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THE INFLUENCE OF ELECTRONIC BANKING SYSTEMS ON THE PROFITABILITY OF COMMERCIAL BANKS IN NIGERIA

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Abstract
This study examined the influence of electronic banking systems on the profitability of commercial banks in Nigeria. The study utilized secondary data collected from the Central Bank of Nigeria's statistical bulletin. Quarterly time series data spanning 2014 to 2023 were used in this study. The Augmented Dickey fuller (ADF) and Phillips-Parron were used to text for stationary. Other econometric tests such as cointegration test, Parsimonious Error Correction model and the auto-regressive distributed lag (ARDL) techniques were used for data analysis. The study found that, in the short-run e-banking systems had no significant impact on the profitability of banks in Nigeria. However, the results from the long-run analysis revealed that ATM and POS positively and robustly influenced profitability of banks in Nigeria while Mobile banking showed a positive and significant impact on commercial banks' profitability. The results from the Johansen Cointegration and the fully modified Least squares showed evidence of long-run relationship between e-banking and banks profitability. Thus, the study recommended that banks should sensitized clients regarding the benefit of using ATM, POS and other e-payment channels, and also offer quality mobile services to improve their profitability.

Keywords: e-Banking, Fund, Profitability, Mobile banking

1.0 Introduction
Information technology has revolutionized the world and this revolution has affected all facets of people's life including banking. Banks are deemed to be early users of technology and the main drivers of technological revolution. Technological revolution in banks has changed their work mechanisms from traditional means to electronic means. Such changes and development have impacts on quality of service, future of banking activities, and consequently, it's continually competitive ability in the world markets since going along with technology is one of the most important factors of economic organizations success in general and banks in particular.

Globally, electronic banking has witnessed tremendous expansion and development in recent years, due to information and communication technology engagement. This has transformed the banking sector in terms of e-business, e-commerce industries, and financial institutions havs taken the world in the competitive business strategy and rapid economic growth and development ((Oluma, Abdullahi, & Madu, 2016)). Electronic banking may be described as a means by which banking products and services are provided through electronic devices such as phones, iPods, etc. The nascent advances in technology seen around the world have eliminated the traditional manual banking system and brought about a paradigm shift in banking to the extent that banks are using internet

technologies to improve efficiency and scale up the provision of a wide range of value-added products and services. Consequently, Nigerian banks, especially commercial ones, now identify electronic banking as a unique means of differentiating themselves from their rivalries by investing in complicated expertise (Omoni, 2015).

Studies on the effect of electronic banking on financial profitability of banks have provided divergent results. In other words, there are mixed findings regarding the effect of electronic banking on banks financial profitability. Researchers such as (Nwansi & Dibiah, 2023) found that there is no significant relationship between electronic banking and financial Profitability of banks, whereas other studies found that electronic banking positively and significantly influences financial profitability (Rabiu, Ladan, Usman, & Garba, 2019). The revolutionary banking recapitalization in Nigeria since its inception is reported to have exponentially embraced the use of information and communication technologies in the provision of banking services which has become a subject of fundamental importance and concern to all banks and indeed a prerequisite for local and global competitive banking. The advancement in technology has played an important role in improving service delivery standards in the banking industry (Soludo, 2004). In its simplest form, point of sales (POSs), cheques, automated teller machines (ATMs) and deposit machines now allow customers to carry out banking transitions beyond banking hours.

Nigerian banks today are seriously into new electronic delivery channels for banking products and services with a view to delivering better services and satisfying customers the more. Banks that cannot offer these services are increasingly losing their customers. This financial revolution comes with different challenges with regards to risk. The volume of transactions in the banking sector has increased tremendously including the level of fraudulent practices experienced by the financial institution in Nigeria. The increased products and services that have been rendered by deposit money banks in Nigeria, is as a result of information technology adoption in the economy. The customers' experience in depositing, withdrawing, transferring, or cheques clearing of cash is made easier and faster.

The main difficulty that e-banking poses for the Nigerian deposit money bank, like in most other countries, stems from the fact that the extent national laws governing e-banking are premised on the assumption of physical presence of parties to business transactions. However, these laws are incompatible with the taxing of e-banking transactions. With e-banking the need for physical presence in the country receiving the goods or service is removed, or is at best diminished. This creates a problem of how to determine the right to tax profits that are derived from electronic transactions – with serious intrinsic implication for the full realization of income tax revenues. Although the recognition of the internet as a major platform for communication has grown in recent times, the current poor state of infrastructures required for e-banking tractions presents yet another drawback to the widespread use of the internet for banking in Nigeria. It is important to note that e-banking does not merely involve a consumer surfing the internet for his needs with his personal computer, but interface between businesses in order to be able to serve the consumer effectively- implying that all the players lining up the supply chain must be fully equipped with the internet and other facilities. The infrastructures required for this critical business-to-business interface are often inadequate or lacking in

developing countries such as Nigeria (United Nations Conference on Trade and Development, 2001). A related challenge that is increasingly being faced by users of electronic facilities for commercial transaction is a lack of universal security mechanism that forms a first-line of defense for such users. This problem has exposed local firms and individuals to substantial avoidable losses that negatively impact their income, profitability, the tax revenue derivable from them.

Further compounding these problems is evidence of a relatively slow acceptability and adaptability of firms and individuals to the reality of conducting commercial transactions electronically, which has manifested itself in the apathy or even resistance to use of e-payment for financial transactions. Indeed, this has been the reason for the recent compulsion of physical cash payment limits instituted by the central bank of Nigeria in 2012. These issues, among others, have jointly impacted the profit realized from e-banking activities in Nigeria especially on ATMS, online purchasing, point of sale and mobile phones. Hence, the need for this study.

However, previous studies on electronic banking and commercial banks in Nigeria showed that, most of the researchers utilizes panel data in their analysis and discovered that e-banking has positive relationship with deposit money banks profitability in Nigeria. This study is to ascertain the effect of electronic banking commercial banks profitability in Nigeria. The specific objectives are to:

1. Evaluate the impact of ATM on the profitability of commercial banks in Nigeria.
2. Examine the influence of Mobility Banking on the profitability of commercial banks in Nigeria.
3. Ascertain the effect of POS on the profitability of commercial banks in Nigeria.

2.0 Literature Review

2.1 Conceptual Review

Profitability in business describes the health of a firm as an outcome of business programmes and Activities measured against stated objectives or compared to the health of competing firms. It is a measure of the extent to which the firm achieves it nominated objectives. Size of bank, quantum of deposits and profitability could be considered reliable indicators of profitability for banks. However, profitability of commercial banks could be viewed from different angles, depending on how well a bank has fared over a specified period of time. Most common profitability indicators are volume of deposit, total asset, customer base and profitability.

For the purpose of this study however, commercial banks' total asset was adopted as a proxy for performance. Total asset represents all the assets and resources of a bank that has economic value whose reward is expected in the future. On the profitability of deposit money banks, it was described as how adequate a financial firm meets the needs of its stockholders (owners), employees, depositors, and other creditors and borrowing customers. Succinctly, commercial banks should endeavor to adhere strictly to the postulations of regulatory authorities, at least to be at peace with their operating policies, loans, and investments. These will in the long run earn the trust and confidence of the public they serve. Traditionally, profitability in banking has been measured through costs, time, and quality, which highlight production orientation in banking. The bank's

profitability is represented in three alternative variable such as return on asset (ROA), return on equity (ROE) and return on investment (ROI).

E-banking is the use of electronic signals or information technology to provide banking services, such that banks' customers can consummate certain financial transactions without visiting the bank. The use of E-banking platform minimizes the use of cash and cheques for payment, and withdrawal slips for cash withdrawals. while e-banking system do abolish cash transactions, they serve as alternative means of effecting transaction without using physical cash or payment instrument like cheque. The adoption of e-banking ushered different e-payment channels: online banking, ATM, mobile banking, POS, and NIBSS instant payment amongst others. Online banking is an e-payment system that allows customers to consummate financial transactions via banks' websites. This type of e-banking is performed through the use of a personal computer that has internet access. Online banking is also known as internet banking, which allows customers to perform secured banking and financial transactions through the internet. These services are offered without physical interaction between customers and banks' staff. Firms opt for internet banking because it eases consummation of transactions. ATM is a computerized telecommunication device that allow banks' customers to access basic teller services performed with ATM includes cash withdrawal, cash deposit, fund transfer, bills payment, account balance enquiry, account opening etc. Thus, with the ATM, customers can consummate certain financial transactions without visiting the bank.

Mobile banking is an e-banking system that allows banks' customer to consummate transactions via a mobile phone and other devices. It is performed using a Smartphone or similar device that is installed with the bank's software. It may also require the customer to do simple biometrics to enable its usage. The customer is usually granted access to consummate transactions via the mobile device after signing in their username and password for authentication. Mobile banking channel require internet access before making transactions. A variant of mobile banking is tele-banking which allows customers to perform rudimentary bank transaction via a phone without an internet network. These services are accessed by dialing a designated number or code that is provided by the bank. After dialing the number or code, there will either be a voice prompt or message prompt instructing the customer on the necessary steps required to accessed the banking services. A first-time customer will usually be required to create a token or change the default personal identification number (PIN) for security purposes.

POS is a portable devices or machine that enables payment for goods and services using a bank card. In Nigeria, POS is used in supermarkets, petrol stations, boutiques, churches, etc. It is a valid means of payment amongst urban dwellers. As an e-payment system, using POS requires the cardholder to insert a bank card in the machine, input their PIN and the amount to be debited and then click (OK) to effect payment. Once the transaction is completed, they will print two copies of receipt, one for the cardholder, and the other for the merchant. Electronic banking is the automated delivery of new and traditional banking products and services directly to consumers through electronic, interactive communication channels (Aburime, 2008). According to Basel Committee Report on Banking Supervision (2003), e-banking is to include the provision of retail and small value banking products and services through electronic channels as well as a large value

electronic payment and other wholesale banking services delivered electronically. With respect to the field of banking and financial services, e-banking has revolutionized the banking industry with digital applications and emerging products and services in a digital economy (Onyeoma, 2023).

The Point of Sales (POS) system is usually a computer device that is linked to a barcode scanner and printer device where the computer has been installed with special software for the POS. POS system can be made to stand alone (not connected to other POS systems) and can be designed to connect to other POS system as required, over the internet as well as on local networks. The traditional POS (TPOS) is not easy to be moved, which means more difficult to apply for movable merchants. A point of sale (POS) terminal is a computerized replacement for a cash register. Much more complex than the cash registers of even just a few years ago, the POS system can include the ability to record and track customer orders, process credit, and debit cards, connect to the other systems in a network, and manage inventory. A POS system for restaurants, for example, is likely to have all menu items stored in a database that can be queried for information in a number of ways. POS terminals are used in most industries that have a point of sale such as a service desk, including restaurants, lodging, entertainment, and museums.

2.1.1 E-Banking System and Commercial Bank Profitability

Previous studies on e-banking systems and commercial banks' profitability literature suggested that e-banking systems enhance different facets of profitability of banks. Nwansi and Dibiah (2023) accessed e-banking and commercial bank's profitability in Nigeria using Ordinary least squares method (OLS). Net interest margin was used as a proxy for banks profitability while ATM, POS, mobile banking and web pay were used as proxies for e-banking. The study found that ATM, POS and internet payment do not have significant effect on Net interest margin while mobile banking has a positive and significant relationship with net interest margin.

Rabiu, Ladan, Usman, and Garba (2019), examined the impact of E-banking on the operational efficiency of banks in Nigeria, a case study of diamond bank plc, Bauchi branch, Nigeria using regression analysis. Findings revealed that the use of e-banking (internet and mobile banking) by the banks has improved the efficiency of these banks, in terms of providing efficient services to customers electronically, reduces time taken to serve customers, allows new customers to open an account online, customers have easy access to their account at all the time 24/7.

2.2 Theoretical Review

Return on Asset (ROA): Return on Asset (ROA) is the profitability ratio that shows the ability of bank assets to produce a profit. It is expressed as profit before tax/Total Assets. It is an indicator of managerial efficacy. Return on assets (ROA) is a dependent variable and it is the quotient of dividing profit before tax by total assets

Financial profitability: Financial Profitability is a measure of how well a firm can use assets from its primary mode of business and generate revenues. Majority of research on financial profitability of banks utilize different accounting-based measures of financial profitability such as Return on Assets (ROA), Return on Equity (ROE), level of Return

on Capital Employed (ROCE), Return on Sales (ROS), ratio of Expenses to Assets (ETA), Profitability Margin (PM), the ratio of Cash to Assets (CTA), ratio of Sales to Assets (STS), Critical business Return on Asset (CROA), Level of operating cash flow (OCF) among others. However, the most widely used indicators of financial profitability of banks in literature are the ROA and ROE.

Technology Acceptance Theory

Davis, Bagozzi, and Warshaw (1989) proposed the technology acceptance theory (TAT) to explain the conceptual model that users' intention or acceptance degree towards information system or technology. TAT is constructed on the foundation of perceived usefulness and perceived ease of use. Perceived usefulness refers to individual belief to improve the degree of job performance through using a particular new technology and information system. Perceived ease of use indicates how easy an individual learns how to operate or use new technology or information system (Davis et al, 1989; Gefen et al, 2003). The model places more emphasis on how perceived ease of use would positively affect perceived usefulness. Exogenous variables such as environment are also the antecedent that induces perceived usefulness and perceived ease of use. Thus, TAT is based on both important perceptive factors as perceived usefulness and perceived ease of use. TAT is widely applied on the research of information technology.

Liu and Arnett (2000), examined the significant variables to build a successful website based on TAT theory. Gefen et at. (2003) combined TAT and rust to propose an integrated model for explaining online consumer behavior. Pavlou (2003), proposed an e-commerce acceptance model of online consumers by separating and applying experiment designs and surveys.

The study integrated TAT factors, the experiences of the public and perceived risk. The empirical result show that the principle of e-government is that people fully trust the government organization and that they highly identify with information technology. As a result of the empirical study, scholars found that TAT does not only apply to examine new information technology acceptance intention or behavior, but also ensures that TAT is suitable for the explanation of online user behavior issues (Liu and Arnett, 2000; Gefen et al., 2003; Pavlou,2003; Horst et al., 2007

2.3 Empirical Review

Enoruma, Ezuem, and Nwani, (2019), examined the relationship between electronic banking and bank performance in Nigeria adopting data sourced from the central bank of Nigeria (CBN) bulletin for the period 2009 to 2017 using regression analysis. The regression results showed that all the predictors are highly correlated to each other.

Hussein and Elyjoy (2018), examined the effect of internet banking on operational performance of commercial banks in Nakuru county, Kenya. Primary data was analyzed using correlation and regression and analysis. The study established that internet banking has a positive and significant effect on operational performance of the commercial banks. Taiwo and Agwu (2017), investigated the roles e-banking adoption has played in the performance of organizations using a case study of commercial Banks in Nigeria. The Pearson correlation was used to analyze the results obtained using statistical package for social sciences (SPSS). It was concluded that the introduction of new channels into their

e-banking operations drastically increased the bank performances, since the more active the customers are with their electronic transactions the more profitable it is for the banks. Amu and Nwezeakwu (2016), studied the relationship between electronic banking and the performance of Nigerian commercial banks. Engle-Granger co-integration model was used to analyze data for the sample period January, 2009 to December, 2013. The study shows that POS is not co-integrated with both the savings and time deposits but are co-integrated with demand deposits.

Babatunde and Salawudeen (2017), examined the impact of e-banking on Nigerian banking industry and financial institutions. The study employed both descriptive and inferential statistics to analyze data. Findings showed that 22 credit officers or 63.9% of the respondents agreed with the opinion that e-banking system has made banking transactions easier, 11 credit officers representing 31.45% strongly agreed while 2 credit officers representing 5.7% were undecided and none of them either disagreed or strongly disagreed.

Hannington (2013), examined the effect of e-banking on the financial performance of commercial banks in Kenya. The study made use descriptive and inferential statistics to analyze the secondary data used. The study finds out that e-banking has a strong and significant effect on the profitability of commercial banks in the Kenyan banking industry.

Asia, Mbabazi, and Jaya (2015), conducted a study to examine the contribution of e-banking towards banking on performance of banking institutions in Rwanda. The study used descriptive research design, while data was analyzed using both qualitative and quantitative analysis. The study revealed that electronic banking system like ATM, pay direct, electronic check conversion, mobile telephone banking and e-transact has a great impact on performance because they increase profitability, reduce bank cost of operations, and increase bank asset and bank efficiency.

Ahmadu, Jibrin, and Kazeem (2015) conducted a study to examine the relationship between electronic banking and liquidity of Deposit Money Banks in Nigeria. The study adopted the ex-post facto research design, while data were analyzed using both descriptive and correlation analysis. Results from the correlation analysis reveal that mobile banking and point of sale had no significant relationship with liquidity, while there is significant negative relationship between internet banking and liquidity.

Dabwor, Eze and Ayatonwu (2017) conducted a study to examine how the adoption of information and communication technology (ICT) affects the competitive performance of the banking sector in Nigeria. The study adopted the descriptive research design, while data were analyzed using both descriptive and inferential statistics. The findings from the study revealed that a positive relationship exists between ICT and banks performance in Nigeria.

Ilumo, Farouk, Saheed (2018) empirically examined the impact of electronic banking products and services on customers' satisfaction in Kaduna, Nigeria. The study adopted a survey research design, while data were analyzed using multiple regression analysis.

The result shows that electronic banking services and electronic banking products have significant positive impact on customers' satisfaction in Kaduna, Nigeria.

Nwakoby (2018) conducted research to examine the impact of information and communication technology on the performance of Deposit Money Banks in Nigeria. The study adopted the experimental research design, while data was analyzed using multiple regression model. The result shows that the adoption of various forms of information and communication technology has greatly influenced the quality of banking operations, performance and has specifically increased banks return on equity.

Ugbede, Yahaya, and Edicha (2019) conducted a study to examine the effect of electronic payment on financial performance of Deposit Money banks in Nigeria. The study employed multiple regression technique. The study revealed that ATM does not contribute to profitability of the sampled banks and also is not significant to banks profitability. POS has a positive contribution to banks profitability and is also statistically significant to bank profitability, likewise, internet banking also has a positive contribution and statistically significant to profitability of the banks.

