Oppressed* (30th Anniversary edition; Myra Bergman Ramos, Trans.) New York, NY. Continuum.
- Glanz, Rimer, and Lewis' "Health Behavior and Health Education: Theory, Research, and Practice. Guide to Community Preventive Services, CDC". www.thecommunityguide.org. National Cancer Institute, US Department of Health, 2005. *Theory at a Glance: A guide for Health Promotion Practice*. Second Edition
- Haruna S. (2014). *From Diffusion to Community Participation: The Communication Strategies of the National Malaria Control Programme (NMCP) MA/ARTS/2965/2009-2010*, (Unpublished M.A. Thesis), Department of Theatre and Performing Arts, Ahmadu Bello University, Zaria, Nigeria
- Heggenhougen H. K., Hackethal V. and Vivek P., (2003). *The behavioural and social aspects of malaria and its control: An introduction and annotated bibliography*, UNDP/World Bank/WHO/TDR, p. 3
- Herek, G. (1986). The instrumentality of attitudes: Toward a neo-functional theory. *Journal of Social Issues*, 42:2, pp.99–114.
- Howard-Grabman, L., (2007). Demystifying community mobilization: an effective strategy to improve maternal and new born health. Washington. USAID (Access program),
- Inagaki, N. (2007). *Communicating the impact of communication for development: recent trends in empirical research*, Washington DC, World Bank, (p. 24)
- Joint Monitoring Programme for Water Supply and Sanitation (2000). *Global Water Supply and Sanitation Assessment Report*. New York, NY.
- Joint Monitoring Programme for Water Supply and Sanitation (2010). *Global Water Supply and Sanitation Assessment Report*. New York, NY.
- Jones, C.L., Jensen, J. D., Scherr, C.L., Brown, N.R., Christy, K., Weaver J. (2015). The Health Belief Model as an Explanatory Framework in Communication Research: Exploring Parallel, Serial, and Moderated Mediation. *Health Communication*, 30(6): 566–576. *US Department of Health and Human Services*.
- Langford M., (2010). A Poverty of Rights: Six Ways to Fix the MDGs. *IDS Bulletin Volume 41 Number 1*. Oxford. *Institute of Development Studies, Blackwell Publishing Ltd*.
- MacBride Commission (1980/2004). Many voices, one world: Towards a new, more just, and more efficient world information and communication order. Report of the International Commission for the Study of Communication Problems. UNESCO Rowman & Littlefield.
- Mefalopulos, P., and C. Kamlongera (2005). *Participatory Communication Strategy Design, A Handbook: A Training and Reference Guide for Designing and*
- 210 *Gusau International Journal of Management and Social Sciences, Federal University, Gusau, Vol.6 , No. 1, January, 2023, ISSN(p): 2735-9026, ISSN(e): 2787-0383*

- Implementing Communication for Development Strategies for Field Projects.* 2nd ed. Harare, Zimbabwe. SADC/FAO.
- Melkote, S. R. (1991). *Development Communication in the Third World: Theory and Practice.* New Delhi, India: Sage Publications.
- Melkote, S. R. (2006). *Everett Rogers and his contributions to the field of communication and social change in developing countries.* Journal of creative communication. 1:1. New Delhi. Sage
- Morris, Nancy, (2003). *A Comparative Analysis of the Diffusion and Participatory Models in Development Communication,* Communication Theory. 13(2), (pp. 225-248), Oxford University Press.
- Nair, K.S. and White, S. A. (eds.) (1993). *Perspectives on development communication.* Delhi. Sage Publications.
- National Population Commission of Nigeria. (1991). *Nigeria Population and Housing Census 1991.* Lagos. National Population Commission,
- Olowoporoku, O. A., (2017). *A Recipe for Disaster: An Assessment of Environmental Sanitation Situation in Nigeria* MAYFEB Journal of Environmental Science Vol 1 (2017) - Pages 1-5
- Oso, L. (2002). "Communication theories and development communication". In Oso, L. (ed.), *Communication and development: A reader.* Abeokuta: Jedidah Publishers. (pp. 151-168)
- Oyadiran, P; Adesina, I. F., (2014). An Assessment of Abuja Environmental Protection Board (AEPB) In Implementing Environmental Sanitation Policy in the Federal Capital Territory, Abuja. *Conflict Resolution & Negotiation Journal.* Issue 2, (p33-88).
- Parkinson, J., (2003). Drainage and stormwater management strategies for low-income urban communities. *Environment & Urbanization.* Vol 15 No 2 October (116)
- Parkinson, J., Tayler, K. & Mark, O., (2007). Planning and design of urban drainage systems in informal settlements in developing countries. *Urban Water Journal.* Vol. 4, No. 3. (pp. 137 – 149)
- Prochaska, J. O. & Di Clemente, C. C., (1982). *Transtheoretical therapy: Toward a more integrative model of change.* Psychotherapy: Theory, Research and Practice, 19(3), 276-288.
- Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). *In search of how people change. Applications to addictive behaviors.* American Psychologist, 47, (pp. 1102–1114)
- Report of the World Summit on Sustainable Development (2002). Johannesburg. United Nations