3.0 Methodology

3.1 Theoretical Framework

This study is anchored on the Technology Acceptance theory (TAT) originally developed by Davies (1986). TAT proposes the connection between users' acceptance of any innovation and the users' perceived ease of usefulness of such a technology (Liu & Arnett (2000)). TAT deals with perceptions as opposed to real usage, and suggest that users are the key factors that influence how, where and when they will use such technology.

TAT propose two framework-perceived usefulness which according to Davis (1986), is the degree to which a user believes that using a particular system will lead to improved profitability (Gefen et al., 2003; Pavlou, 2003) while the second is the perceived ease-of-use which shows the extent to which a person believes that making use of certain technology is not cumbersome. The relevance of TAT to this current study is that it explains users' acceptance of electronic banking and usage in the # context of improving organizational profitability. The data of the study comprised of electronic banking measures of mobile banking, POS, ATM and internet banking while profitability measure comprised of return on asset, which were obtained from the CBN statistical bulletin. Data obtained were analyzed using both descriptive (mean, maximum, standard deviation, skewness, kurtosis, and Jacque-Bera test) and inferential (Pearson correlation, Variance Inflation Factor, Breusch Pagan Godfrey, unit root co-integration and error correction model) statistical techniques.

3.2 Model Specification

The model for this study was adapted from Nwansi and Dibiah, (2023) who proposed a three variable linear regression model to assess the relationship between electronic banking and operational efficiency. Thus, the relationship between e-banking and the profitability of deposit bank is expressed as specified in the model below:

CBP = f (ATM, MB, POS. CBL) …….. (1)

The statistical model becomes:

$$CBP = b0 + b1ATM + b2MB + b3POS + CBP + ei \quad \ldots\ldots\ldots\ldots \quad (2)$$

Where: CBP = Commercial banks' profits
ATM = Payments through ATM machine
MB = Mobile Banking
POS = Payment through Point-of-Sale
CBL = Commercial bank loans
bo = Unknown coefficient to be estimated
b1 –b4 = coefficient of the contributions of the independent variables: Automated Teller Machine (ATM), MB/Internet subscription, and Point-of-Sale (POS) to the attainment of the dependent variable. ei = Error term.bo, b1, b2, b3 >0.

3.3 Techniques of Analysis and Data Sources

The study used autoregressive distributed lags (ARDL) techniques of analysis to determine the relationship between variables in study. To ensure the validation of the research hypotheses, the diagnostic tests were carried out arising from the pre-OLS result estimation. For the purpose of this study, this approach involved the use of secondary data reported in various issues of the central Bank of Nigeria (CBN) Annual reports and accounts. The data set used as proxies for the e-Banking variables and the regression analysis in this study were derived from these sources for the period covering 2014 to 2023 on quarterly basis.

4.0 Presentation of Results and Interpretation

4.1 Descriptive Statistics

The descriptive statistics of the variables of the study are presented in Table 1. The statistics include the mean (average), median, maximum, minimum values, Jarque-Bera statistics, amongst others

Table 1: Descriptive Statistics

	CBP	ATM	MB	POS	CBL
Mean	28172.09	1.08E+13	16283.28	4599.009	6239.518
Median	21900.00	1.56E+12	2550.000	1026.900	1525.910
Maximum	55100.00	5.22E+13	53500.00	22702.25	26210.36
Minimum	11500.00	1.52E+10	1770.000	14.81000	25.67000
Std. Dev.	15288.80	1.55E+13	16148.52	6783.055	8248.916
Skewness	0.492658	1.384588	0.513798	1.656490	1.258708
Kurtosis	1.609057	3.748389	1.722652	4.306088	3.213219
Jarque-Bera	5.205811	14.74258	4.815232	22.72139	11.43594
Probability	0.074058	0.000629	0.060030	0.000012	0.003286
Sum	1211400.	4.63E+14	700181.0	197757.4	268299.3
Sum Sq. Dev.	9.82E+09	1.01E+28	1.10E+10	1.93E+09	2.86E+09
Observations	40	40	40	40	40

Source: Author's computations using E-views 10

Commercial banks' profit statistic averaged N28.17billion and ranged between N11.5b million and N55.1 billion. The coefficient of skewness and kurtosis as well as the p-value of the Jarque-Bera which is close 0.05 indicates than the series is normally distributed. Mean (average) banks credit during the period was N6239.52. Its minimum value was N25.67 billion, while its maximum value was N26210.36 billion. The p-value of the

Jarque-Bera statistic (which is less than 0.05) suggests that the series followed a normal distribution. POS transactions averaged N4599.0 billion and ranged from 11.81 to 22702.25. The series is not normally distributed as indicated by coefficient of skewness, kurtosis and the p-value of the Jarque-Bera statistic which is less than 0.05. Mobile banking volume averaged N16283.28 billion and ranged between N1770.0 and N53500. 0 billion within the period under consideration. The Jarque-Bera statistic with a p-value close to 0.05 indicate that the series is normally distributed.

4.2: Unit Root Test

Table 2: Unit Root Test Results

VARIABLES	ADF Test Statistics	5% Critical Value	Order of Integration
CBP	-4.070740	-1.949609	I(1)
ATM	-4.404390	-3.526609	I(1)
MB	-3.094009	-2.935001	I(0)
POS	-3.036865	-2.935001	I(0)
CBL	-8.898646	-3.529758	I(1)

Source: Authors Computation using E-Views 10

From the unit root result summarized in the table above, bank profit (CBP), ATM and credit (CBL) are all stationary at first difference while mobile banking (MB) and POS are stationary at level form judging from our decision rule since the ADF statistics is greater than the 5% level of significance in absolute value. Not having a stationarity time series data indicates not having a short run relationship among the individual series. Therefore, since the entire variables are not stationary at level form, there is a need to conduct a co-integration test to test for the long run relationship of the variables. This also support the used of autoregressive distributed lag (ARDL) technique of analysis

4.3 **Cointegration Test**

In econometric analysis, two variables will be cointegrated if they have a long-run or an equilibrium relationship between them (Gujarati, 2004). The ARDL Bounds test (Pesaran et al 2001) was utilized for this purpose in line with ARDL econometric analysis as well as the Johansen co-integration test. The results of the test are presented in Tables 3 and 4

Table 3: Johansen Co=Integration Test
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.884341	142.5842	69.81889	0.0000
At most 1 *	0.485113	54.14268	47.85613	0.0115
At most 2	0.387111	26.92655	29.79707	0.1035
At most 3	0.140774	6.854113	15.49471	0.5947
At most 4	0.015332	0.633481	3.841466	0.4261

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Authors Computation using E-Views 10

Table 4: ARDL Bounds Test Results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	13.10957	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Source: Authors' Computation using E-Views 10

The trace statistics value showed at least two cointegrating equations at the 5% level of significance indicating long-run relationships among the variables of the model

The Bounds test cointegration test results also showed that long-run relationship exists between the dependent variable and the explanatory variables. This is indicated by the computed F-statistic of 13.109 which is greater than the upper bounds critical values at the conventional levels of statistical significance. According to the Granger Representation Theorem, existence of long run relationship between variables implied that the short run (dynamic) relationship between them can be represented with an error correction model which is also handled using ARDL techniques of analysis.

4.4 **ARDL Regression Results**

The results of estimation of the specified short-run (error correction) and the long-run models are presented in Table 5.

Table 5: ARDL Test Results

Included observations: 39

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1543.401	831.0572	1.857154	0.0774
CBP(-1)*	-0.124087	0.067281	-1.844310	0.0793
ATM(-1)	-7.87E-10	1.83E-10	-4.300280	0.0003
MB(-1)	0.156491	0.057729	2.710807	0.0131
POS(-1)	0.311238	0.120967	2.572925	0.0177
CBL**	1.054534	0.357181	2.952380	0.0076
D(ATM)	-1.68E-10	1.15E-10	-1.461940	0.1586
D(ATM(-1))	6.61E-10	1.40E-10	4.735180	0.0001
D(ATM(-2))	4.97E-10	1.44E-10	3.441018	0.0025
D(ATM(-3))	2.22E-10	1.39E-10	1.604360	0.1236
D(MB)	-0.069319	0.027034	-2.564152	0.0181
D(MB(-1))	-0.190264	0.060649	-3.137118	0.0050
D(MB(-2))	-0.152175	0.050091	-3.037986	0.0063
D(MB(-3))	-0.085309	0.038710	-2.203790	0.0288
D(POS)	-0.364100	0.186599	-1.951243	0.0645
D(POS(-1))	-0.479956	0.211555	-2.268710	0.0340
D(POS(-2))	-0.473484	0.190097	-2.490754	0.0212
D(POS(-3))	-0.262057	0.192835	-1.358969	0.1886
CointEq(-1)*	-0.124087	0.012574	-9.868404	0.0000

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATM	-6.35E-09	2.52E-09	-2.519761	0.0199
MB	1.261146	0.399906	3.153603	0.0048
POS	2.508236	1.376867	1.821698	0.0828
CBL	8.498373	2.876224	2.954697	0.0076
C	12438.10	1893.954	6.567268	0.0000

EC = CBP - (-0.0000*ATM + 1.2611*MB + 2.5082*POS + 8.4984*CBL +
12438.1016)

Source: Authors Computation using E-Views 10

The cointegrating form (that is the error correction model) shows that profit of commercial banks (CBP) is significantly affected by short run, first and second lagged of ATM. The short run effect of mobile banking (MB) on commercial bank is negative and significant at the 1% short-run and all lagged periods of time. On the short run, one and two-period lags of POS values also significantly affected the profit of commercial banks (CBP)

Bank credits significantly and positively influenced profitability at both the short run and long run analysis. This attests to the fact that loans are indispensable in bank operations. The error correction coefficient is negatively signed as expected and significant at the 1% level. The absolute value of the coefficient indicates that 12.41% of the short-run deviation from equilibrium is adjusted quarterly to restore the equilibrium. The Durbin-Watson statistic of 2.0 shows the absence of serial correlation in the model. Hence, the model precision is good enough for robust policy recommendation

The estimated long-run coefficients reveal that the profit of commercial banks is affected by ATM operations, mobile banking, POS activities and lending transactions. This again underscores the need to target these variables to improve the performance of deposit money banks in Nigeria.

4.5 Discussion of the Results

The results from the empirical analyses are far-reaching and apt for policy directions. It is on this basis that the implication of this result is conducted. Firstly, it is established that bank loans impact on its profit in the short and long run. Its effect improved the profit performance of banks. This is similar to findings by Onyeoma & Ozor (2022). Commercial banks loans are positively related to its performance in the short-run and long-run as well.

Secondly, the study also found ATM significantly boosts profit of banks in Nigeria. This is in tandem with empirical evidence from the reviewed literature. The result also emphasizes the role of mobile banking as a determinant of banks profit performance in Nigeria. This is in synchrony with theoretical evidence of objective of electronic banking and its key role on the economy in general. Another factor influencing banks' profit performance as revealed by the study is POS. The observed effect of POS revealed that at both short run and long run POS impacts on the banks profit.

5.0 Summary, Conclusion and Recommendations

5.1 Summary

The broad objective of this study is to examine the effect of electronic banking on commercial banks profit performance in Nigeria from 2014 to 2023 using autoregressive distributed lags techniques of analysis on quarterly data. Based on empirical evidence from this study, bank loans and ATM, have significant and positive impact on profit performance of banks in Nigeria at both short and long-run. However, money supply, mobile banking and POS have significant impact on banks performance in Nigeria on the short run long run too. Four hypotheses were formulated, tested and analysed for the study with interesting outcomes for robust policy recommendations.

5.2 Conclusion

The study examined electronic banking and commercial banks' profit performance in Nigeria from 2014 to 2023 using autoregressive distributed lags techniques of analysis on quarterly data. The conclusion reached based on finding revealed indicate that banks loans, ATM, mobile banking and POS have impact on banks' profit performance in Nigeria. Thus, they are therefore suitable variables for capturing banks' performance in Nigeria. Attention should be focused on the identified variables and policies geared towards effective implementation to boost e-banking penetration and financial inclusion considering that Nigeria is a developing country. Again, ATM, mobile banking and POS should be targeted in the implementation of financial inclusion policy to influence the level of economic activities to create the conducive atmosphere to develop the economy for financial system stability. Financial sector development and financial deepening should be encouraged by monetary authorities and regulators to re-invigorate and improve the development of commercial banks in Nigeria. This of course play the key role of financial sector development to reinforce the efficacy of monetary policy in Nigeria.

5.3 Recommendations

Based on the findings of this study, the following policy recommendations have been proffered:

1. Evidence from the study revealed that bank credit has a role to play in determining the profit performance of banks, the government should prioritize credit creation and administration policies in the regulation of banks in order to improve the profit performance of banks in Nigeria
2. ATM transactions improved banks' performance, the monetary authorities, bank executives and regulators should guarantee, re-invigorate and improve ATM schemes and policies by deposit money banks in Nigeria. This of course will play the key role of improving financial services in Nigeria.
3. Mobile banking and POS should be targeted in the implementation of financial inclusion policy to influence the level of economic activities to create the conducive atmosphere to develop the financial sector and financial deepening in Nigeria

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CLIMATE CHANGE AND ENERGY TRANSFORMATION IN CONSUMPTION, CONSERVATION AND ENVIRONMENTAL PROTECTION IN SSA.

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Abstract

This paper examined the relationship between climate change, energy transformation in consumption, conservation, and environmental protection in Sub-Saharan Africa. Utilizing annual panel data encompassing 20 countries spanning from 2015 to 2021, the System Generalized Method of Moment (GMM) technique was employed to estimate the results. Environmental protection was used as a dependent variable, while climate change, energy transformation in consumption, and conservation were employed as independent variables, respectively. The results revealed a significant negative relationship between climate change and environmental protection in Sub-Saharan Africa in the short run. Similarly, in the long run, they demonstrate a significant negative relationship with environmental protection. Conservation also indicates a significant positive relationship with environmental protection. The conclusion drawn from these findings is that climate change reduces environmental protection. It emphasized the critical importance of reducing the effects of climate change. Consequently, the paper recommended that sub-Saharan African economies should institute policy reforms aimed at reducing the side effects of climate change. These reforms may include expanding awareness of the dangers of climate change and subsidizing energy consumption in SSA.

Key words: Climate change; Energy transformation; Sustainable development; GMM.

Introduction

Climate change and global warming pose an existential threat to humanity as one of the major on-going concerns of the last two decades, with their impacts reverberating across continents and ecosystems (Jain, 2017). As a developing region, Sub-Saharan Africa (SSA) faces this threat more acutely than other regions. The region is uniquely vulnerable to the adverse effects of climate change due to its high dependence on rain-fed agriculture, limited adaptive capacity, and socio-economic challenges. This climate change creates a significant threat to development in SSA as the region becomes highly vulnerable to factors such as rising temperatures, changing rainfall patterns, and extreme weather conditions.

The region also has limited access to modern energy services, causing more over-reliance on fossil fuels, resulting in significant environmental impacts, including greenhouse gas emissions and air pollution, which worsen climate conditions and negatively affect

human health. The energy sector, which is a critical component of development in every region, is faced with numerous challenges. For example, in Nigeria, over 600 million people lack access to electricity, and over 700 million people rely on traditional biomass for cooking. In another development, Okwanya and Abah (2018) reported that more than 70% of Nigerians living in rural areas used wood fuel, consuming over 50 million tons of wood fuel annually, which is equivalent to 350,000 ha/year of deforested land. Furthermore, inadequate energy infrastructure leads to frequent power outages and reduced economic productivity. Similarly, the Council for Renewable Energy of Nigeria also estimates that power outages bring about a loss of 126 billion naira (US$ 984.38 million) annually (Akuru, Onukwube, Okoro, & Obe, 2017). Insufficient and unreliable energy infrastructure, coupled with heavy reliance on fossil fuels, has led to frequent power outages, hindering progress across various sectors due to huge income losses, health hazards due to exposure to carbon emissions, unemployment, and the high cost of living.

To address these challenges, SSA countries have committed to transitioning to a low-carbon economy with a focus on renewable energy, energy efficiency, and sustainable development (Adewuyi, Kiptoo, Afolayan, Amara, Alawode, & Senjyu, 2020). Most of these policies are aimed at fostering energy security, promoting economic growth, and mitigating the environmental impact of energy production and consumption. However, the transition requires significant investment, technological innovation, and policy support.

This study aims to examine the relationship between climate change, energy transformation in consumption, and environmental protection.

2.0 Literature Review

Qu, Xu, Qu, Yan, and Wang (2017) investigated the long-run and short-run relationship among energy consumption and environmental pollution using the autoregressive-distributed lag approach in China for the period 1985–2014. Results revealed a co-integration relationship with a statistically significant positive relationship between energy consumption and environmental pollution. Similarly, Granger causality results suggested a unidirectional Granger causality between energy use and environmental pollution. The paper concluded that energy consumption (fossil energy) over time has worsened the level of environmental pollution.

Similarly, Tutak and Brodny (2022) examined how the adoption of renewable energy affected economic indicators in the European Union from 2000 to 2019. The findings show that energy use contributes positively to economic expansion. Chun-sheng, Shu-Wen and Xin (2012) investigated the environmental effects of household energy consumption in rural and urban areas, using SPIRPAT model. The results show that there is an unobvious difference of per capita energy consumption between areas. But in terms of energy structure, urban households are dominated by the fossil energy, while rural households are dominated by both of biomass energy and fossil fuels.

Jain (2017) examined the relationship between economic development and carbon emissions in developing countries, specifically focusing on BRIC economies. Using panel data from 1991 to 2011, the paper employed the reduced form modeling and GMM

model. Results revealed that that GDP per capita and GDP growth rate have a significant influence on per capita CO2 emissions. Specifically, the results show that for every 1% increase in GDP per capita, carbon emissions increase by 17.5% in the panel dataset of the study.

According to Cole (2000), the need for economic growth necessitates increased production and consumption to meet consumer demands, which puts additional strain on the environment's resources and produces waste and pollution. Additionally, Jahanger, Ozturk, Onwe, Joseph and Hossain (2023) argued that increased energy use speeds up CO2 emissions; yet, over time, the use of efficient manufacturing technologies may mitigate these emissions. Similar to this, Tsani (2010) examined the possible unidirectional causality between energy consumption and economic growth for Greece from 1960 to 2006 and proposed a causal relationship between the two.

Furthermore, utilizing an ARDL bounds testing approach supplemented by the Johansen-Juselius (ML) procedure in a multivariate framework, Ghosh (2010) examines the causal relationship between carbon emissions and economic growth for India by introducing energy supply, investment, and employment for the years 1971–2006.

3.0 Methodology

3.1 Theoretical Framework

Ecological Modernization Theory (EMT) is a comprehensive framework that emerged in the late 20th century to grapple with the apparent conflict between economic development and environmental preservation. It extends the principles of classical modernization theory, which argued that societal progress is marked by economic growth, technological advancement, and social change. However, unlike its predecessor, EMT contends that environmental sustainability can be integrated into this progress. It suggests that societies can achieve ecological sustainability not by rejecting modern industrial economies but by transforming them. This transformation involves the adoption of new technologies, the implementation of effective policies and the establishment of appropriate institutional arrangements.

The theory has found increasing application in environmental policy analysis due to its ability to provide a structured lens through which to examine the dynamics at play. Scholars such as Christoff (1996), Spaargaren Mol, and Sonnenfeld (2013), Byrne, Gleeson, Howes, and Steele (2009) have contributed significantly to elucidating the nuances of EMT and its implications for policy formulation and assessment.

The theory emphasizes the importance of considering not only environmental objectives but also the broader socio-economic context in which policies are formulated and implemented. In essence, EMT offers a holistic approach to addressing environmental challenges within the framework of modern industrial societies. By recognizing the interplay between economic, social, and environmental factors, it provides a pathway toward achieving sustainability without sacrificing economic development

3.2 Model Specification and Estimation Techniques

To effectively analyze the impact of climate change, energy transformation in consumption and environmental protection in Sub-Saharan Africa, the following model adopted from Jain (2017) is modified.

$$lnEPR_{it} = \beta 0 + \beta_1 lnCLC_{it} + \beta_2 lnETC_{it} + \beta_3 lnCON_{it} + \beta_4 lnGDP_{it} + \beta_5 lnFDI_{it} + €_{it}$$

Where:

$lnEP_{it}$= natural logarithm of the dependent variable, Environmental Protection for observation i and time t

$lnCLC_{it}$, $\beta_2 lnETC_{it,}$ $\beta_3 lnCON_{it,}$ $\beta_4 lnGDP_{it,}$ $\beta_5 lnFDI_{i\ t}$ are the natural logarithms of the independent variables, representing Climate Change, Energy Transformation in Consumption, Conservation, Gross Domestic Product, and Foreign Direct Investment respectively, for observation *"i"* and "*t".*

β is the intercept term.

β_1 β_2 β_3 β_4 are the coefficients representing the effects of the natural logarithms of the independent variables on the natural logarithm of Environmental Protection.

$€$ is the error term, which accounts for unobserved factors that influence Environmental Protection for observation "i*"* and time "*t".*

Dependent Variable:

Environmental Protection (EPR): Represents the level of environmental protection measures, policies, and actions. This variable is proxy by Air and Soil quality, data was obtained from world development indicators database.

Independent Variables:

Climate Change (CLC): Refers indicators of climate change impacts or trends. This variable is proxy by CO2 emission and temperature trend. Data was obtained from world development indicators database.

Energy Transformation in Consumption (ETC): Measures changes in energy consumption patterns or energy mix. This variable is proxy by energy consumption and data was obtained from world development indicators database.

Conservation (CON): This variable represents conservation efforts and practices, the variable proxy by biodiversity indicators, data was obtained from world development indicators database.

Control Variables include Gross Domestic Product (GDP) and Foreign Direct Investment (FDI)

3.3 Model Estimation Techniques

This study employed dynamic panel regression technique, the Generalized Method of Moment (GMM), specifically the system GMM was preferred over the differenced GMM following the rule of thumb proposed by Blundell and Bond (1998). Similarly, the fixed effect (FE) and random effect (RE) models were used to compare the results as the GMM considers endogeneity while the two simple panel data models (the fixed effect (FE) and random effect (RE)) do not. This is because the two-step system Generalized Method of Moments (Arellano & Bond, 1991) generates a robust estimator based on the assumption that the error term is not serially correlated. Thus, disturbances and the instrumental variables are uncorrelated in the equations.

3.4 Data Sources and Sample Size

This study employed annual panel data from 2015–2021 (T=7) for 20(N=20) countries in Sub-Saharan Africa. The sample size and the study period were selected based on data availability and quality. Data were sourced from world development index (2024).

4.0 Empirical Results and Interpretation of Results

This sub-section present result of both descriptive and inferential statistics.

Table 1: Descriptive Statistics on Environmental protection, Climate change, Energy Transformation in consumption, GDP and FDI.

Variable	Obs.	Mean	Standard dev.	Min	Max
EPR	140	9.021979	.8609374	7.438321	10.75768
CLC	140	3.658806	.7355564	1.232798	5.369361
ETC	140	1.559872	.3851953	.9330785	2.397618
CON	140	4.12096	.0658986	3.898066	4.227213
GDP	140	3.135438	.1747597	2.766319	3.640214
FDI	140	18.5967	5.062971	3.28981	24.44403

Source: Author's computation using Stata

In Table 1, the average Environmental protection is approximately 9.02% in SSA, while the standard deviation is around 0.86, indicating a moderate amount of variation around the mean. Furthermore, the minimum and maximum value for Sustainable development ranges from 7.44 to 10.76. Furthermore, the mean values for climate change and energy transformation in consumption were estimated to be around 3.66% and 1.56% while their respective standard deviations were 0.73% and 0.39 respectively while conservation has a mean value of 4.12%. Similarly, gross domestic product and foreign direct investment have mean values of 3.13% and 18.5% respectively.

Table 2: Two-step system GMM and Fixed Effect Models Estimation

Variable	**System GMM**	**Fixed Effect (FE)**
l. EPR	0.969* (108.89)	
CLC	-2.689** (-1.83)	-19.04*
ETC	-24.28 (-0.82)	3.34
CON	9.779* (0.94)	2.81
GDP	8.844*** (0.76)	44.18
FDI	8.97e*** (8.23)	1.11*
	Diagnostics	
AR (2) P Value	0.213	
Hansen Test	0.197 Hausman's Test	
Model	Chi-sq statistics	P-value
FE	11.03	0.0503

Source: Author's computation using Stata.

***significant at 1%; **significant at 5%; *significant at 10%.

In Table 2 above, the Hansen-J test and the AR (2) test revealed that the Generalized Method of Moments (GMM) estimator is valid as there are no symptoms of instrument proliferation or autocorrelation, therefore, we can confirm the reliability of the GMM estimates.

From the result, the lag value of the previous environmental protection indicates significant positive relationship with current environmental protection at 1% level of significance, this means that, higher environmental protection in the past positively influences current environmental protection.

Similarly, climate change (CLC) has a significant negative relationship with environmental protection at 5% level. This suggests that a unit increase in climate change *ceteris paribus*, is associated with a 0.052% decrease in environmental protection. This finding was supported in a study by Qu, Xu, Qu Yan and Wang, (2017) who found significant negative relationship between climate change and environmental protection. Likewise, the Ecological Modernization theory is in agreement with this finding as the model emphasized the importance of considering not only environmental objectives but also the broader socio-economic context in which policies are formulated and implemented. The energy transformation in consumption did not indicate significant relationship with environmental protection.

Furthermore, conservation indicates significant positive relationship with environmental protection at 10% level of significance, suggesting that a unit increase in conservation will increase environmental protection by 9.7%. In addition, the coefficient of GDP is 8.84, this indicates significant positive relationship between GDP growth and environmental protection. Specifically, a unit increase in GDP growth rate is expected to improve environmental protection by 8.84%. Also, the coefficient of FDI is 8.97 which is positive and significant, this indicates strong association between foreign direct investment and environmental protection.

The significant coefficients in the short-run estimate of system GMM are used to generate long run relationship in table 3.

Table 3: GMM Long run Estimates (Dep. VAR LPR)

Variables	**Coefficient**
CLC	-2.435* (4.939)
CON	7.310** (10.201)
GDP	21.970 (3.987)

Source: Researcher's computation using Stata.

Table 3 revealed that the estimated coefficient for the long-run impact of climate change (CLC) on environmental protection (EPR) after accounting for the lagged value of EPR (L1.epr) is approximately -2.435. The negative coefficient (-2.435) suggests that, in the long run, a one-unit increase in climate change (CLC) ceteris paribus will lead (-2.435)

decrease in environmental protection (EPR). This indicates that higher climate change is linked to lower environmental protection in the long run.

Similarly, the estimated coefficient for the long-run impact of conservation (CON) on environmental protection is approximately 7.310. The positive coefficient suggests that, in the long run, a one-unit increase in conservation (CON) ceteris paribus will lead to (7.310) increase in environmental protection (EPR). This indicates that higher conservation is linked to higher environmental protection in the long run.

Furthermore, the estimated coefficient for the long-run impact of gross domestic product (GDP) on environmental protection is approximately 21.970. The positive coefficient suggests that, in the long run, a one-unit increase in gross domestic product (GDP) ceteris paribus will lead to (21.970) increase in environmental protection (EPR). However, the result is not statistically significant at any conventional level considering that the p-value is approximately 0.622.

5.0 Summary, Conclusion and Recommendations

5.1 Summary

Findings from this study indicate that, climate change (CLC) has a significant negative relationship with environmental protection (EPR) at 5% level of significance while energy transformation in consumption (ETC) did not indicate any relationship with environmental protection (EPR). Moreover, conservation (CON) has significant positive relationship with environmental protection at 10% level of significance likewise gross domestic product (GDP) indicates significant positive relationship with environmental protection at 1% level of significance. Similarly, foreign direct investment (FDI) has significant positive relationship with environmental protection at 1% level of significance.

5.2 Conclusion

The study concludes climate change reduces environmental protection considering their inverse relation. Similarly, conservation and GDP improves environmental protection in SSA hence the positive and significant relationship. Unfortunately, foreign direct investment is not a good determinant of environmental protection in SSA. Therefore, these finding underscores the critical importance of reducing the obstacles of climate change to foster economic growth and development in SSA.

5.2 Recommendations

This study recommends that, Sub-Saharan African economies should increase expenditures on conservation. This can reduce climate change leading to higher environmental protection in SSA. National leaders in this region should develop and implement blue print or policies that are directed to financial openness to attract higher levels of R&D-related direct foreign investment can decrease the environment depletion. Similarly, there is the need for a target which aids the government to frame climate change technological policies and regulations such as promotion of low-CO2 emission technologies, improvements in traditional and hybridized internal combustion engines, fuel cell vehicles and electric vehicles or imposing fuel efficiency. The study also proposes that Sub-Saharan African economies should institute policy reforms aimed at reducing the side effects of climate change. These reforms may include expanding the

awareness creation on the dangers of climate change and subsidizing energy consumption in SSA.

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THE NEXUS BETWEEN SAVINGS, CAPITAL FORMATION AND ECONOMIC GROWTH IN NIGERIA

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Abstract
The study examined the impact of saving and gross capital formation on economic growth in Nigeria, using Autoregressive Distributed Lag (ARDL) technique on time series data spanning from 1981 to 2023. The variables employed for the study are gross domestic product (GDP), gross savings (SAV), gross fixed capital formation (GFCF), lending interest rate (LINT), inflation (INF) and governmnent expenditure (GEXP). The result of the study revealed that savings had a positive relationship with economic growth in Nigeria in the short and long-run. There was an inverse relationship between inflation and economic growth in the short- and long-run, while the lending interest rate also had an inverse relationship with economic growth both in the short-run and in the long-run. Gross fixed capital formation had a direct but insignificant relationship with economic growth both in the short-run and long-run. The study recommended that the government should implement policies that encourage savings that are geared towards economic growth in Nigeria. Also, government should ensure that its fiscal operations are directed toward useful purposes that are geared towards economic growth.

Keywords: Capital formation, Inflation, Investment, Growth

1.0 Introduction
Economic growth models suggest that savings plays a large role in economic development of any economy. This is achieved by boosting capital accumulation and enhancing technological progress through increasing the rate of savings, mobilizing and pooling of savings, production of information about investments, facilitating and encouraging the inflows of foreign capital, as well as optimizing the allocation of capital (Ayadi, 2021). To stimulate savings however, the business environment must be competitive so that business can operate profitably. In addition, savers must be assured of preservation of the real value of their savings. Conversely, there must be safe and profitable investments to attract savings and guarantee returns so as to preserve the real value of savers.

High inflation as well as low level of saving's rate encourage high consumption and discourages savings. Most developing economies are therefore incapable of achieving high level of savings due to high level of unemployment added to the fall in disposable income and the erosion of purchasing power. Nigeria's gross national saving is low compared with most countries of the World. Based on the United States' Central Intelligence Agency (CIA), Nigeria was placed in the 131st position out of 180 countries covered by the agency; as Nigeria's national saving ratio was estimated to be 13.10 percent in 2016 (Nwonye, Ihegboro, Onah & Ojiako, (2022)

Capital formation determines the capacity of an economy to produce which inturn affect macroeconomic performance. For a country to experience rapid economic growth rates that can be sustained overtime, it must be able to maintain capital formation at a sizeable proportion of gross domestic product (GDP). Bakare (2011) opine that the share of capital formation in GDP should not be less than 27 percent for sustained economic growth. Over the years, the Nigerian government has considered the need for improvement in capital formation. To this end, it has pursued an economic reform that shifted emphasis from the public sector to the private sector. The public sector reforms had as its main objectives to ensure that interest rates were positive in real terms and to encourage savings thereby ensuring that investment funds are readily available to the real sector (Ekpo & Umoh, 2011).

However, the reform programme could not achieve its main purpose of improving the rate of economic growth, although it led to improvement in some macroeconomic variables like the nominal interest rate and money supply. For instance, in 1980, gross fixed capital formation stood at 89.38% of GDP but thereafter declined steadily throughout that decade to 43.75% of GDP in 1988. It attempted to increase in 1989 and 1990 but thereafter, it continually declined drastically till 2017 and stood at 14.72% of GDP. The gross fixed capital formation rose from 19.02% of GDP in 2018 and stands at 33.11% of GDP in 2022 (World Bank Data, 2023).

From the foregoing, it is evident that there has been a great decline in the gross capital formation in Nigeria over the years and a lot of factors have been attributed to this decline. As a result, the speed of economic growth in Nigeria have not been satisfactory. Hence, the researchers delve into the study foe possible solution. The general objective of this study is to investigate the nexus between savings, capital formation and economic growth in Nigeria from 1981 to 2023. The findings from this study will aid policy makers and the government, as well as relevant stakeholders in the area of policy formulation as it relates to the level of savings and capital formation in the quest for sustainable economic growth in the economy.

2.0 Literature Review

2.1 Conceptual Literature

In Keynesian economics, savings is the portion of disposable income not spent on consumption but accumulated or invested directly in capital equipment or in paying off a home mortgage, or indirectly through purchase of securities (Nwanne, 2014). Gersovitz (1988) defines savings as a sacrifice of current consumption that provides for the accumulation of capital, which in turn, provides additional output that can potentially be used for consumption in the future. In developing countries, capital formation is of paramount importance. It is key determinant of economic growth and serves as a yardstick for the measurement of capital stock. The productive capacity of the economy depends largely on the capital formation. In other words, capital is the most important factor of production particularly in a developing economy. The more the capital, the higher the productive capacity of the economy. Capital formation is the increase in the stock of both material and human capital by making available part of a society's currently available resources. It results when some proportion of a society's present income is saved and invested in order to increase material and human capital.

Economic growth is regarded as a major goal of national policy in any economy. It is the increase in the capacity of an economy to produce goods and services with the passage of time. In essence, it is an increase in the capacity of an economy to produce diverse goods and services in aggregate terms from one period to another. Growth can be measured in nominal or real terms (Singer, 2013; Feldstein, 2017).

2.2 Theoretical Literature

There are many schools of thought dealing with saving and Investment and their role in the growth process of an economy.

Saving and Investment in the Arthur-Lewis model

Lewis highlighted the crucial role of savings as a key driver in the economic growth process, as the obstacle to further investment in less developed countries is that the marginal propensity for savings is very low. Lewis pointed to the importance of real savings in the development process in developing countries, considering that the main problem in the development process was the inability of most developing countries to mobilize the real savings needed to implement development programs. Lewis also stressed that the prerequisite of economic development is a significant increase in capital accumulation, including knowledge and competencies. Lewis believes that in underdeveloped (poor) countries, the saving rate increases with the growth of average per capita, especially in the capitalist sector. Thus, the relationship between the saving rate and the level of development (average per capita income) is positive. However, in the highly developed countries, there is a weak excuse to expect a positive correlation between the saving rate and the average of an individual's income

Saving and Investment in the Harrod-Domar model of Economic Growth

The new Keynesians such as Harrod-Domar stressed that saving is the important element of capital accumulation, and if economic growth rates are raised, increased saving will lead to a fruitful rise in capital; thus, increasing production and growth, by increasing the supply of capital will reduce the benefit rate, and this would encourage investment, and then increase production and growth. The Harrod-Domar growth model describes the economic mechanism through which savings and investment leads to further growth. The model determines the rate of economic growth based on the important role of saving, and this model assumes that the element of capital is the rare determinant of growth (Todaro & Smith, 2006). It also emphasizes that saving can only be sustained in an economy capable of producing economic goods.

This model postulates that saving, S, is a percentage of the national income, Y, so we form the following simple equation:

$$S = sY \quad \text{……..} \quad (2.1)$$

Where s is a proportion (marginal propensity to save). Investment is simply the change in capital and the postulation is as follows:

$$I = \Delta K \quad \text{……} \quad (2.2)$$

Because capital, K, is directly related to gross national income or output Y in accordance with the capital/output coefficient, then *k* is as follows:

$$k = \frac{\Delta K}{\Delta Y} \rightarrow \Delta K = k\Delta Y \quad \text{……} \quad (2.3)$$

Gross national saving should equal national investment, that is:

$$I = S \quad \text{……} \quad (2.4)$$

From (1), (2), (3) and (4) we have that:

$$sY = k\Delta Y \quad \ldots\ldots\ldots\ldots \quad (2.5)$$

Thus, $\frac{\Delta Y}{Y} = \frac{s}{k}$ ……. (2.6)

The relation (2.6) simply postulates that the gross national product (GNP) growth rate was determined by the correlation between the national saving rate (s) and the capital/output coefficient (*k*). More specifically, the growth rate of national income will be linked to a positive direct relationship with the saving rate. It is associated with an inverse or negative relationship with the capital/output coefficient; the rise in *k* will result the decrease of national income growth rate. Therefore, for economic growth to occur, a certain percentage of GNP should be saved and invested.