- Rummel, R. J. (1975). *Understanding conflict, violence and war: Vol. 1: the dynamic psychological field*. Chapter 3 page 3, Beverly Hills, CA: Sage.
- Sadiq Q. O., Ezeamaka C. K., Daful M. G., Anjide T. W., Sani H. & Ogbole M., (2018). Environmental sanitation practices in Kuchigworo and Garamajiji along airport road, Abuja. *Journal of Geography and Regional Planning*. Vol. 11(11), (pp. 172-182)
- Shannon, C.E. & Weaver, W. (1949). *The mathematical theory of communication*. Urbana, IL. University of Illinois Press.
- Singh, AS, Masuku M. (2014). Sampling Techniques and Determination of Sample Size in Applied Statistics Research: An Overview. *International Journal of Commerce and Management*. 2(11):1-22.
- Ubleble B. A. & Kpae G. (2017). A Critique on Nigeria National Policy on Environment: Reasons for Policy Review. *IIARD International Journal of Geography and Environmental Management*. ISSN 2504-8821 Vol. 3 No.3
- United Nations General Assembly (2008) *International Year of Sanitation 2008: Advocacy for sanitation; a brief guide*. New York. UN Water.
- Warnock, K., Schoemaker, E., Wilson M., (2007). *The case for communication in sustainable development: Promoting dialogue, debate and change*. London. Panos.
- White, S.A. (1999). "Participation: Walk the talk." In S.A. White (ed.) *The art of facilitating participation* (pp. 15-32). New Delhi. Sage.
- World Health Organization (2004). *The sanitation challenge: Turning commitment into reality*. Geneva.
- World Health Organization (2017). *World Malaria Report, 2017*, Geneva.
- World Health Organization (2012). *Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)*. Geneva.
- Yamane, T (1967). *Elementary sampling theory*. Instituto del Libro, Edis. Revolucionaria

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

¹Igboka, A. Ngozi, ²Prof. Elkhanah Chubike Ndie & ³Agbapuonwu, Noreen

^{1,3} Department of Nursing, Faculty of Health Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

²Department of Nursing Science, Faculty of Health Sciences, National Open University of Nigeria, Abuja, Nigeria

Abstract

The study examined reasons for substance abuse among secondary school adolescents in Owerri Municipal Council of Imo State. The study adopted the descriptive survey design. Two research questions and hypothesis guided the study. The population of the study comprised all 4,435 senior secondary school II students in the ten public secondary schools in Owerri Municipal Council of Imo State. A sample of 420 students were drawn for the study using the simple random sampling technique (balloting) and proportionate sampling technique. A self-structured questionnaire designed on a four-point Likert scale and interview on students' substance abuse for teachers, principals and counsellors were used to obtain data. The test-retest method and Cronbach alpha method was used to establish the internal consistency and a reliability coefficient of 0.85 was obtained. Responses to the research questions were answered with mean and standard deviation, while the hypothesis was tested with independent t-test statistics. The findings of the study revealed that the reasons for secondary school adolescents in Owerri Municipal Council of Imo State include; relieve from stress, boredom, to be active, addiction, survive acute condition, obedience to peers, to be energized during action, to acquire boldness, to eliminate shyness during presentation, to overcome depression, maintain social level/acceptance, intellectual enhancement. Further findings showed that there is a significant difference in the mean responses of the male and female adolescents on the reasons for substance abuse. It was also revealed that there is a significant mean difference in the involvement of the middle and late adolescent on substance abuse. Based on the findings of the study, it was recommended among others that students should be mindful of the type of friends they associate with and endeavour to speak to their parents or teachers when they are been pressured into the use and abuse of substances by their peers.

Keywords: *Reasons, Substance Abuse, School Adolescents.*

Introduction

The use and abuse of substances and drugs had a long history in many cultures and societies. Natural plants like opium, coca and cannabis among others have been in

use for many years. Traditionalist in religious ceremonies have used some herbs, healers have used opium for medicinal purposes and the general population have used nicotine and caffeine in socially approved ways (Chisom, 2010). However, recent evidence shows that a number of students and non-students abuse substances, with the majority of the students being in secondary and tertiary institutions (Ewuzie, 2015). The non-medical use of drugs is increasingly seen as a major social and public health problem which affects not only the users and abusers themselves, but also their families as a whole.

Substance abuse refers to the damaging or harmful use of psychoactive substances, such as alcohol and illegal drugs (Jibrin, 2019). Ndom, Igbokwe and Ekeruo (2012) explained substance abuse as drug abuse involving the use of a substance in a manner that its user excessively consumes the substance in large quantity or in a manner detrimental to themselves or those around them. According to Sambo as cited in Muritala, Godwin, Anyio, Muhammad and Ajiboye (2015), substance is said to be abused when its use is not pharmacologically necessary especially when used in the face of legal prohibition or when a socially acceptable beverage is used excessively. Chronic use of substances can cause serious and sometimes irreversible damage to adolescent's physical and psychological development. National Agency for food, drug administration and control, NAFDAC (2004) explained the term substance abuse as excessive and persistent self-administration of a substance or substances without regard to the medically or culturally accepted patterns. It could also be viewed as the use of a substance to the extent that it interferes with the health and social function of an individual. Ewuzie (2015) also sees drug and substance abuse as the excessive or persistent taking of a particular substance or a combination of different substances, to the extent that it causes physical damage to the user, impairment of the user's ability to function in social situation or make a person behave ways that may be harmful to others and himself.

The use and abuse of substances have been found to have detrimental effect on the general wellbeing and particularly mental health of students (Akindutire & Adegboyega, 2012). It has caused some physiological and psychiatric disturbances according to Agwogie (2010), and have also been alleged by teachers and students

to give rise to poor psychosocial adjustment; and risk factor for most unremitting diseases and family relationship problems, among others (Oshodi, Aina & Onajole, 2010). Students continuously get involved in the use and abuse substances likely due to the fact that they are ignorant or poorly informed about the damaging consequences of abuse of drugs (Oshodi, Aina & Onajole, 2010). As submitted by Ajayi and Ayodele (2002), drug abuse is the wrong application or improper use of chemical substances that have the tendency of altering the functioning of the cells in the body. For Ajayi and Ekundayo (2010), drug abuse is over reliance or dependence and therefore misuse of one particular drug either with or without a previous medical diagnosis, from qualified personnel.

Drugs that are commonly abused are called psychoactive drugs, while substances include all other products that have the potential of causing intoxication. All these when taken into the body can alter a person's experience or consciousness such as his or her sensations, feelings, thought or the function of the nervous systems. According to Afuwai (2016), there are several numbers of drugs which are used and abused among adolescent student, they include; Depressants; these are drugs that slow down the central nervous system, bodily functions and behaviours. Examples of these depressant drugs include barbiturates tranquilizers and alcohol. Hallucinogens: Hallucinogens, also called psycuedelic (mind-altering) drugs, are drugs that modify an individual's perceptual experiences and produce hallucination. Common example of this drug is the LSD (Lysergic acid diethylamide). Marijuana is a wilder hallucinogen drug, which comes from the hemp plant (*cannabis sativa*) which originated in central Asia, but is now grown in most parts of the world (Oshodi, Aina & Onajole, 2010). The active ingredient in marijuana is THC, which stands for the chemical delta tetrahydrocannabinol. Because marijuana is metabolized slowly, its effect may be present for several days. Stimulants: Stimulants are drugs that increase the activity of the central nervous system. The most widely used stimulants are caffeine, nicotine (tobacco), amphetamines and cocaine (Afuwai, 2016).