The main obstacle to development according to this model is the relatively low level of new capital in most poor countries.

Saving and Investment in the Solow Growth Model

This model is an extension of the Harrod-Domar model, focusing jointly on the importance of savings and investment as a key determinant of the process of capitalist accumulation, and hence economic growth. According to the Solow growth model, improving the savings rate encourages investment, which is a prerequisite for reaching a high growth rate. However, Solow adds two other elements of production to his model, namely labour and technological level. According to this model, growth in GDP is the result of one or more of the following factors:

(i) A quantitative or qualitative increase in the labour component through population growth and/or education;
(ii) An increase in the capital stock through saving and investment; and
(iii) An improvement in the technological level.
(iv)

2.3 Empirical Literature

The empirical literature consulted from research for the specified period with a view to identify previous relevant efforts and studies in various aspects are presented in this sub-section.

Elias and Worku (2015) explored the causal relationship between economic growth and savings in East Africa for the period 1981 to 2014 using the vector error correction mechanism (VECM) method and Johansen cointegration. The results found significant positive relationship between domestic savings and economic growth for Uganda and Ethiopia. The Granger causality result showed unidirectional causality running from economic growth to gross domestic savings for Ethiopia and Uganda. and concluded that economic growth accelerates gross domestic savings in Ethiopia and Uganda.

Jagadeesh (2015) investigated the role of savings on economic growth in Botswana for the period 1980 – 2013 using secondary data. Employing the dynamic ordinary least squares (DOLS) technique, the study found out that there is a significant relationship between savings and economic growth. Since saving is a channel through which capital formation is transmitted to accelerate the economic growth in Botswana, the study went further to recommend that efforts should be made to raise the level of savings in a

sustainable manner and should take appropriate strategy to divert savings into productive investment.

Sellami, Bentafat, and Rahmane, (2020) measured the impact of domestic saving on economic growth in Algeria using the ARDL for the period 1980 to 2018. The results indicated the significant short and long run effects of saving on economic growth in Algeria's case, where saving levels are high and very positive with the level of economic growth. In this context, the study recommends measures to mobilize domestic saving; considering them as the right way to finance capital accumulation, to develop the national economy, and to push it for appropriate and acceptable growth rates.

Ribaj and Mexhuani (2021) conducted an empirical analysis on the impact of savings on economic growth in a developing country, using Kosovo as a case study. By employing the ordinary least squares methodology for the period 2010 to 2017, the regression results showed that deposits have a significant positive impact on Kosovo's economic growth, because savings stimulate investment, production, and employment and consequently generate greater sustainable economic growth. Furthermore, loans and remittances also help boost the economy of Kosovo through their direct impact on investment. This research concluded that the increase in the accumulation of savings from commercial banks in Kosovo has a positive effect on Kosovo's economic growth, as well as those remittances and loans are also an important enabling factor in driving the economy of Kosovo through a direct impact on investment.

Nwonye, Ihegboro, Onah, and Ojiako, (2022) examined the growth impact of savings on the Nigerian economy. The variables employed in the study are total savings, private consumption expenditure, gross fixed capital formation and core credit to the private sector. Data for the study were sources from CBN statistical bulletin for a period of ten (10) years spanning through 2011 to 2020. With the use of multiple regression analysis, result of the analysis showd that total savings has positive and significant effect on the gross domestic product of Nigeria. It was also observed that private consumption expenditure has a negative and insignificant effect on the gross domestic product of Nigeria. The study further revealed that gross fixed capital formation has a negative and significant effect on the gross domestic product of Nigeria. It was also observed that core credit to the private sector has positive and significant effect on the gross domestic product of Nigeria. Based on the findings, the study recommended that the government should create an enabling environment in order to foster domestic saving that will help to increase the level of economic growth in Nigeria.

Opadeji, Olaniyi, Adekanmbi and Olubitan, (2023) utilized the Johansen co-integration technique and the Vector Error Correction Model (VECM) to examine the impact of gross capital formation and infrastructure on economic development in Nigeria from 1991 to 2021. The findings of the co-integration analysis revealed the existence of a long-run relationship among the variables while the Vector Error Correction Model (VECM) indicated that gross capital formation did not exert a statistically significant effect on economic development in Nigeria within the study period. However, it was observed that infrastructure had a significant positive effect on the development of the economy. Based on the findings, the study recommended a collaborative effort between the government and private sectors to establish a conducive environment that promotes capital

investments within the country. Also, capital formation should be efficiently utilized with a sizable amount accorded to infrastructural development which in turn translates to economic development.

Yedder, Weriemmi and Bakari (2023) did an empirical assessment of the impact of domestic investment and trade on economic growth in North Africa countries for the period 1990 – 2021 by using Panel CSARDL Model. Empirical results indicated that domestic investment and exports don't have any impact on economic growth in the long run. However, they found that the impact of imports to be positive in the long run. The results showed that exports and national investments are not considered as a source of economic growth in the country of North Africa over this extended period and suffer from a miserable economic organization and many problems in terms of political and economic instabilities.

3.0 Methodology

3.1 Theoretical Framework

The Neoclassical Economists pioneered by Léon Walras (1834-1910), Alfred Marshall (1842-1924) and Vilfredo Pareto (1848-1923) tried to ease the constraints relating to the distribution of power between industrialists and workers so as to ensure proper savings and investment. Neoclassical theory of savings and investment remain a matter of intense concern to millions of people around the world. Enhanced capital, labour and technical progress are the three principal sources of economic growth in an economy. Consequently, the rate of growth of capital (physical and human) and technical progress have been found to account for a significant proportion of economic growth (Abramovitz, 1956; Kuznets, 1987; and Solow, 1957). From the findings of Jorgenson, Gallop and Fraumeni (1987) between 1948 and 1979, gross fixed capital formation accounted for 46% of economic growth of the United States, labour growth accounted for 31% while technical progress accounted for 25%.

Growth accounting is based on an aggregate production function which shows the relationship between output, capital, and labour over time. Thus,

$$Y_t = f(K_t, L_t, t) \qquad \ldots\ldots\ldots\ldots\ldots \qquad (3.1)$$

Where $Y_t, K_t, and\ L_t$ are the quantities of real aggregate output, capital and labour respectively at time t, and t is the index of chronological time. The purpose of growth accounting is to determine from the empirical data how much of the change in real output between say $t = 0$ and $t = 1$ can be attributed to changes in the inputs, capital and labour and technology.

The capital accumulation or capital formation equation explores the relationship between investment in tangible assets (I) and capital stock (K). Notionally,

$$\Delta k_t = I_t - \alpha k_{t-1} \qquad \ldots \qquad \ldots \qquad (3.2)$$

Where Δ represents a discrete change, α is depreciation, and I is the gross investment. Gross investment can either be endogenously determined by profit maximizing firms or assumed to be some fixed proportion of output, say sY_t. Taking natural logarithm of both sides of equation (3.1) and differentiating it totally with respect to t, we obtain

$$\frac{\partial lnY}{\partial t} = \frac{\partial lnY}{\partial lnK_t}(K_t, L_t, t)\frac{\partial lnK}{\partial t} + \frac{\partial lnY}{\partial lnL_t}(K_t, L_t, t)\frac{\partial lnL}{\partial t} + \frac{\partial lnY}{\partial t}(K_t, L_t, t)$$

(3,3)

$\frac{\partial lnY}{\partial lnK_t}$ and $\frac{\partial lnY}{\partial lnL_t}$ are the elasticities of real output with respect to capital and labour respectively at time t and $\frac{\partial lnY}{\partial t}$ is the instantaneous rate of technical progress, or equivalently, the rate of growth of output holding the inputs constant. The first term on the right of equation (3.3) represents the contribution of the growth of capital to the growth of real output. Note that the contribution of the growth of capital depends on both the production elasticity of capital and the growth rate of capital. If the rate of growth of capital is low, then the contribution of capital will be low even with a high production elasticity of capital. Similarly, the second term represents the contribution of the growth of labour while the third term represents the contribution of technical progress. Together, the three terms add up to the rate of growth of real aggregate output.

However, not every variable on the right-hand side of equation (3.3) can be directly observed. Capital and labour are observable. The elasticities of output with respect to capital and labour must be separately estimated, often requiring additional assumptions. Moreover, note that the instantaneous rate of technical progress $\frac{\partial lnY}{\partial t}(K_t, L_t, t)$ depends on K_t and L_t as well as t. The rate of technical progress over many periods cannot be simply accumulated from one period to the next, unless technical progress is neutral, in which case the instantaneous rate of technical progress, $\frac{\partial lnY}{\partial t}$, is independent of capital and labour.

Thus, in order to use equation (3.3) to measure technical progress overtime, three basic axioms are maintained; constant returns to scale, neutrality of technical progress and profit maximization with competitive output and factor markets. Profit maximization with competitive markets allows the identification of the elasticities of output with respect to labour with the share of labour cost in total output. Constant returns to scale in production implies that the sum of the elasticities of output with respect to capital and labour is exactly unity. Neutrality of technical progress justifies the accumulation of successive estimates of technical progress overtime.

3.2 Model Specification

The specification of the econometric model is usually based on economic theory and on any available information relating to the phenomenon being studied. This study builds a multiple regression model and makes use of econometrics procedure in estimating the relationship between the economic variables adapted from the Neoclassical model. From the theoretical postulations and literature review, this study adapted Nwonye et al (2023) model respecify its model functionally as follows:

$$GDP = f(SAV, GFCF, LINT, INF, GEXP) \quad \ldots\ldots \quad (3.4)$$

This econometric form of the model is specified as:

$$GDP = \beta_0 + \beta_1 SAV + \beta_2 GFCF + \beta_3 LINT + \beta_4 INF + \beta_5 GEXP + \mu_t \quad \ldots.$$

(3.5)

Where; GDP =Gross Domestic Product (which is a proxy for economic growth)
SAV = Savings, GFCF = Gross fixed capital formation
LINT = Lending interest rate, INF = Inflation

GEXP =Government Expenditure, μ_t=Stochastic error term, β_0=Intercept term
The *a-priori* signs come from economic theory. The *apriori* expectation of the model is given below:$\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 < 0$, $\beta_5 > 0$.
Saving is expected to bear a positive relation on economic growth since increased savings is expected to be invested in capital. Saving is the proportion of current consumption that is channeled to investment (Bakare, 2011).

3.3 Data Requirements and Sources

This study utilized secondary data to elicit information for the variables specified in the model. Specifically, data for this study were obtained from the Central Bank of Nigeria (CBN) statistical bulletin 2022 and the World Development Indicators (WDI) of the World Bank database of 2023 for the period under review. The methodological strategy is aimed at providing a rich empirical background for the analysis. The ARDL technique was employed for the estimation of the data collected within a dynamic framework to examine the key variables of interest in this study using E-views software

4.0 Presentation of Results and Interpretation

4.1 Descriptive Statistics

The selected series were descriptively tested to ascertain their normality. The result of the descriptive statistics was shown in Table 1.

Table 1: Descriptive Statistics

	GDP	SAV	GFCF	LINT	INF	GEXP
Mean	2028.707	6.92E+10	6.15E+10	18.60433	18.27804	3.525225
Median	2050.939	6.64E+10	5.98E+10	17.69000	12.94178	3.334495
Maximum	2679.554	1.53E+11	8.02E+10	31.65000	72.83550	7.323454
Minimum	1429.012	1.26E+10	4.81E+10	11.48313	5.388008	1.470257
Std. Dev.	462.7116	4.64E+10	8.90E+09	4.018825	15.90199	1.470976
Skewness	-0.054889	0.422991	0.300190	1.033655	2.180409	1.368200
Kurtosis	1.335856	1.846263	1.868493	4.794682	6.855141	4.578153
Jarque-Bera	3.940354	2.899627	2.324413	10.61742	47.99502	14.13613
Probability	0.139432	0.234614	0.312795	0.004948	0.000000	0.000852
Sum	68976.05	2.35E+12	2.09E+12	632.5471	621.4534	119.8577
Sum Sq. Dev.	7065368.	7.11E+22	2.61E+21	532.9815	8344.820	71.40443
Observations	34	34	34	34	34	34

Source: Authors' Compilation using E-views 9

Table 1 shows the results of the descriptive statistics for the selected series. Based on the results, all the selected variables (GDP, SAV, GFCF, LINT, INF and GEXP) all had a consistent average. This was indicated by the fact that the mean and median values lied between the maximum and minimum values for average. As such, the mean and median for the selected variables are consistent. However, the values of the standard deviation of the selected series were high. The standard deviation measures the degree of the spread of the data. The high values of the standard deviations imply that the data points of the selected variables are unevenly spread.

The coefficient of skewness measures the extent to which each of the distribution is symmetrical. The skewness coefficient for Gross Domestic Product (GDP) was negatively while the other variables were positively skewed. However, GDP, SAV and GFCF were moderately skewed as evidenced by the fact that their coefficient of skewness lies between -0.5 and 0.5. LINT, INF and GEXP appeared to be more skewed than the

other selected variables. It can be inferred from the result that the distributions of the selected variables were relatively symmetrical.

4.2 Correlation Analysis

The pair-wise correlation coefficients of the variables are presented in Table 2. It shows the relationship between pairs of the variables.

Table 2: Cross Correlations

	GDP	SAV	GFCF	LINT	INF	GEXP
GDP	1.000000					
SAV	0.837939	1.000000				
GFCF	0.767966	0.703793	1.000000			
LINT	-0.679746	-0.774106	-0.633960	1.000000		
INF	-0.387830	-0.364200	-0.377184	0.414945	1.000000	
GEXP	0.447006	0.599368	0.506592	-0.622865	-0.091419	1.000000

Source: Author's computations using E-views 9.

Table 2 shows that SAV, GFCF and GEXP are positively correlated to GDP. The implication of the positive correlation coefficients is that SAV, GFCF and GEXP move in the same direction as GDP. However, the correlation between the pairs of variables: LINT and GDP and INF and GDP are negative as expected. These suggest that LINT and INF move in opposite direction with BOP.

GFCF and GEXP are directly related to SAV. This suggests that within the period under consideration, increase in GFCF and GEXP is associated with increase in SAV. However, the correlation between the pairs (LINT, SAV) and (INF, SAV) is negative. GEXP is also positively correlated to GFCF. This suggests that they both move in the same direction. The correlation coefficient between LINT and GFCF and INF and GFCF is negative, suggesting an inverse relationship between the variables. INF and LINT are moderate and positively correlated while the pairs (GEXP, LINT) and (GEXP, INF) are inversely related.

4.3 Unit Root Test

The Augumented Dickey Fuller (ADF) unit root test was employed to investigate the integral properties of the series as shown in table 3.

Table 3: The Augumented Dickey Fuller (ADF) Unit Root Test

Variables	**ADF at Level**	**ADF at First Diff.**	**Remark**
LNGDP	-1.491216 (0.8161)	-4.039357 (0.0149)*	Stationary at first diff.
LNSAV	-3.167075 (0.1049)	-6.403501 (0.0000)*	Stationary at first diff.
LNGFCF	-7.090535 (0.0000)*	-	Stationary at level
LINT	-2.390834 (0.3788)	-5.871502 (0.0001)*	Stationary at first diff.
INF	-4.086433 (0.0133)*	-	Stationary at level
LNGEXP	-3.277818 (0.0876)	-5.702578 (0.0003)*	Stationary at first diff.

Source: Authors' compilation from E-views 9 *significant at 0.05

Table 3 shows the result of the unit root test for the selected series. At level, GFCF and INF had Augumented Dickey Fuller (ADF) statistic that was less than the critical value

in absolute terms and whose probability is greater than the 5% level (p>0.05). This implied that the null hypothesis that both series have unit root at level was rejected. Hence, GFCF and INF are stationary at level. The result in Table 3 further showed that GDP, SAV, INT and GEXP were non-stationary at level. This was based on the fact that the Augumented Dickey Fuller (ADF) statistic for each of the series was greater than the critical value at 0.05 level. Hence, the null hypothesis that the selected series (i.e. GDP, SAV, INT and GEXP) have unit root were rejected at first difference.

4.4 Lag Length Criterion

Prior to the cointegration test, a lag order selection criteria test was carried out to determine the appropriate lag that would be employed for the cointegration test. The result of the lag length criteria is presented in Table 4.

Table 4: Lag Selection Criteria

Lag Selection Criteria
Endogenous variables: LNGDP LNSAV LNGFCF LINT INF LNGEXP
Exogenous variables: C
Sample: 1981 2023
Included observations: 31

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-174.7513	NA	0.004674	11.66138	11.93892	11.75185
1	-55.34524	184.8868	2.26e-05	6.280338	8.223159*	6.913649
2	-3.071462	60.70503*	1.05e-05*	5.230417	8.838514	6.176649*
3	44.90625	37.14404	1.16e-05	4.457661*	9.731033	6.406567

Source: Authors' compilation from E-views 9 * indicates lag order selected by the criterion

Based on the lag criteria test in Table 4, the suitable lag interval is 2. This choice was based on the fact that majority of the criteria (i.e. LR, FPE, AIC, SC & HQ) indicated a lag interval of 2.

4.5 Cointegration Test

Based on the fact that the all the selected series in this study were integrated multivariate time series, a cointegration analysis could be carried out on the series. The cointegration analysis would determine if there was a long-run relationship among the variables. The Autoregressive Distributed Lag (ARDL) Bounds cointegration test was employed for this purpose.

Table 5: Bounds Cointegration Test

ARDL Bounds Test Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	12.42802	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Authors' compilation from E-views 9

The cointegration test result shows that long run relationship exists between the dependent variable and the regressors. This is indicated by the computed F-statistic of 12.42802 which is greater than the upper bounds critical values at the 5 percent conventional level of statistical significance. According to the Granger Representation Theorem, existence of long run relationship between variables implied that the short run (dynamic) relationship between them can be represented with an error correction model.