In Nigeria and many other African countries, drugs, alcohol and diverse types of substances that are not permitted or prohibited by law are readily available to adults and to a growing number of young people, both female and male students and non-students together. A preliminary survey confirmed that substance abuse was quite prevalent among students/ young people. The problem seems to be

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

more acute in urban schools as compared to rural schools in Nigeria. Substance abuse has been on the increase in among secondary school adolescents in recent times. Many have died, some lost their sight and hundreds of others hospitalized after consuming illegal poisonous liquor and other additives. In the streets, many street boys and girls are found sniffing many kinds of inhalants such as cobbler's glue/gum, dried faeces, paints, etc. They see it as a way of expressing frustration, hopelessness and powerlessness (Aden, Dimlo, Ndolo, & Chinda, 2006). Sequel to this, this study examines the reasons for substance abuse among secondary school adolescents in Owerri Municipal Council of Imo State.

Due to the diverse socialization agents such as the peer group, teachers, mass media, the government, the church, the mosques and interaction with different people, individuals are acquiring values that go beyond those of their immediate localized culture. Since the family is less involved in socialization of the young, very little is communicated to the young in the way of values and customs. As a result, the traditional value system has been eroded leading to moral decadence. In school, children spend most of their time with the peer group. Peers have a high degree of influence only when parents have abdicated their traditional supervisory roles. Hence, active and involved parents may be able to limit the influence of peer groups on young people's attitudes towards drug use, therefore have a crucial influence on children's behaviour. The stability of family relationships, environment and expectations are powerful forces in helping people, especially children and young adults, manage their lives. Strong family relationships are a source of support for the young members of the family and may prevent children from engaging in drug abuse. Lack of household stability, income or employment for a parent may increase stress on the family and heighten its vulnerability, pushing marginal individuals to find "solutions" or solace in alcohol or drugs. Prevention of drug problems among the youth should employ knowledge about factors likely to influence young people's behaviour. Family factors that may lead to or intensify drug use are thought to include prolonged or traumatic parental absence, harsh discipline, and failure to communicate on an emotional level, the influence of disturbed family members and parental use of drugs. These will provide a negative role model for children. Disrupted family life appears to be a major risk factor for

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

drug abuse among some young people; and that as many as 10 per cent of the young people between 15 and 20 years of age (World Health Organization, 2012).

The school environment may influence students' substance abuse. Students spend most of their time in school therefore there are a lot of things either positive or negative that can take place within a given school environment. They interact with other students, workers, teachers among others. If drug availability, drug trafficking patterns, cultural beliefs on drug use is generally tolerated, it becomes a risk that can influence young people to start to abuse drugs. The influence normally comes through the place the drugs are offered. Such places include parks, streets, schools, homes or parties. The students in towns are more likely to abuse drugs and other substances as compared to those in the rural areas. The same youth in towns have a different lifestyle as compared to the rural youth. Those in towns are outgoing and like partying a lot so they are more predisposed to drugs as compared to those in rural areas as drugs are more available in urban areas as opposed to the availability in rural areas. People use illegal drugs because of their ready availability and promotion of interests of those who are in a position to benefit financially from their sale. Bus stops and schools within town centers are the best known dens of drugs taking. Many researchers have also shown that early initiation to drug abuse is associated with greater drug involvement whether with the same or different drugs. Many youths do not progress to abusing other drugs but for those who do, their drug abuse histories can vary by neighbourhood drug availability and other characteristics of the abuser population (Otieno & Ofulla, 2009).

As children enter high school, they are exposed to greater availability of drugs, drug abusers and social engagements involving drugs. These challenges increase the drug abuse risks. Young people face the greatest risk as they are easy targets for recruitment into the abuse of the drugs by drug barons, because the youth are vulnerable at this period as they seek for peer identification and individualization from the family. It is clear that the youth experiment with drugs during the growing up processes. Even when children are outside their setting, the family has an important role to play. The family protective factors for children outside the family include: age, appropriate parental monitoring of social behaviour including establishing curfews, ensuring adult supervision of activities outside the home, knowing the child's friends and enforcing household rules, success in academic and

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

involvement in co-curricular activities, strong bonds with pro-social institutions such as; school and religious institutions and acceptance of conventional norms against drug abuse (Afuwai, 2016).

Theoretical review of the study took a look at the social learning theory of Albert Bandura and as a basis for explaining adolescents' substance use and abuse. This theory is very relevant to the study because it emphasizes that learning occurs when there is socialization and that a person learns by observing what others do. Thus, the school environment plays a major role in enhancing or curbing the vice of drug abuse. Adolescents learn by observation, therefore, parents, and teachers and significant-others in the society should be mindful of their behaviours in the presence of these adolescents as they are influenced by what they see. The theory emphasizes on reciprocal determinism where both the environment and the learner mutually influence the other.

Therefore, the study examined reasons for substance abuse among secondary school adolescents in Owerri Municipal Council of Imo State. Specifically, the study sought to achieve the following;

1. Identify reasons for the substance abuse among the adolescent students in Owerri Municipality based on their gender.
2. Find out the extent to which substance abuse among secondary school adolescents in Owerri Municipal council of Imo state differ based on their stage.

The following research questions guided the study;

1. What are the reasons responsible for substance abuse among the secondary school adolescents in Owerri Municipality based on their gender?
2. To what extent does substance abuse among secondary school adolescents' students in Owerri Municipal Council differ based on their stage?

The following null hypotheses tested at 0.05 level of significances guided the study;

1. The mean ratings of the male and female adolescents do not relate significantly on the reasons for substance abuse.

2. There is no significant relationship on the adolescents' involvement in substance abuse based on their stage (middle adolescent and late adolescent).

Methodology

The study used the descriptive survey design. The population of the study comprised all 4,435 senior secondary school II students in the 10 public secondary schools in Owerri Municipal Council of Imo State Sourced from the Ministry of Secondary Education Management Board, (2022). A sample of 420 students were drawn for the study using the simple random sampling technique (balloting) and proportionate sampling technique. A self-structured questionnaire titled "prevalence of substance abuse among adolescents in secondary schools" (POSAASS) and interview question on students' substance abuse for teachers, principals and counsellors were used to obtain data. The questionnaire was designed on a four-point Likert scale of Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2, and Strongly Disagree (SD) =1. The face and content validity of the questionnaire was ensured. Cronbach alpha method was used to establish the internal consistency of the questionnaire. The questionnaires were administered once to 30 students who were not part of the sample, but are in the population of the study, the scores gotten were collated with Pearson Product Moment Correlation statistics, and a reliability coefficient of 0.85 was obtained. Responses to the research questions were analysed using mean and standard deviation, while the hypothesis was tested with independent t-test statistics.

Results and Discussion

Research Question 1: What are the reasons responsible for substance abuse among the secondary school adolescents in Owerri Municipality based on their gender?

Table 1: Showing the reasons responsible for substance abuse among adolescent based on gender

Table 1 shows that mean ratings of the adolescents on the reasons responsible for

S/N	Item statement	Males			Female			Total		
		\bar{X}	SD	N	\bar{X}	SD	N	\bar{X}	SD	
1	Taking alcohol makes me to survived acute condition, like fright.	3.96	0.26		3.88	0.48	195	3.92	0.38	420
2	I like to take plenty of Tobacco so that I will be bold.	3.31	0.67		3.18	0.60	195	3.25	0.64	420
3	I prefer taking Narcotic drug to any other substance in order to suppress depression	3.05	0.75		3.27	0.72	-	3.15	0.74	
4	To me taking stimulant like cocaine mira is preferable to any other substance as it kills the inferiority complex in me.	1.43	0.50		1.42	0.56	-	1.42	0.53	
5	Taking menthol sweets melted in carbonated helps to reduce stress	2.68	0.70		2.25	0.81	-	2.48	0.78	
6	Taking drugs energized me for any action	3.39	0.52		3.13	0.68	-	3.27	0.61	
7	I derive self-confidence anytime I take some of these substances.	3.76	0.43		3.45	0.81	-	3.62	0.65	
8	I take drug to enhance my intellectual ability	3.43	1.03		3.07	0.97	-	3.26	1.02	
9	I usually take some substance in order to forget my sorrow, feel happy and kill inferiority complex.	1.20	0.40		1.16	0.37	-	1.19	0.39	
10	To keep friends	3.22	0.91		2.78	1.20	-	3.02	1.08	
11	To be socially accepted by peers	1.93	0.77		2.02	0.83	-	1.97	0.80	
12	To attract respect from my peers.	2.33	0.70		2.41	0.85	-	2.37	0.77	