4.6 Regression Result

The results of estimation of the specified short-run (error correction) and the long-run models are presented in table 6.

Table 4.6: Estimation Results

ARDL Cointegrating And Long Run Form Dependent Variable: LNGDP Selected Model: ARDL(1, 2, 1, 2, 2, 2) Sample: 1981 2023 Included observations: 32				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNSAV)	0.013941	0.020415	0.682872	0.5045
D(LNSAV(-1))	-0.052864	0.020580	-2.568782	0.0206
D(LNGFCF)	-0.033798	0.050845	-0.664734	0.5157
D(LINT)	0.002333	0.002874	0.811910	0.4288
D(LINT(-1))	-0.010733	0.002551	-4.206679	0.0007
D(INF)	-0.002341	0.000505	-4.636760	0.0003

D(INF(-1))	0.000681	0.000543	1.252947	0.2282
D(LNGEXP)	0.005308	0.017590	0.301778	0.7667
D(LNGEXP(-1))	-0.027345	0.019720	-1.386661	0.1846
CointEq(-1)	-0.188015	0.061305	-3.066888	0.0074

Cointeq = LNGDP - (0.5869*LNSAV -0.8022*LNGFCF + 0.0817*LINT
-0.0091*INF + 0.3153*LNGEXP + 11.3812)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNSAV	0.586926	0.123926	4.736092	0.0002
LNGFCF	-0.802173	0.559492	-1.433752	0.1709
LINT	-0.081662	0.030037	2.718762	0.0152
INF	-0.009073	0.003865	-2.347600	0.0321
LNGEXP	0.315301	0.161666	1.950330	0.0689
C	11.381221	11.512268	0.988617	0.3376

Source: Author's Estimation using EVIEWS 9

The cointegrating form (that is the error correction model) shows that LNGDP is significantly affected by one year lagged saving. The short run effect of saving on gross domestic product is negative and significant at the conventional level after a period of time has elapsed. The short run effect of lending interest rate (LINT) on economic growth (as proxied by gross domestic product) is also negative and significant at the 1% level with a one period lag. A percentage increase in LINT depletes economic growth by 0.011 percent.

The contemporaneous effect of inflation is negative and statistically significant in the short run. This suggests that the variable was major short run determinant of gross domestic product in the country during the period under consideration. Inflation adversely affects gross domestic product in the short run. Thus, a percentage increase in inflation will engender economic growth to deteriorate by 0.23% in the current period.
The contemporaneous and lagged negative effect of government expenditure and gross fixed capital formation do not affect economic growth in the short run. The error correction coefficient is correctly signed as expected and significant at the 5% level. The absolute value of the coefficient indicates that 18.01 percent of the short run deviation from equilibrium is adjusted annually to restore the equilibrium.

The estimated long run coefficients reveal that economic growth (as proxied by GDP) is influenced by saving, lending interest rate, inflation and government expenditure. Contrary to the observed positive short run effect of saving on gross domestic product, the long run effect is positive but significant at the 5% level. Thus, raising saving by one percent will engender an increase in economic growth by 58.69 percent. As in the short run, the long run effect of lending interest rate is also statistically significant at the 5 percent level. This implies that in the long run, high level of inflation will adversely affect economic growth.

Just as in the short run, the observed negative effect of inflation on economic growth is statistically significant at the 5% level. Any rise in inflation by a unit dampens GDP by 0.00913 units. This again underscores the need to target inflation to keep it as low as possible within the single digit range. Government expenditure positively influences economic growth in the long run at the 10% level of significance. Thus, GEXP is a determinant of economic growth in the long run.

4.7. Robustness Check for Regression Results

4.7.1 Test for Heteroskedasticity, Normality and Serial Correlation

The estimated coefficients in the study are further examined using basic robustness tests. The heteroskedasticity, normality and serial correlation tests using the B-P-G, J-B and LM statistic respectively, reported in table 7 are used to show the stability of the cointegration parameters for the variables used in the equation.

Table 7: Post Estimation Test results

Test	Test Statistic	Prob. value
Heteroskedasticity Test: Breusch-Pagan-Godfrey (B-P-G)	0.790642	0.6730
Normality Test: Jarque-Bera (J-B)	0.323424	0.8506
Serial Correlation LM Test: Breusch-Godfrey	0.599264	0.5627

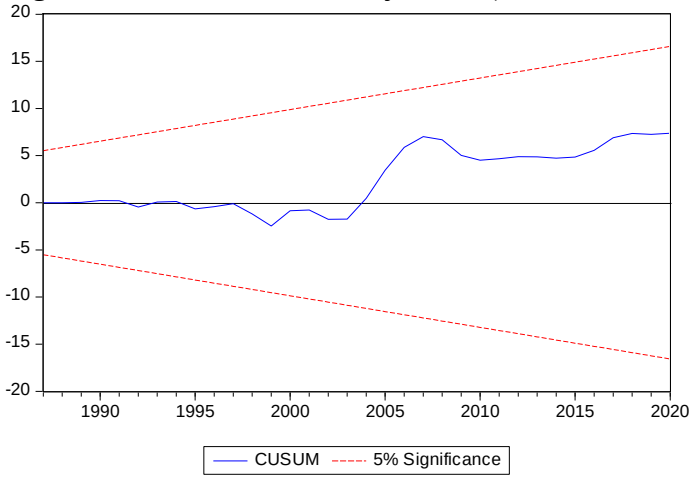
Source: Authors compilation using E-views 9

From the results, none of the test statistic conducted passed the significance test at the 5 percent level. Thus, the respective tests: Breusch-Pagan-Godfrey (B-P-G) heteroskedasticity test, Jarque-Bera (J-B) normality test and Breusch-Godfrey Serial Correlation LM Test, showed that the residuals are normally distributed and devoid of serial correlation. Thus, the estimated equation can be adjudged to be stable and effective for long term prediction and analysis.

4.7.2 Model Stability Test

Further robustness checks are provided by testing the stability of the estimated data across the cross sections in the sample. This helps to eliminate doubt about possible outlier regression for any of the groups in the sample. Figure 1 shows the result of the plot of cumulative sum of residuals (CUSUM) which was used for the test.

Figure 4.1: Parameter Stability Chart (Cumulative Sum of Recursive Residuals)



Source: Author's result from E-views 9

It can be seen that the plot of the CUSUM test trend line lied entirely within the dotted bound in the chart which is the critical bounds at the 5% level of significance. This reveald that the model is stable.

4.8 Evaluation of Research Hypotheses

The hypotheses formulated in chapter one of this study shall be tested in this sub-section. The t-ratios of the estimated coefficients of the long run model shall be used to test the hypotheses.

Hypothesis One: Based on the t-test result we reject the null hypothesis which states that saving does not have a significant impact on economic growth in Nigeria.

Hypothesis Two: From the estimation results, we fail to reject the null hypothesis that gross fixed capital formation does not significantly impact economic growth in Nigeria.

Hypothesis Three: From the regression result, lending interest rate has an inverse relationship with balance of payment in Nigeria. Hence, we reject the hypothesis that lending interest rate does not significantly impact economic growth in Nigeria.

Hypothesis Four: This null hypothesis is rejected by the t-ratio of the coefficient of inflation rate in the long run model. Thus, inflation does significantly impact on economic growth in Nigeria for the period of study.

Hypothesis Five: Based on the t-statistic, we fail to reject the null hypothesis that government expenditure does not have a significant impact on balance of payment in Nigeria.

Policy Implication of the Results

The result of the empirical analysis carried out show that saving has a short-run and long-run relationship with economic growth in Nigeria. This relationship was statistically significant indicating that any form of variations in savings would certainly affect economic growth in the long-run. Thus, any policy action of the government that triggers

any form of change in saving would statistically influence the level of economic growth in Nigeria. Hence, a policy action that increases savings would induce an incremental effect on economic growth in Nigeria. These findings was consistent with that of Turan and Olesia (2014) and Sellami, Bentafat, and Rahmane, (2020).

The study also found lower inflation rates significantly boosts economic growth both in the short and long run in Nigeria. The result also emphasized the role of lending interest rate as a determinant of economic growth in Nigeria in the long run and short run for the period of investigation. Another factor influencing economic growth as revealed by the study is government expenditure in the long run. The established long-term positive relationship between government spending and real gross domestic product (GDP) per capita in Nigeria implies that expansionary fiscal policy is a major factor in driving economic growth since it raises the level of economic activity. However, capital formation was revealed no to be a key ingredient for long run economic growth in Nigeria.

5.0 Summary, Conclusion and Recommendations

5.1 Summary

Ensuring economic growth is one of the macroeconomic objectives of the government of any country. Hence, accumulation of savings is imperative for the growth of any economy. It was against this background that this study investigates the impact of savings on economic growth in Nigeria. This study made use of annual time series data which were sourced from the World Bank Development Indicators (WDI) and the Central Bank of Nigeria Statistical Bulletin (various issues). The series were tested for stationarity with the Augumented Dickey Fuller (ADF) unit root test. The result revealed that the selected series were stationary at level and at first difference.

The long-run relationship between savings and economic growth was tested with the ARDL Bounds cointegration test. The result of the test indicated that there exist a long-run relationship between savings and economic growth in Nigeria. The analysis of this study showed that savings had a positive relationship with economic growth in Nigeria in the short and long-run. There was an inverse relationship between inflation and economic growth in the short- and long-run, while the lending interest rate also had an inverse relationship with economic growth both in the short-run and in the long-run. Gross fixed capital formation had a direct but insignificant relationship with economic growth both in the short-run and long-run.

The result of the short-run dynamics showed a speed of adjustment of 18.80% which was statistically significant at 0.05 level which is rather slow. Savings and lending interest rate both had an inverse relationship with economic growth in the short run. This was statistically significant at 0.05 level. The result of the analysis further showed that savings, gross fixed capital formation, lending interest rate, inflation and government expenditure were able to explain over 83.1 percent of the systematic variation in economic growth in Nigeria in the short-run. The result of the Granger causality test revealed that there exist a uni-directional relationship between savings and economic growth in Nigeria. The relationship flowed from gross domestic product (GDP) to savings.

5.2 Conclusion

This study had investigated the impact of saving on economic growth in Nigeria. Based on the empirical findings of the result it was concluded that savings had a significant impact on economic growth in Nigeria. Specifically, savings had a significant and positive relationship with economic growth in Nigeria in the long-run and also in the short run in Nigeria. Hence, any government policy action that affects the level of savings would have either boost or deplete economic growth in Nigeria. The causal relationship between savings and economic growth is unidirectional and it flows from economic growth to savings. The lending interest rate, inflation and government expenditure all impacted economic growth in Nigeria for the period of study. However, gross fixed capital formation was found not to be a determinant of economic growth both in the short-run and long-run.

5.3 Recommendations

Based on the empirical analysis and conclusion of the study, the following recommendations are made.

(i) Savings is a key ingredient for both short-run and long run economic growth in Nigeria. Therefore, government should ensure policies that encourage savings are directed toward useful purposes that are geared towards economic growth.

(ii) Considering that lending interest rate adversely affected economic growth in the short run and in the long run, there is need for occasional governments' intervention through the monetary authorities to influence the level of interest rate so as to achieve desirable levels of output.

(iii) Government spending has been shown to have a positive and significant impact on economic growth, which demonstrates the necessity of government spending in Nigeria. Therefore, government should ensure that its fiscal operations are directed toward useful purposes that are geared towards economic growth.

(iv) It has been empirically revealed that inflation has a negative impact on Nigeria's long-term economic growth. Hence, the government through the monetary authority, should work to implement the best monetary policy instruments.

(v) Capital formation as highlighted by the insignificant coefficients in the various short-run and long run models showed that it was not significant in explaining economic growth for the period of study. This calls for effort by the governments to encourage domestic capital formation and enhance the attractiveness of the economy to foreign investment so as to raise the level of capital in the economies. Such measures include infrastructural development, security tightening, favourable tax policies and other measures aimed at reducing the cost of doing business in Nigeria.

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IMPACT OF FINANCIAL DEVELOPMENT AND RURAL POPULATION ADJUSTMENT ON ENVIRONMENTAL DEGRADATION IN NIGERIA

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Abstract
This study explored the dynamic effects of financial development and rural population changes on the environment in Nigeria. The paper investigated the intricate relationships between these factors, examining how they interact and influence environmental sustainability. Drawing upon empirical studies and theoretical frameworks, the study employed the ARDL model to analyze annualized economic data spanning between 1990 and 2022, explaining their relationships and the long-run effect of financial development and the rural population on environmental degradation. It discussed the challenges faced by Nigeria in addressing environmental depletion and advanced policy interventions to promote sustainable development. The study revealed that financial development and rural population had positive and significant impacts on environmental degradation, encouraging the use of renewable energy sources and hence environmental sustainability. It revealed that economic growth had a negative influence, though not statistically significant, indicating a potential for environmental degradation. The results highlighted the importance of considering financial policies and rural development strategies in environmental conservation efforts by facilitating credit access for the private sector. The study recommended sustainable rural development, which entails investing in rural infrastructure, agricultural productivity, and diversified livelihoods; encouraging the adoption of renewable energy sources to reduce reliance on fossil fuels; and sustainable economic growth to moderate growth objectives with environmental conservation.

Keywords: Financial development, Rural, Environmental depletion, Nigeria, Sustainable development.

1.0 Introduction
Population growth and environmental sustainability have remained a concern and have dominated international discourse. This has also trickled down to regions and countries as environmental protection policies in line with economic growth policies remain the principal focus of every economy. Considering statistical figures from WDI (2024). The comparative growth analysis across Non-Renewable Energy Consumption (NRE) as a measure of environmental degradation, Credit to Private Sector (CPS) as a measure of financial development, and Population Growth Rate (PGR) reveals distinct trends for Nigeria, Sub-Saharan Africa (SSA), and the World. In terms of NRE consumption, Nigeria exhibits a modest but steady increase from 3.5% in 2018 to 4.8% in 2022, while SSA demonstrates significantly higher levels ranging from 78.5% to 81.8% over the same period. Conversely, the World data indicates minimal fluctuations, remaining relatively stable ranging from 0.2% to 0.6% throughout the years. Regarding CPS,

Nigeria experienced a gradual rise from 15.2% in 2018 to 17.3% in 2022, with SSA showing lower but similar increasing trends, ranging from 45.2% to 47.8%. In contrast, the World maintains consistently high CPS percentages, averaging around 55.5% to 56.2% over the years, substantially surpassing both Nigeria and SSA. Concerning PGR, Nigeria and SSA exhibit comparable rates, with Nigeria's population growth increasing from 2.6% to 3.0%, while SSA's ranges from 2.1% to 2.5%. This is an indication that population growth rate in Nigeria dictates the pace for SSA. Conversely, the World data illustrates a declining trend in population growth rate, dropping from 1.10% in 2018 to 0.70% in 2022. These findings highlight the varying energy consumption patterns, economic dynamics, and demographic trends across Nigeria, SSA, and the World, underscoring the importance of context-specific policy responses and sustainable development strategies tailored to each region's unique challenges and opportunities.

Nigeria, like many other developing countries, is experiencing rapid changes in rural population which accounts for about 70 percent of the population and financial development, both of which have profound implications for the environment. This paper aims to provide a comprehensive analysis of the dynamic effects of financial development and changes in rural population size on environmental depletion and sustainability in Nigeria. It seeks to identify the specific impact of "rurality" on environmental degradation and propose strategies for sustainable development.

Financial development in Nigeria has both direct and indirect effects on environmental depletion. On one hand, the expansion of financial services facilitates investment in industries and infrastructural projects that may have adverse environmental impacts (Adewuyi & Adeleke, 2018). For example, the financing of oil and gas exploration, mining operations, and large-scale construction projects often leads to habitat destruction, pollution, and land degradation. Moreover, the proliferation of consumer credit and financial products stimulates demand for goods and services, contributing to resource depletion and waste generation (Aina et al., 2019). Urbanization exacerbates environmental depletion by increasing the demand for land, water, energy, and other natural resources. As urban areas expand, they encroach upon forests, wetlands, and agricultural lands, leading to deforestation, habitat fragmentation, and loss of biodiversity (Uchegbu & Nzeadibe, 2019). Moreover, rapid urban growth results in increased pollution from transportation, industrial activities, and waste generation, degrading air and water quality and posing health risks to urban populations (Olajide & Ogunrinola, 2020).

Environmental sustainability remains a central discussion point in many diplomatic discourses, it is generally believed that rural population expansion and activities have remained a major contributor to environmental depletion. In the case of developing economies like Nigeria, there have been concerted efforts by different levels of government to implement policies that can bring visibility to the rural populace and attract a reverse effect on rural-urban migration. This also has an immediate effect on the population, rurality, and the environment.

The primary goal of this study is to ascertain the dynamic interplay between financial development, rural adjustments, and environmental sustainability. In our view, rural expansion and the reverse effect of rural-urban migration have not received enough

attentions in recent studies. This study becomes paramount to add to the body of knowledge and to spool out policy directions to encourage environment-friendly policy actions.

2.0. Literature Review

2.1 Conceptual Literature

2.1.1 Financial Development

Financial development refers to the enhancement and sophistication of financial systems within an economy, facilitating efficient allocation of resources, promoting economic growth, and reducing poverty. It encompasses various dimensions, including the depth, breadth, efficiency, and stability of financial markets, institutions, and instruments. Indicators of financial development include measures such as the ratio of broad money (M2) to GDP, depth indicators like private sector credit to GDP ratio and stock market capitalization to GDP ratio, breadth indicators like the number of banks and financial institutions per capita, efficiency indicators such as interest rate spreads and the ease of obtaining credit, and stability indicators like non-performing loans ratio and the adequacy of regulatory capital buffers. Financial inclusion, measured by the percentage of the population with access to formal financial services, is a crucial indicator reflecting the inclusivity and accessibility of the financial system, essential for fostering equitable economic development and reducing income disparities. Overall, robust financial development is pivotal for promoting economic growth, reducing poverty, and enhancing the resilience of economies against external shocks. The Nigerian financial sector has undergone significant growth and transformation in recent decades, driven by economic reforms and technological advancements. The liberalization of the financial system, starting in the 1980s, led to the emergence of a diverse range of financial institutions, including banks, insurance companies, and capital markets (Ogbonna & Ebiringa 2019). Foreign investment and technological innovations have further accelerated the expansion of financial services, increasing access to credit, mobilizing savings, and facilitating investment in various sectors of the economy (Adams & Gidiglo, 2016).