substance abused, specifically the males had the mean scores of 1.20 and 3.96 for item 9 and 1 respectively. That means the reasons the male adolescents are involve in substance are to survive acute condition, to be energized during action, to acquire

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

boldness, to eliminate shyness during presentation and to overcome depression and maintain social level. This is because the mean ratings of items 1,2,3,5,6,7,8 and 10 are above 2.50 which is their criterion mean value. Then considering the mean ratings for the females on the reasons responsible for their involvement in substance abuse the results in table 1 revealed that their mean values ranged from 1.16 for item 9 to 3.88 for item 1 respectively. So based on the items mean score, it is obvious that the female adolescents abused substance due to; survive acute condition, obedience to peers, to be energized during action, to acquire boldness, to eliminate shyness during presentation, to overcome depression, maintain social level/acceptance and intellectual enhancement. This is because the mean values of the items, related to the reasons are above 2.50, which is the criterion mean value. On the other hand, both male and female believed that to be socially accepted by peers, attracting respect from peers and using stimulants to kill inferiority complex, achieving feeling of joy and happiness are not among their reasons for substance abuse. This is because their mean scores in the items related to these reasons are less than 2.50 which is the criterion mean value.

Research Question 2: To what extent does substance abuse among secondary school adolescents' students in Owerri Municipal Council differ based on their stage?

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

Table 2: Showing the extent substance abuse among secondary school adolescents' students in Owerri Municipal Council differ based on their stage

In table 2 it is shown that the middle stage of adolescents' responses to the item statement related to substance abused yielded mean values that is higher than 2.50.

S/N	Item statement	Middle stage				Late stage	Total N = 420
		\bar{x}	SD	\bar{x}	SD	Mean	SD
1	There is nothing wrong with taking some hard substance	3.46	0.54	3.33	0.81	3.40	0.68
2	I cannot do without taking some hard drugs.	3.96	0.26	3.92	0.34	3.94	0.30
3	For me to be fulfilled in a day I must take alcohol or any other stimulant	3.59	0.66	3.34	0.70	3.47	0.69
4	Taking tobacco is a necessity	3.84	0.40	3.34	0.90	3.61	0.69
5	I feel good whenever I take some of these substance like cocaine and marijuana	3.42	0.50	3.14	0.66	3.29	0.60
6	Taking menthol sweet melted in carbonated drink makes me to eat well so I like it.	3.47	0.713	3.35	0.71	3.41	0.72
7	Taking hard drugs makes me to be happy, so I like it.	3.45	0.74	3.49	0.69	3.50	0.67
8	A day without in take of substance never exist	3.51	0.66	3.49	0.66	3.30	0.61
9	Taking some of these substances make is a way of keeping the ball rolling	3.26	0.89	3.34	0.77	3.30	0.84
	Aggregate mean	3.55		3.42		3.47	

Thus items 1 – 9 all have mean values greater than the criterion mean. This is for both middle and late stages of adolescents. Specifically the middle stages have the aggregate mean value of 3.55, while the late had 3.42. Thus the middle had the mean value of 0.13 higher than the late counterparts.

Hypothesis 1: The mean ratings of the male and female adolescents do not relate significantly on the reasons for substance abuse.

Table 3: Showing Independent t-test on the mean responses of the male and female adolescents on the reasons for substance abuse.