The financial sector in Nigeria has undergone significant evolution over the years, marked by regulatory changes and policy reforms aimed at promoting financial stability, deepening financial markets, and enhancing access to financial services. Following independence in 1960, Nigeria's financial sector was initially dominated by foreign-owned banks. However, in the 1970s and 1980s, the government embarked on indigenization policies, leading to the nationalization and localization of banks and financial institutions. The Financial Sector Reform Program (FSRP) of the late 1980s and early 1990s introduced measures to liberalize and deregulate the financial system, including the establishment of regulatory bodies such as the Central Bank of Nigeria (CBN) and the Securities and Exchange Commission (SEC). This period also saw the introduction of structural adjustment programs (SAPs) aimed at addressing macroeconomic imbalances and promoting market-based economic policies (IMF, 2009). In the 2000s, Nigeria embarked on further financial sector reforms to strengthen regulatory oversight, improve corporate governance, and enhance financial inclusion. These reforms included the consolidation of banks to ensure their stability and resilience, the introduction of risk-based supervision frameworks, and initiatives to promote electronic banking and digital financial services (CBN, 2014).

Financial development plays a critical role in fostering economic growth and urbanization in Nigeria. A well-developed financial sector facilitates the mobilization and allocation of savings and investment, channeling funds from surplus units to deficit units, and supporting productive economic activities. Financial institutions such as banks, insurance companies, and capital markets provide essential financial services, including credit provision, risk management, and capital formation, which are vital for driving economic growth and development. Olofin, Ayinde & Adedokun, (2013). Financial institutions also play a pivotal role in supporting rural expansion by providing financial inclusion services. Mortgage banks offer mortgage loans to individuals and developers for home purchase and construction, while real estate investment trusts (REITs) mobilize funds from investors to invest in income-generating properties, including residential, commercial, and industrial real estate ("Real Estate Finance and Urban Development," Fashogbon, 2015). Financial institutions serve as key intermediaries in the financial system, mobilizing savings, allocating capital, and facilitating investment, infrastructure development, and urban expansion, thereby contributing to economic growth and urbanization in Nigeria.

2.1.2 Rural Population Adjustment

Rural community expansion is the process of growth and development in rural areas This is an increase in population, economic activities, infrastructure, and services. The rural population structure can be altered due to various factors such as migration from urban to rural areas, natural population growth, agricultural developments, or government initiatives to promote rural development. As rural communities expand, there is typically a diversification of economic activities beyond traditional agriculture, including small-scale industries, tourism, and service sectors. This expansion may also lead to improved infrastructure such as roads, schools, healthcare facilities, and access to utilities like electricity and clean water. Moreover, the expansion of rural communities often fosters social cohesion, cultural exchange, and community engagement, contributing to overall socio-economic development. However, challenges such as environmental degradation, inadequate infrastructure, and limited access to services may also arise, necessitating careful planning and sustainable management strategies to ensure the balanced development of rural areas. In Nigeria, the rural population growth has been experiencing a gradual decrease in its annual growth rate. WDI's (2024) annual statistical report reveals that in 2022, the rural population experienced a 0.73% increase from 2021. The year 2021 with a rural population of 100,840,661, which was a 0.76% increase from 2020.In 2020, the increase was 0.79%, with a rural population of 100,084,652. While 2019 had an increase of 0.8% from the previous year. These figures indicate a slight but consistent growth in the rural population, although the rate of growth has been slowly declining over the years. This trend can have significant implications for Nigeria's energy resource utilization, economic development, and urbanization policies.

2.1.3 Environmental Depletion and Changes in Rural Population

Environmental depletion encompasses various forms of degradation, including deforestation, soil erosion, air and water pollution, and loss of biodiversity. The country's rich natural resources, including forests, wetlands, and marine ecosystems, are under threat from unsustainable exploitation and anthropogenic activities (Adelekan, 2017). Industrialization, agriculture, urbanization, and extractive industries contribute to environmental degradation, exacerbating climate change impacts and posing risks to

human health and well-being. Environmental sustainability in Nigeria is a critical issue, given the country's vulnerability to climate change and its impact on agriculture, water resources, and overall livelihoods. The impact of environmental depletion on flora and fauna is significant and multifaceted. Environmental degradation leads to the loss of biodiversity, which is critical for ecosystem function and services essential to human survival.

Deforestation, unsustainable agriculture, and industrialization lead to habitat degradation, simplification, and fragmentation, affecting both plant and animal life. Unsustainable fishing, excessive consumption of fuel wood, and overharvesting of medicinal plants contribute to the depletion of both flora and fauna. Continuous ecological imbalance due to human activities can cause environmental stress, leading to further degradation, and The degradation of the environment affects economic and food security, diminishes plant life, and leads to land and water resource depletion, which can increase social conflicts and migration. Efforts to combat these impacts include the United Nations' Sustainable Development Goal 15, which aims to protect, restore, and promote sustainable use of terrestrial ecosystems, manage forests sustainably, combat desertification, halt and reverse land degradation, and stop biodiversity loss. It's crucial to address these issues to ensure the preservation of Nigeria's rich natural heritage and the well-being of its people.

Environmental challenges are associated with population pressures and economic development. Urbanization and economic development in Nigeria have led to various environmental challenges, including pollution, deforestation, land degradation, and loss of biodiversity. Rapid urbanization has resulted in increased industrial activities, transportation emissions, and waste generation, contributing to air, water, and soil pollution. Moreover, the expansion of agricultural lands and urban infrastructure has led to deforestation, habitat loss, and fragmentation of ecosystems, threatening the survival of plant and animal species (UNEP, 2011). The expansion of urban areas in Nigeria has exerted significant pressure on natural resources, ecosystems, and environmental quality. Urban sprawl and land-use changes have resulted in the conversion of forests, wetlands, and agricultural lands into built-up areas, leading to habitat destruction and loss of biodiversity. Moreover, the construction of roads, buildings, and other infrastructure has disrupted natural drainage systems, leading to increased flooding, erosion, and sedimentation of water bodies ("Urban Expansion in Nigeria," UN-Habitat, 2015). The depletion of natural resources such as water, forests, and minerals has also occurred due to unsustainable exploitation and extraction practices associated with urbanization and economic development. Water pollution from industrial effluents and untreated sewage discharge has degraded freshwater ecosystems and threatened the availability of clean water for human consumption and ecosystem services (Olaniyan & Adebola, 2019). Environmental management strategies are therefore focused on enhancing environmental governance, strengthening regulatory frameworks, and promoting public participation in decision-making processes. This includes implementing environmental impact assessments (EIAs), monitoring and enforcement mechanisms, and public awareness campaigns to promote sustainable behavior and practices among urban residents and businesses.

Rural community expansion refers to the process of growth and development in rural areas, an increase in population, economic activities, infrastructure, and services. The rural population structure can be altered due to various factors such as migration from urban to rural areas, natural population growth, agricultural developments, or government initiatives to promote rural development. As rural communities expand, there is typically a diversification of economic activities beyond traditional agriculture, including small-scale industries, tourism, and service sectors. This expansion may also lead to improved infrastructure such as roads, schools, healthcare facilities, and access to utilities like electricity and clean water. Moreover, the expansion of rural communities often fosters social cohesion, cultural exchange, and community engagement, contributing to overall socio-economic development.

However, challenges such as environmental degradation, inadequate infrastructure, and limited access to services may also arise, necessitating careful planning and sustainable management strategies to ensure the balanced development of rural areas. In Nigeria, the rural population growth has been experiencing a gradual decrease in its annual growth rate. WDI's (2024) annual statistical report reveals that in 2022, the rural population experienced a 0.73% increase from 2021. The year 2021 with a rural population of 100,840,661, which was a 0.76% increase from 2020.In 2020, the increase was 0.79%, with a rural population of 100,084,652. While 2019 had an increase of 0.8% from the previous year. These figures indicate a slight but consistent growth in the rural population, although the rate of growth has been slowly declining over the years. This trend can have significant implications for Nigeria's energy resource utilization, economic development, and urbanization policies.

2.2 Theoretical Review

2.2.1 McKinnon-Shaw hypothesis

The theory of financial development, widely recognized as the McKinnon-Shaw hypothesis, falls under the expansive umbrella of financial liberalization theory. This hypothesis advocates that the imposition of financial restrictions, such as caps on interest rates and other regulatory measures, impedes the effective distribution of resources and stifles economic growth. In contrast, the process of financial liberalization, which entails the elimination of these restrictions, is believed to foster a more efficient financial system, thereby propelling economic development forward. The McKinnon-Shaw hypothesis theorizes that an unregulated interest rate environment can activate the mobilization of savings and investments. This activation is anticipated to elevate investment levels and, as a result, spur economic growth.

The hypothesis is predicated on the notion that financial markets are instrumental in economic development, as they facilitate the channeling of savings into productive investment opportunities. In its simplified form, financial repression leads to decreased savings, which in turn results in reduced investment and diminished economic growth. Financial liberalization results in increased savings, which fosters greater investment and enhanced economic growth.

Over time, this model has been refined and expanded, underscoring the significance of 'inside money'—which refers to money generated through private sector loans—and its support by the private sector's internal debt. The evolution of the financial sector is

regarded as a pivotal element in driving economic growth. Empirical studies have explored the linkages between financial development and urbanization, particularly in the context of developing countries like Nigeria. Jayaraman et al. (2012) found a positive relationship between financial development and urbanization in Nigeria, emphasizing the role of credit availability in fostering urban expansion. Similarly, Olawande et al. (2019) observed a significant correlation between financial sector development indicators, such as credit to the private sector, and urban population growth, indicating that financial development facilitates urbanization.

2.2.2 Environmental Kuznets Curve (EKC) hypothesis

This theory explores the link between rural population and environmental degradation. The Environmental Kuznets Curve (EKC) hypothesis was proposed by Simon Kuznets (1950). This theory, initially developed by Simon Kuznets, suggests that there is an inverted U-shaped relationship between environmental degradation and economic development. As an economy grows, environmental degradation increases up to a certain point, after which it begins to decrease as the economy continues to develop and income levels rise. The EKC hypothesis is based on the observation that as economies transition from agrarian to industrial and then to service-oriented structures, the environmental impact of economic activity changes. Initially, rapid industrialization leads to increased pollution and resource depletion. However, as income levels rise, there is a greater demand for environmental quality, leading to investments in cleaner technologies and more stringent environmental regulations.

Recent empirical studies on the Environmental Kuznets Curve (EKC) hypothesis have found that an inverted U-shaped relationship between economic growth and environmental degradation exists in a significant number of countries, supporting the EKC hypothesis. However, the relationship varies across different income groups and environmental indicators, with some studies suggesting that the turning point of environmental improvement occurs at higher income levels.

2.2.3 **Thomas Malthus Population and Resource Theory**: Thomas Malthus' population theory, articulated in his work "An Essay on the Principle of Population" (1798), is highly relevant to the study of rural population changes and environmental sustainability. Malthus proposed that populations grow exponentially, while resources such as food and space grow arithmetically. In rural areas, this can lead to overpopulation relative to the available land and resources, causing environmental strain. Malthus identified 'preventive checks' (like moral restraint, delayed marriage, and contraception) and 'positive checks' (like famine, disease, and war) that control population growth. Malthus' theory highlights the potential for resource depletion due to unchecked population growth. In rural areas, this can manifest as deforestation, soil erosion, and water scarcity, which threaten both the environment and agricultural sustainability. Malthus' ideas are used to analyze the impacts of population growth on natural resources and ecosystems. His theory underscores the importance of sustainable practices in rural development to balance population dynamics with environmental health. Malthus' theory remains a foundational concept in understanding the complex relationship between population dynamics and environmental sustainability, particularly in rural areas where the balance between human needs and ecological capacity is most delicate.

The above theories supported by studies provide empirical evidence supporting the theories and demonstrate the complex interplay between population dynamics, livelihood choices, urbanization, migration, and institutional factors in environmental sustainability. For this study, Thomas Mathus population and resource theory will be developed upon to determine the dynamic effect of financial resource development and rural population adjustment on environmental sustainability in Nigeria.

2.3 Empirical Review

2.3.1 Rurality and Environmental Degradation

Several studies have examined the impact of rural population growth on land use change and deforestation. Research in the Amazon region has shown that rural population expansion is a significant driver of deforestation, as land is cleared for agriculture and settlement. Onilude and Vaz (2020) in their study employed a methodology involving the analysis of multi-temporal land use and land cover datasets using Geographic Information Systems (GIS). The findings revealed an increased fragmentation of cultivated lands in rural areas and forest fragmentation in urban areas. It was recommended that policymakers should make informed decisions to ensure sustainable land use practices. While this study is for a densely populated Lagos, the same applies to other states with large commercial cities like Kano, Rivers, Abuja, and Anambra.

Madu (2012), in his study on spatial impacts of rural population pressure on agricultural land use in Nigeria, the hierarchical cluster analysis was employed as the methodology. The southeastern states of Nigeria were revealed to be experiencing the most severe impacts due to rural population pressure. Consequently, the study recommends that these states should be prioritized for agriculture and rural development initiatives based on the degree of impact observed. The gap in this study is that it is area-specific as the agricultural practice depends on the weather conditions and availability of natural agricultural resources such as soil type, water bodies, etc. which was not factored into the study.

Research has highlighted the role of rural communities in natural resource management and conservation. Community-based approaches to resource management, including participatory forest management and community-managed conservation areas, have shown promise in mitigating environmental degradation while supporting rural livelihoods. The study by Onyekuru (2021), utilized an empirical survey methodology, assessing rural households across various ecological zones. The study uncovered a high dependence of these households on forest resources for their livelihood sustenance. Based on these findings, the study recommends that the implementation of REDD+ should not only aim at climate change mitigation but also support livelihoods, indigenous rights, and the preservation of cultural values within these communities.

Policy interventions aimed at addressing rural population dynamics and environmental degradation have been explored in the literature. These include initiatives to promote sustainable land use planning, improve access to alternative livelihoods, strengthen property rights, and support community-based conservation initiatives. In the year 2022, a study by Folorunso and Folorunso titled “Environmental Degradation in Nigeria: The Challenges of Peaceful Co-existence,” the authors examined environmental sociology and management practices. The findings from this study indicate that poor environmental

management is a contributing factor to economic insecurity and social conflicts. As a recommendation, the study suggests the adoption of strategies that are aimed at strengthening the response to desertification and promoting integrated urban planning to address these challenges.

The relationship between rural population dynamics and climate change is an emerging area of research. Rural populations are often disproportionately affected by climate change impacts, such as changes in precipitation patterns and extreme weather events, which can exacerbate environmental degradation and undermine rural livelihoods. Madu (2016), examined rurality and climate change vulnerability in Nigeria using the method of computing rural index and an integrated vulnerability assessment approach. The findings of the study highlighted that the northern states of Nigeria are more susceptible to the impacts of climate change due to their higher degrees of rurality coupled with a lower adaptive capacity. Based on these insights, the study recommends the development of robust decision-making policies that would facilitate climate change adaptation and promote even rural development across the regions.

The relationship between rural areas and environmental degradation is multifaceted. Rural population growth is a significant driver of land use change and deforestation, as evidenced in regions such as the Amazon and Lagos, Nigeria, leading to fragmented landscapes and prompting calls for sustainable land use policies. Moreover, rapid population growth often intensifies agriculture, causing soil degradation, water pollution, and biodiversity loss, especially pronounced in southeastern Nigeria. Community-based resource management approaches show promise in curbing environmental degradation while supporting rural livelihoods, exemplified in studies on forest resource use in Nigeria

2.3.2 Financial Development and Environmental Sustainability

The Role of Financial Institutions in Sustainable Development Financial institutions play a critical role in promoting sustainable development by channeling funds towards environmentally-friendly projects and initiatives. Studies have highlighted the importance of integrating environmental, social, and governance (ESG) criteria into financial decision-making processes to ensure sustainable investments (Scholtens and Kang, 2013). Moreover, financial institutions can leverage innovative financial instruments, such as green bonds and impact investing, to support environmental conservation and climate change mitigation efforts (Gupta & Barua, 2017).

Effects of Financial Policies on Environmental Conservation Financial policies and regulations have significant implications for environmental conservation and sustainability. For instance, fiscal incentives and subsidies for renewable energy projects can stimulate investment in clean energy infrastructure and reduce reliance on fossil fuels (Liu et al., 2020). Conversely, lax regulatory frameworks and financial incentives for resource extraction and intensive land use can exacerbate environmental degradation and depletion (Carruthers & Clark, 2010).

Dada et al. (2022), investigated the link between economic growth, financial development, urbanization, natural resources, human capital, trade openness, and ecological footprint: evidence from Nigeria Impact of various factors on Nigeria's

ecological footprint using ARDL and Granger causality Economic growth, FDI, and trade openness contribute positively to EFP, worsening environmental quality. Urbanization and financial development reduce EFP1.

Omoke et al. (2020), examined the impact of financial development on carbon, non-carbon, and total ecological footprint in Nigeria: new evidence from asymmetric dynamic analysis. Asymmetric effects of financial development on ecological footprint employed the Nonlinear ARDL. The study reveals that Positive financial development reduces ecological footprint, while negative development increases it.

Adegbite (2019) studied financial development, energy consumption, and environmental quality in Nigeria using Panel cointegration and Granger causality tests. The study revealed that financial development showed a significant positive effect on energy consumption and a negative effect on environmental quality in Nigeria. The study however required focus on rural populations and specific environmental depletion indicators. Hence this study is directed towards addressing this challenge.