Gender	N	Mean	SD	Mean diff	Df	t	p-value	Result
Male	225	35.42	6.61	1.52	418	2.19	0.014	Significant
Female	195	33.90	7.68					

Table 3 shows that the mean responses of the male and female on the reason for substance abuse are 35.42 (SD = 6.61) and 33.90 SD = 7.68 respectively. These mean values yielded a mean difference of 1.52. Then, when this mean difference was subjected to an independent t-test, a calculated t-value 2.18 obtained that was significant at a p-value of 0.014, which is less than 0.05, the chosen alpha level. This indicates that there is a significant difference in the mean responses of the male and female adolescents on the reasons for substance abuse.

Hypothesis 2: There is no significant relationship on the adolescents' involvement in substance abuse based on their stage (middle adolescent and late adolescent).

Table 4: Showing Independent t- test on the mean scores of middle and late adolescents on their involvement in substance abuse.

Adolescent stage	No.	Mean	SD	Mean df.	df	T	p-value	Result
middle	218	84.61	12.31	12.8	418	2.48	0.03	Significant
Late	207	57.41	10.86					

In table 4, it is shown that the summated mean scores of the middle adolescent and late adolescents in their involvement in substance abuse, are 84.61 (SD = 12.31) and 57.41 (SD = 10.86) respectively. These mean scores yielded a mean influence value of 12.80, which indicated that the middle adolescents are more involved in substance abused than the late adolescents.

Table 4 further shows that when the mean difference value of 12.80 was subjected to an independent t-test, a calculated t- value of 2.48 was obtained level, which is less than 0.05, the chosen alpha. Therefore, there is a significant mean difference in the involvement of the middle and late adolescent on substance abuse. This implies that the difference in the mean scores of the middle and late adolescents observed is not by chance. Again specifically, it means that the middle adolescents are significantly more involve in substance abuse than the late adolescents.

Discussion of Findings

Reasons for Substance Abuse among Adolescents Based on Gender

It was found that male adolescents in Owerri municipality engaged in abuse of substances the most owing to the reason that taking alcohol makes them able to survive acute conditions like fright while engaging the least in abuse of substances because it kills inferiority complex in them. On the other hand, the female adolescents in Owerri municipality, engaged in abuse of substances the most also owing to the reason that it makes them able to survive acute conditions while engaging in abuse of substances the least also because it helps them to forget their sorrows and kills inferiority complex in them.

Hence, both male and female adolescents in Owerri Municipality engaged most in abuse of substances for same reason that taking alcohol makes them able to survive acute conditions amongst other reasons for which they engage in abuse substances such as to gain boldness, suppress depression, forget their sorrows and kill inferiority complex, reduce stress, energize for action gain confidence and enhance intellectual ability. This finding is consistent with Watson, (2012), who also found that there is a dramatic increase particularly in 'developing countries on the use of substances, mainly alcohol in order to cope with acute conditions.

Adolescents Substance Abuse Based On Their Stage

One of the findings of the stage is that stages of adolescent significantly influence the substance abuse among adolescents. Specifically, it was found that late adolescents are less involved in substance abuse than the middle adolescent stage. This result may be attributed to the fact that the late adolescents' might have experienced the ill-effect of the substance abuse and are trying to avoid the

substance by reducing their level of intake. On the other hand, the middle adolescents are relatively new in it and might have not experienced the ill-effect to the extent that they be thinking of making a U-turn.

This finding is not in line with that of Ibrahim (2016), who reported that youths of 18 -25years were more involved in drug abuse. The disparity between the present and the previous one made by Ibrahim *et al*, (2016) is the fact that the present study considered the stages of adolescents, while the previous study considered range of age.

Conclusion

Substance abuse, based on the findings of this study is noticeable among male and female adolescents in secondary schools in Owerri Municipality. There is a high prevalence of substance abuse among the adolescents in secondary schools in Owerri Municipality with alcohol rating as the most used and abused substance and stimulants the least used and abused substances. Other substances that are used and abused among adolescents' in secondary schools in Owerri Municipality include cigarettes, menthol sweet melted in carbonated drinks. The study has shown that adolescents in secondary schools in Owerri Municipality have many reasons for their abuse of substances, which include relieve from stress, boredom, to be active, addiction, survive acute condition, obedience to peers, to be energized during action, to acquire boldness, to eliminate shyness during presentation, to overcome depression, maintain social level/acceptance, intellectual enhancement and others. Further findings showed that there is a significant difference in the mean responses of the male and female adolescents on the reasons for substance abuse. It was also revealed that there is a significant mean difference in the involvement of the middle and late adolescent on substance abuse.

Recommendations

Based on the findings of the study, the following recommendations were made;

1. Students should be mindful of the type of friends they associate with and endeavour to speak to their parents or teachers when they are been pressure into the use and abuse of substances by their peers
2. School counsellors in conjunction with ministry of education, should organize seminars for students on the dangers of substance abuse. Videos and

- clips of the harmful effects of abuse should be displayed to students to enable them see practical examples of what substance abuse could cause.
3. There should be constant regulation and monitoring by parents, of the kind of company their children keep.
 4. Parents should lead good lives and become shining examples to their children, because parents who themselves are substance abusers, may influence their children negatively.

References

- Afuwai, E.D. (2016). Drug abuse on socio-emotional behaviour among secondary school students in Kaduna state, Nigeria. Unpublished masters' dissertation Department of vocational and technical education, Faculty of Education, Ahmadu Bello University Zaria
- Agwogie, M.O. (2010). An investigation into the Nature and predisposing factors related to drug Abuse in Kano and Lagos State. Unpublished M.ED. Thesis A.B.U. Zaria
- Ajayi I.A. & Ayodele, J.B. (2003). *History and development of education in Ado-Ekiti, Ado Ekiti. Nigeria*, Petoa education publisher.
- Ajayi I.A. & Ekundayo H.T (2010). *Contemporary issues in Educational management*, Lagos. Nigeria. Bolbay publisher.
- Akindutire, I. O. & Adegboyega, J. A. (2012). Psychoactive substance consumption and awareness of health effects among students in tertiary institutions in Ekiti State, Nigeria. *Journal of emerging trends in educational research and policy studies*, 3(3): 257-262
- Chisom, C. (2010). Drug misuse warning and effects. Unpublished Lecture, Zaria; ABU.
- Eneh, A. U. & Stanley, P. C. (2004). Patterns of substance use among secondary school students in rivers state. *Nigerian Journal of medicine*, 13: (1). Retrieved from: <http://www.medlinenigeria.com/journals/pattern%20of%20substance%20use%20among>
- Ewuzie, M. A. (2015). *Drug, Alcohol and Tobacco*. Owerri: Helphzibah pub

Reasons for Substance Abuse among Secondary School Adolescents in Owerri Municipal Council of Imo State

- Jibrin U. Y. (2019). The effect of drug abuse among youth in Nasarawa Local Government, Kano State, Nigeria (2014-2017). *Journal of International Politics*, 1 (3), 42- 54
- Muritala, I. A., Godwin A., Anyio, B. T., Muhammad, M., & Ajiboye, S. A. (2015). Impact of substance abuse on academic performance among adolescent students of Colleges of Education in Kwara State, Nigeria. *Journal of Education and Practice*, 6 (28), 108-112
- NAFDAC, (2004) *A handbook on Prevention of Drugs and Substance Abuse in Nigeria National Drug Law Enforcement Agency, Stages and effects of drug abuse*. Lagos: NAFDAC
- Oakley R, & Charles K. (2003). *Drugs, Society and Human Behavior* National Library of Australia; Available from: <http://trovela>.
- Oshodi, O.Y., Aina, O. F., & Onajole, A.T (2010). Substance use among secondary school students in an urban setting in Nigeria: prevalence and associated factors. *African Journal of Psychiatry*; 13:52-57
- Otieno A. O., & Ofulla A. V. O., (2009). Drug abuse in Kisumu town western Kenya, Nairobi: *An African Journal of Food Agriculture Nutrition and Development online*.
- Watson, J. C. (2012). Assessing the potential for alcohol related issues among college student athletes. *Online journal*, 4(33): 14-26.
- World Health Organization (2012). *A Programme on Substance Abuse, multi-city Study on Drug Injecting and Risk of HIV Infection*. A report prepared on behalf of one International Collaborative G