Ajide and Lawanson, (2020) investigated financial development and environmental quality in Nigeria using Autoregressive distributed lag (ARDL) bounds testing approach and concluded that financial development negatively affected environmental quality in the short run but positively in the long run. Their study was robust but with limited consideration of rural population dynamics and specific environmental depletion factors Babatunde, and Ogunleye, (2019) used a bounds-testing approach to cointegration in studying Financial Development and Environmental Degradation in Nigeria conclude that financial development significantly contributes to environmental degradation in Nigeria. Dauda and Alao (2021) studied the topic; Financial Development, Energy Consumption, and Environmental Quality Nexus: Evidence from Nigeria. The study used the Autoregressive Distributed Lag (ARDL) approach and opines that financial development increases energy consumption and deteriorates environmental quality in Nigeria.

Egbetokun, et al (2017) studied Financial Development, Human Capital and Environmental Degradation in Nigeria: An Autoregressive Distributed Lag Bound Testing Approach and concluded that financial development and human capital significantly contributed to environmental degradation in Nigeria. The major gap in the study is that it ignores the differential impact of financial development on environmental depletion in rural areas. Hence this study set to fill this gap observed.

Lawanson and Ajide (2019) investigated financial development and environmental degradation in Nigeria: A critical assessment using the Autoregressive Distributed Lag (ARDL) bounds testing approach and concludes that financial development worsens environmental degradation in Nigeria. Olagunju and Du (2018) also investigated "Financial development and environmental degradation in Nigeria: A test of environmental Kuznets curve hypothesis using the Autoregressive Distributed Lag (ARDL) bounds testing approach and revealed that Financial development initially increases environmental degradation but decreases it beyond a threshold in Nigeria.

Generally, the reviewed works reveal that financial institutions are recognized for their role in promoting sustainable development through integration and innovative financial instruments like green bonds and impact investing (Scholtens & Kang, 2013; Gupta & Barua, 2017). Fiscal incentives and subsidies can promote renewable energy, while lax regulations may lead to environmental degradation (Liu et al., 2020; Carruthers & Clark, 2010). Several studies show that financial development can have both positive and negative impacts on environmental quality, with factors like economic growth, urbanization, and trade openness playing significant roles (Dada et al., 2022; Omoke et al., 2020; Adegbite, 2019; Ajide and Lawanson, 2020; Babatunde and Ogunleye, 2019; Dauda and Alao, 2021; Egbetokun et al., 2017; Lawanson and Ajide, 2019; Olagunju and Du, 2018).

Despite the robust studies, the majority lack focus on rural populations, which may experience the impacts of financial development differently (Adegbite, 2019; Ajide and Lawanson, 2020; Egbetokun et al., 2017). While some studies address the short-term negative effects of financial development on environmental quality, the long-term positive effects are less understood (Ajide and Lawanson, 2020). In a test of the Environmental Kuznets Curve Hypothesis, the hypothesis that financial development initially increases but eventually decreases environmental degradation beyond a certain threshold needs more empirical evidence (Olagunju & Du, 2018). The studies on environmental degradation in Nigeria share a common focus but overlook the significant influence of the rural population, which constitutes a majority of the country's populace. Incorporating the rural demographic into environmental research is crucial for a holistic understanding of the underlying causes, effects, and viable remedies for environmental issues. Such an inclusive approach would reveal the distinct interactions between rural communities and their surroundings, highlighting the need for sustainable development plans that balance environmental preservation with the well-being of rural inhabitants. The result of this study will contribute to the body of knowledge on financial development and environmental degradation in Nigeria and will provide a very useful policy guide for achieving a balance between financial development, rurality, and environmental sustainability

3.0 Methodology

3.1 Econometric Modelling Development.

The model framework lends credence to Thomas Malthus's population and resource theory which captures life sustainability amid changes in population and resources. The Cobb Douglas production function $y = f(K, L)$ is further augmented with Environmental Degradation(ED) as a function of financial development(FD), Rural population(PG), and Economic growth rate(GR) in Nigeria.

The equation is specified as follows:

$$ED = f(FD, PG, GR) \quad (1)$$

This is further transformed into an econometric model as shown below

$$ED = \beta_0 + \beta_1 FD + \beta_2 PG + \beta_3 GR + \mu \quad (2)$$

Where $\beta_0$represents the intercept, β_i represents the coefficients of respective dependent variables and μ represents the error term, which has a zero mean.

The expected apriori is $\beta_1 > 0, \quad and \ \beta_2, \beta_3 < 0$. Increase in financial development is expected to translate to increased use of renewable energy within the rural populace and

invariably reduction in environmental sustainability. Also, the negative outcome expected for the other coefficients means that, as expected in developing economies like Nigeria, the increased growth is mainly tapped from natural non-renewable resources and an increase in rural population will mean greater pressure on the crude non-renewable environmental resources such as fossil fuels, coal, etc which will imply a consistent reduction in the use of renewable energy with negative environmental impact.

3.2 ARDL Bonds model

Transforming the model in Equation (2) based on the ARDL approach, we obtain

$$\Delta ED_t = \beta_0 + \beta_1 ED_{t-1} + \beta_2 FD_{t-1} + \beta_3 PG_{t-1} + \beta_4 GR_{t-1} + \sum_{i-0}^{p^1} \delta_5 \Delta ED_{t-1} + \sum_{i-0}^{q^2} \delta_6 \Delta FD_{t-1} + \sum_{i-0}^{q^3} \delta_7 \Delta PG_{t-1} + \sum_{i-0}^{q^4} \delta_8 \Delta GR_{t-1} + \theta ECM_{t-1} + \mu_t \quad (3)$$

where Δ indicates the differencing in the variables, that is $\Delta y_t = y_t - y_{t-1}$. We apply an autoregressive distributed lag (ARDL) model advanced by Pesaran et al. (2001) to Equation (3) to obtain the long-run and short-run effects of the independent variables on environmental sustainability. The ARDL bound testing cointegration approach provides evidence of the long-run cointegrating relationship that may exist among the variables. Unlike the existing cointegrating models, the ARDL bounds testing approach is suitable irrespective of whether the variables are integrated of I(1), or I(0) or mutually cointegrated. Another advantage of this approach is its flexibility over small or large sample size.

The first part of the equation (3) is the long run equation, when estimated, it is expected that $\beta_2 > 0, \beta_3 < 0, \beta_4 < 0$ since it is expected that increased financial development sould go with better awareness and increase in the use of renewable energies which implies reduction in environmental degradation. Also increase in rural population and economic growth is expected to have a reverse effect on the use of renewable energies. The same a-priori expectations apply to the second part of the equation which is the short-run of the model.

3.3 The Dynamic Short-Run Effects

The dynamic short-run effects are estimated through a restricted error correction model, derived from the second part of the flexible ARDL model expressed as follows:

$$\Delta ED_t = \beta_0 + \sum_{i-0}^{p^1} \delta_i \Delta ED_{t-1} + \sum_{i-0}^{q^2} \delta_i \Delta FD_{t-1} + \sum_{i-0}^{q^3} \delta_i \Delta PG_{t-1} + \sum_{i-0}^{q^4} \delta_i \Delta GR_{t-1} + \theta ECM_{t-1} + \mu_t \quad (4)$$

θECM_{t-1} Indicates the first lag of the error correction term obtained from the residual of the long-run effects in Equation (2). The dependent variable, environmental degradation might not immediately adjust to its long-term equilibrium path as the determinants change, the speed of adjustment to the long-run equilibrium path is

therefore captured by the ECM_{t-1}term. This is defined as the one-period lag of the residual in the long-run equation. The long-run coefficients are normalized as follows: $\theta_i = \beta_i / (1 - \sum_{j=1}^{q} \omega_k)$, where $i = 1,2,3,4$ and the error correction term (ECM) is obtained as:

3.4 The Long Run Model

$ECM_{t-1} = \theta_1 ED_{t-1} + \theta_2 FD_{t-1} + \theta_3 PG_{t-1} + \theta_4 GR_{t-1}$ (5).

3.5 Description of Data

The annualized data for Nigeria's economy employed in this study spanning between 1990 and 2022 was sourced from the WDI (World Development Index report for 2023. The variables investigated are as detailed below.

Table 1: Variables

INDICATOR	VARIABLE	DESCRIPTION	SOURCE
ENVIRONMENTAL DEGRADATION	ED	Renewable energy consumption (% of total final energy consumption)	WDI
FINANCIAL DEVELOPMENT	FD	Domestic credit to private sector (% of GDP)	WDI
RURAL POPULATION	PG	Rural population (% of total population)	WDI
ECONOMIC GROWTH	GR	Economic Growth Rate	WDI

Source: Author's work

4.0 Results and Discussion

This section covers the pre-test, test and post-test diagnostic analysis. After the necessary pretests on variables, we will estimate an empirical model given as:

$$ED = \beta_0 + \beta_1 FD + \beta_2 PG + \beta_3 GR + \mu \quad (1)$$

4.1 Data Analysis

Table 2: Descriptive Statistics

	ED	FD	GR	PG
Mean	84.75	10.39	4.29	59.44
Median	84.63	9.88	4.23	60.06
Maximum	88.68	19.63	15.33	70.32
Minimum	80.64	4.96	(2.04)	46.48
Std. Dev.	2.40	3.54	3.96	7.56
Skewness	(0.09)	0.73	0.47	(0.19)
Kurtosis	1.77	3.17	3.39	1.70
Jarque-Bera	2.13	2.99	1.40	2.51
Probability	0.34	0.22	0.50	0.28
Sum	2,796.83	342.76	141.50	1,961.67
Sum Sq. Dev.	184.85	401.93	501.38	1,828.01

Authors' computation. Note: variables are as defined in Table 1.

Based on the provided summary statistics: *Environmental Degradation (ED):* Proxied by renewable energy consumption as a percentage of total final energy consumption, it shows fluctuations over the years and negatively skewed and slight decline in renewable

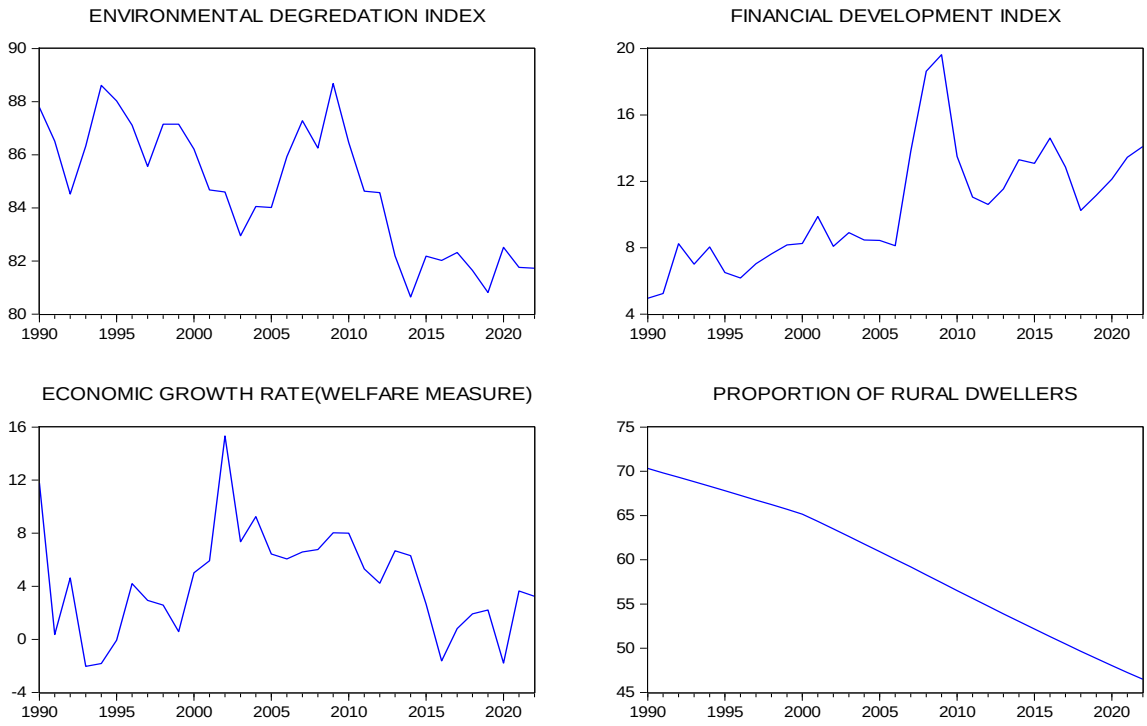
energy consumption over the years. An increase in this percentage would indicate a shift towards more sustainable energy sources and potentially less environmental degradation. *Rural Population (PG):* Represented as a percentage of the total population, rural population seems to have declined over the years. This could be indicative of urbanization trends, where people are moving away from rural areas towards urban centers. Urbanization may have implications for economic development and resource distribution.

Financial Development (FD): Proxied by domestic credit to the private sector as a percentage of GDP, this variable shows fluctuations over the years. Increases in domestic credit could indicate growth in financial markets and access to credit for private businesses. However, it's essential to monitor the quality and sustainability of this credit expansion.

Economic Growth (GR): Represented by the economic growth rate, this variable exhibits significant volatility over the years. While some periods show robust growth, others indicate contractions. Overall, there seems to be a positive trend, with periods of growth outweighing periods of decline. This suggests a mixed performance in economic growth over the years.

The different series indicates fluctuations in renewable energy consumption, rural population, domestic credit to the private sector, and economic growth in Nigeria over the years. While there are positive trends such as declining rural population and some periods of economic growth, challenges such as environmental degradation and economic volatility persist.

4.2 Graph Display



4.3 Correlation Matrix

Table 3: correlation Coefficient

	ED	FD	GR	PG
ED	1			
FD	-0.29512	1		
GR	0.077065	0.060888	1	
PG	0.762642	-0.7014	0.111298	1

Authors' computation using Eviews 9

ED has a positive correlation with Rural Population growth and a weak positive relationship with Growth rate but shows a weak negative relationship with financial development. It is also worthy of note that financial development has a reverse effect on rural population growth while financial development has a push effect GDP growth rate. The correlation coefficient between GR and PG is approximately 0.111. This indicates a very weak positive correlation between the Economic Growth Rate and the Rural Population Ratio.

4.4 STATIONARITY TEST

Table 4: Group unit root test

Group unit root test: Summary				
Series: ED, FD, GR, PG				
Exogenous variables: Individual effects				
Newey-West automatic bandwidth selection and Bartlett kernel				
			Cross-	
Method	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.381697779	0.35134277	4	126
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.312347849	0.0947014	4	126
ADF - Fisher Chi-square	15.79811431	0.04536257	4	126
PP - Fisher Chi-square	13.50256327	0.09568825	4	128
** Probabilities for Fisher tests are computed using an asymptotic Chi				
-square distribution. All other tests assume asymptotic normality.				

Authors' computation from E-views 9

The above presents the results of unit root tests for the series ED (Environmental Degradation), FD (Financial Development), GR (Economic Growth Rate), and PG (Rural Population Ratio). Unit root tests are used to determine whether a time series is stationary or non-stationary. Im, Pesaran and Shin Test (IPS) and Augmented Dickey-Fuller (ADF) Test: These tests examine whether there's a unit root allowing for individual-specific unit root processes. For the IPS test, with a p-value of 0.0947, we again fail to reject the null hypothesis at conventional significance levels, suggesting potential non-stationarity. For the ADF test, however, with a p-value of 0.0454, we reject the null hypothesis of a unit root at a 5% significance level, indicating evidence of stationarity.

4.5 ARDL Model Estimation

The unit root test results suggest mixed evidence regarding the stationarity of the series. The ADF test provides evidence of stationarity for some series, while other tests suggest potential non-stationarity. ARDL models are suitable for analyzing relationships between variables that exhibits mixed properties in terms of stationarity (some are stationary while others are non-stationary).

Table 5: ARDL Results

Dependent Variable: ED				
Method: ARDL				
Maximum dependent lags: 4 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): FD GR PG				
Selected Model: ARDL(4, 0, 2, 0)				
Variable	Coeff	Std. Error	t-Stat	Prob.*
ED(-1)	0.468	0.174	2.696	0.014
ED(-2)	0.075	0.185	0.408	0.688
ED(-3)	0.153	0.183	0.835	0.414
ED(-4)	(0.401)	0.160	2.504)	0.022
FD	0.190	0.088	2.171	0.043
GR	(0.102)	0.070	(1.454)	0.162
GR(-1)	0.142)	0.071	(2.009)	0.059
GR(-2)	0.209	0.068	3.055	0.007
PG	0.250	0.062	4.013	0.001
C	43.250	11.977	3.611	0.002
R-squared	0.891	Mean dependent var		84.541
Adjusted R-squared	0.840	S.D. dependent var		2.455
S.E. of regression	0.982	Akaike info crite		3.069
Sum squared resid	18.327	Schwarz criterion		3.540
Log likelihood	(34.495)	Hannan-Quinn		3.216
F-statistic	17.327	Durbin-Watson stat		2.215
Prob(F-statistic)	0.002			

Authors' computation from E-views 9

4.6 Model Selection:

The ARDL model with lag orders (4, 0, 2, 0) was selected using the Akaike Information Criterion (AIC) method. The ARDL model provides insights into the short- and long-term relationships between the variables ED, FD, GR, and PG. The significant coefficients indicate the impact of each variable on ED, while the model fit statistics suggest that the model explains a substantial portion of the variability in ED.

4.7 ARDL Cointegration with Long run.

Table 6: Cointegration and Long run Analysis of the ARDL

ARDL Cointegrating And Long Run Form				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ED(-1))	0.173	0.176	0.981	0.339
D(ED(-2))	0.248	0.165	1.503	0.149
D(ED(-3))	0.401	0.160	2.504	0.022
D(FD)	0.190	0.088	2.171	0.043
D(PG)	0.250	0.062	4.013	0.001
D(GR)	(0.102)	0.070	(1.454)	0.162
D(GR(-1))	(0.209)	0.068	(3.055)	0.007
CointEq(-1)	(0.705)	0.173	(4.086)	0.001
Cointeq = ED - (0.2699*FD + 0.3552*PG -0.0501*GR + 61.3386)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD	0.270	0.126	2.150	0.045
PG	0.355	0.060	5.926	0.000
GR	(0.050)	0.101	(0.495)	0.626
C	61.339	4.455	13.769	0.0

Authors' computation from E-views 9

In the provided output, the ARDL model results include both the cointegration form and the long-run coefficients for the dependent variable ED (Environmental Degradation) based on the selected ARDL (4, 0, 2, 0) model. This section provides coefficients for the cointegration relationship among the variables with their lagged differences.

The CointEq (-1): This coefficient represents the error correction term, indicating the speed of adjustment towards the long-run equilibrium. The result shows up to 70.5% percent adjustment on an annual basis. The negative coefficient for the error correction term indicates that deviations from the long-run equilibrium are corrected in subsequent periods. Long Run Coefficients: The long run result shows that financial development and rural population has a positive and direct influence on environmental degradation and both variables are statistically significant in determining the level of renewable energy consumption and hence environmental sustainability is encouraged, conversely, economic growth has a negative influence on use of renewable energy which though not statistically significant, tends to bring about environmental degradation. This result is in line with findings in mainly developing countries.

4.8 Post-Diagnostic Test

Table 7: ARDL Bond Test for Long run Relationship.

ARDL Bounds Test		
Test Statistic	Value	K
F-statistic	3.778898817	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
1%	4.29	5.61

Authors' computation from Eviews 9

The ARDL Bounds Test is used to determine whether long-run relationships exist among the variables included in the model. At the 10% significance level, the calculated F-statistic exceeds the upper bound of 3.77 hence we reconfirm that a long-run relationship exists. Also considering the suitability of the model, the independent variables in the model explain over 89% of the variations in Environmental degradation. The model is good enough as the F-value is statistically significant even at 5% levels.

5.0 Summary, Conclusion and Recommendations

5.1 Summary

The analysis explored the relationship between environmental degradation (ED) proxied by renewable energy consumption, financial development (FD) represented by domestic credit to the private sector, economic growth (GR), and rural population (PG) in Nigeria over several years. Descriptive statistics revealed fluctuations in these variables, indicating mixed trends such as declining rural population and economic volatility alongside challenges like environmental degradation. The Correlation analysis showed a weak negative correlation between ED and FD, a very weak positive correlation between ED and GR, and a strong positive correlation between ED and PG. Stationarity tests provided mixed evidence regarding the stationarity of the series. Using the ARDL model, short- and long-term relationships among the variables were analyzed. The selected ARDL model revealed significant coefficients indicating the impact of each variable on ED. The cointegration form and long-run coefficients indicated positive influences of FD and PG on ED, while GR showed a negative influence, albeit not statistically significant.

5.2 Conclusion

The analysis suggests that financial development and rural population have positive and significant impacts on environmental degradation, encouraging the use of renewable energy sources and hence environmental sustainability. Conversely, economic growth appears to have a negative influence, though not statistically significant, indicating a potential for environmental degradation. The results highlight the importance of considering financial policies and rural development strategies in environmental conservation efforts.

5.3 Recommendations

Based on the findings of this study, the following recommendations are made:

1. The government should embark on policies aimed at enhancing financial development, such as improving access to credit for private businesses and promoting financial market growth, can contribute positively to environmental sustainability by encouraging investments in renewable energy and environmentally friendly technologies.

2. The government should implement policies to support sustainable rural development, including investments in rural infrastructure, agricultural productivity, and rural livelihood diversification. This will reduce environmental degradation by addressing rural population pressures and promoting sustainable resource management practices as well as promoting cleaner energy alternatives.

3. Environmental Protection Agency should carry out continuous monitoring and evaluation of environmental and developmental interventions that are essential to assess their effectiveness in mitigating environmental degradation and promoting sustainable development.

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IMPACT OF COMMERCIAL BANKS CREDITS ON SMALL AND MEDIUM ENTERPRISES IN NIGERIA

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Abstract
The study examined the Impact of commercial Banks Credits on Small and Medium Enterprises in Nigeria from 1981 to 2022 using autoregressive distributed lags techniques of analysis on data from the Central Bank of Nigeria and Bank of Industry. The research focused on banks credits and its influence on small and medium Scale enterprises in Nigeria. The credit to SMEs, banks loans, money supply, lending interest rate and inflation were the independent variables used for the study. Profit performance which was the dependent variable was measured using SMEs profitability. Regression results were used to test five hypotheses. The results showed that credit to SMEs and aggregate banks loans were positive and significant at both short and long run. It was also found that money supply, lending interest rate and inflation showed varying level of significant relationships with the profit performance of small-scale business enterprises in Nigeria. The study recommended that the government should prioritize credit creation and administration strategies to SMEs in order to improve the profit performance of the SMEs in Nigeria. In addition, the monetary authorities and regulators should guarantee, re-invigorate and improve loans schemes by commercial banks in Nigeria through appropriate credit policies.

Keywords: Small and Medium Enterprises, banks, credit, Interest rate, Inflation

1.0 Introduction
In Nigeria, available data from the commercial banks indicates that 90% of companies registered are micro, small and medium enterprises. This target group has been identified as the catalyst for economic growth of the country as they are a major source of income and employment to many Nigerians. Small-scale enterprises employ between 6 and 29 employees with fixed assets of $100,000 while medium-scale enterprises employing between 30 and 99 employees with fixed assets of up to $1 Million (UNIDO, 2012). Like other countries of the world, SMEs in Nigeria have the tendency to serve as sources of livelihood to the poor, create employment opportunities, generate income and contribute immensely to economic growth. Small firms are the engines for economic development of several developed countries such as the US and Japan. Despite its increasing roles, access to credit by SMEs remains one major constraint to Nigerian SMEs. Most large companies usually start as small enterprises, so the ability of SMEs to develop and invest becomes crucial to any economy wishing to prosper. Although countries' definitions of what constitutes an SME for legal or statistical purposes are typically based on the number of employees, banks generally define SMEs in terms of average annual sale; an indicator that is more easily observable, a good proxy of an SME level of business activity, and, thus, more useful to banks' business and risk management purposes. A vast

number of data on SMEs in Nigeria also suggest SMEs are more financially constrained than large firms (SMEDAN, 2005).

Traditionally, financial institutions in Nigeria have been cautious with lending to SME groups because of high default rates and risks associated with the sector. Few banks have therefore developed an explicit policy for SME target groups taking the particular requirements and needs into consideration, an example is the development of customized financial products and appropriate credit management systems. Only few banks have SME specific loan products, and many of these are donor funded. Since SMEs are scarcely financed by equity due to risk in its operation amongst others, the last resort is thus debt financing and this is usually financed by financial institutions through the granting of loans. However, many SMEs lack assets that could be used as collateral. SMEs are also more prone to financial distress and failure. Commercial banks, because of these factors, consider lending to SMEs a high risk. Therefore, commercial banks often deny loans or offer loans to SMEs at higher rates of interest to accommodate the perceived high credit risk of SMEs. Inferring from the above, SMEs serve as sources of livelihood to the poor, create employment opportunities, generate income and contribute to economic growth. There is also the potential of small firms to turn economies with negative growth into vibrant ones, not to mention the fact that most large companies usually start as small enterprises, so the ability of SMEs to develop and invest becomes crucial to any economy wishing to prosper. From the argument above the only easier finance options for SMEs are loans (Debt financing) assess from financial institutions, thus it is necessary to examine the impact of these loans on the performance of SMEs.

The broad objective of this study is to examine the impact of commercial banks credit on small and medium enterprises profit performance in Nigeria. The study is organized into five sections: chapter one is the introduction; it contains the background of the study, the statement of the problems, the research questions, the statement of the hypothesis, the objectives of the study among others. Section two covers the review of relevant literature. Section three entails the theoretical framework, source of data, and model specification for the study. Section four presents the results of estimation while section five concludes the study and makes recommendations

2.0 Literature Review

2.1 Conceptual Review

Small and medium enterprises are the back bone of most economies especially developing countries like Nigeria, since the large corporate bodies mostly spring up from these small firms.

The UNIDO (2012) classified an enterprise as SME when it meets any two of the following criteria namely, number of employees, size of assets, or annual sales as follows: microenterprises employ up to 10 employees, with total assets and annual sales of up to $10,000; small enterprises employ up to 50 employees with total assets and annual sales of up to $3 million; and medium-sized enterprise employ up to 300 employees, with total assets and annual sales of up to $15 million. It is therefore noted that there is no universal definition of SMEs, which applies to all countries. This is due to the fact that SMEs are not homogeneous; they differ from one country to the other and from one industry to the other. However, SMEs are generally privately-owned firms

which have relatively a small number of personnel and low volume of sales and fixed assets (Dada, 2014)

Sources of Finance for Small Businesses in Nigeria

Finance has been identified in many business surveys as one of the most important factors determining the survival and growth of small-scale enterprises in both developing and developed countries (Owolabi and Nasiru,2017). While financing may not be the only problem militating against the small business sector, finance allows small-scale enterprises to undertake productive investments, expand their business and acquire the latest technologies, thus ensuring their competitiveness and that of the nation in general UNIDO (2012). The sources of finance for SMEs include the following:

Personal Savings Source of Finance: Personal savings which is also referred to as owner-savings is usually the first source of finance available to the small business owner. A significant proportion of the initial capital both fixed and working for small scale enterprises is obtained from personal savings accumulated from other activities. Personal savings represents funds invested into the business by the owner(s) which the business is under no obligation either to refund or pay interest on it (Aliyu & Bello, 2013). It is also referred to as risk capital. For the small business owner, personal savings is preferred over debt as a mode of financing as they undergo a typical cash shortage and are generally unable to secure loans with collateral during the founding phase. However, personal savings or internal finding alone may not be expected to meet the entire demand for finance by the Small-Scale Enterprises given the likelihood of smaller savings because of lower incomes. This factor exposes the small-scale business owner to seek credit from other sources.

Kadiri. (2012) summarized into two; the sources of credit available to small scale enterprises as; formal and informal institutions. The formal source includes; deposit money banks, finance houses, micro-finance banks, merchant banks and government owned finance institutions like the bank of industry, Central bank of Nigeria, Nigeria Industrial Development Bank, etc. The informal source comprises of friends, relations, money lenders, clubs and savings societies like "ESUSU" and cooperative amongst others.

SME and Access to Finance

A large body of the existing literature has documented that bank are the main external capital provider for SME sector in both developed and developing countries (Olaoye et al 2018, Nwoko et al 2019). In order to optimize their capital structure small businesses should focus on bank financing. The rationale been that, the business owners will employ funds more efficiently when they are monitored by and answerable to banks. However, most small business owners prefer their own source of finances to any bank source, because most small business owners do not want to give up their management control for their business. They prefer to remain 'small' and retain control and to grow 'big' and be under control.

Deposit in banks are the main sources of financial services, but unfortunately banks rarely lend to small scale enterprises, due to the fact that these small-scale enterprises operate with high risk. It is often argued that, in as much as small scale enterprises have the need for the assistance from banks, they are less attractive to commercial banks due

to the high risks that is associated with the high costs of production, low returns on their investment and yet lack collateral securities (Afolabi, 2013). Again, small business seeking loans are usually unable or unwilling to provide accounting records and other documentation required by banks. This makes the banks biased and as such prefer large corporations' borrowers, where there is assurance of security, high profit and faster rate of returns. There are various banks that provides credit to small scale enterprises like, commercial banks, merchant banks, micro finance banks, Agricultural Bank etc., but this study focused on the effect of commercial banks credits to small scale business.

2.2 Theoretical review

2.2.1 Keynesian Economic Theory

The main thrust of this theory as postulated by Keynes (1936), rest on the fact that SMEs are vital in the economic development of any country. The theory lends credence to the fact that the activities of SMEs thrive when the government creates an enabling and conducive environment. This environment thus created must ensure market regulation, efficient resource allocation and stabilization of policies on those macroeconomic fundamentals (inflation rate, exchange rate, interest rate, etc.) that are embedded in the environment affecting the activities of SMEs. Keynes believes that SMEs operate in a dynamic environment subject to several uncertainties and as such SMEs will only thrive in a conducive environment. However, given these uncertainties and dynamism in the business environment, the ability for SMEs to understand its nature become crucial as it enables them to be proactive in decision making

2.2.2 Schumpeter Theory of Innovation

This theory was proposed by Schumpeter (1934) and is premised on the fact that entrepreneurs are risk-takers. Their innovations are determined based on their pro-activeness to their environment. However, the environment being susceptible to changes overtime, plays a crucial role in their performance as businesses operators. Moreover, given that such factors domiciled in the environment are external to businesses, an understanding of such factors becomes a sine-qua non for efficient decision making, ultimately leading to an improved performance of businesses. Furthermore, Schumpeter viewed entrepreneurs as agents of change, individuals creating chaos by unsettling the status quo, developing new products, ideas and driving the market forward. This theory maintained that creativity and innovativeness are the drivers of entrepreneurship, which further defined business performance**.**

2.2.3 Loan Pricing Theory

This theory posits that in trying to adjust the lending rate, banks affect the pricing factors of loans, which however affects the cost of funds available for lending. This ripple effect triggers the loan uptake by borrowers, which ultimately affect the lending capacity of the banks. Banks should take into cognizance adverse selection problems on moral hazards issues when maximizing interest income, due to high information asymmetry available in the credit market. When the lending rates are high, this may likely trigger adverse selection in the market, as only risk lovers would take up such loans. Once such loans are received, the borrowers may develop moral hazard behavior, as they are likely to take-up investments with a high level of risk to compensate for the lending rate. This theory argues that a viable company should provide as much collateral as possible so as to signal to banks that they are less risky borrowers. This is in turn would cause the banks

to charge a lower interest rate on loans. However, the reverse signal arguments contends that banks only require more collateral for more risky firms' that requires payment of higher interest rates.

2.2.4 Credit Market Theory

This theory ties the interest rate required on loans with the bank's income earned from lending activities. It postulates that there exist credit terms that clears the market. In assuming that loans and advances remains constant, the interest rate then becomes the price (credit term) that clears the market. However, a rise in loan demand given a certain customer base level will spike a surge in interest rate, vice versa. The main thrust of this theory rest on two major factors; bank's income and interest rate. A higher interest rate means more income for banks, but a rise in interest rate makes borrower prone to default risk. Consequently, any rate above the optimal interest rate may lead to possible losses and less income for banks.

2.3 Empirical Review

Mamman and Aminu (2013) assessed the effect of 2004 banking reforms on loan financing of SMEs in Nigeria. A sample size of 500 was randomly chosen and chi-square test was used which indicated that there is no significant effect of 2004 banking reform on loan financing of SMEs in Nigeria and suggested that there are some constraints which restricted access to loans from the banks for SMEs in Nigeria. Aliyu and Bello (2013) examined the contribution of commercial banks to the growth of SMEs in Nigeria between 1980 and 2009. Using ratio analysis and trend analysis, it was discovered that commercial banks contribute to financing SMEs but their contribution has declined as the government through CBN directives abolished the mandatory bank's credit allocations.

Nwosa and Oseni (2013) examined the impact of bank loans to SMEs on manufacturing output in Nigeria for the period spanning 1992 to 2010. Employing error correction modelling technique, the study deduced that bank loans to the SME sector had significant impact on manufacturing output both in the long and short run. Omah, Duruwoju, Adeoye and Elegunde (2012) examined the impact of post-bank consolidation on the performance of SMEs in Nigeria, with special reference to Lagos State. A sample size of 50 was drawn from the supra-population of the study within Ikeja Local Government in Lagos State. Applying mean, standard deviation and coefficient of variation in its data analysis, the study revealed that SMEs do not have better access to finance through banks, due to neo-reorganization in banks as a result of post-bank consolidation and SMEs do not have absolute rapport with the financial institutions due to their financial background in Nigeria.

Dada (2014) noted that the consistently repeated complaint of SMEs about their problem regarding access to finance is highly relevant constraint that endangers the development of the sector in Nigeria and investigating the effect of commercial banks' credit on SMEs development employing Ordinary Least Square (OLS) technique to estimate the multiple regression models. The findings revealed that commercial banks credit to SMEs and the saving and time deposit of commercial banks exert a positive and significant influence on SMEs development proxy by wholesale and retail trade output as a component of

GDP, while exchange rate and interest rate exhibited adverse effect on SMEs development.

Qureshi (2012) examined the problems and constraints faced by small and medium-sized enterprises (SMEs) in Pakistan with regard to access to financing. The research methodology includes qualitative data and quantitative data. A survey was undertaken from a sample group of 500 respondents of SMEs in Karachi from whom various questions were asked through a structured questionnaire. In addition, one-on-one formal and informal interviews were taken from various businessmen and bankers. Samples were selected conveniently. A conceptual model/framework was devised to test and ascertain the statistical validity. It included dependent variable {SME financing} and independent variables: financing constraints, functional/internal barriers, government support and incentives, and SMEs growth and development. The study found that formal financing is the biggest problem of SMEs because a substantial portion of SMEs did not have the security required for collateral. The loan processing time was very lengthy and cumbersome and the loan terms were not succinct and thoroughly understood by the borrower which is a similar scenario to the Nigerian situation.

Commercial bank loans to SMEs from 1998 to 2017 had a negative and insignificant impact on economic growth of Nigeria measured as GDP (Olaoye *et al.,* 2018). They further argued that inflation rate exerted an insignificant positive effect on the country's economic growth measured by GDP. Johnny and Ayawei (2018) concluded that, there is positive significant relationship between commercial banks' credit to SMEs and fixed capital formation which is proxy for economic growth, while there exists a significant negative relationship between interest rate on bank credit and economic growth. The results also found an insignificant negative relationship between inflation rate and fixed capital formation (economic growth) in Nigeria during the period under review.

Similarly, Ezeaku *et al.* (2017) investigated SMEs financing and its effect on manufacturing sector growth in Nigeria. The findings of their study revealed that, banks' loans to SMEs exerted significant positive impact on economic growth in Nigeria from 1981 to 2014. The results also indicated that bank interest rate and inflation rate on SMEs credit impacted economic growth negatively. Commercial banks' credit to SMEs has a negative and highly statistically significant effect on economic growth in Nigeria from 1992 to 2015 (Owolabi and Nasiru, 2017). They also found an insignificant but negative relationship between banks' credit to SME and unemployment and a statistically significant negative effect of banks' credit to SMEs on poverty. The study further analyzed the likely factors responsible for the negative relationship between banks' credit to SMEs and economic growth to be high operating costs for SMEs as well as poor risks managerial skills among the SMEs operators. While expressing a contrary opinion through their findings, Nwoko *et al.* (2019) argued that there exists a statistically significant positive relationship between banks' credit to SMEs and economic growth in Nigeria. The study recommended that government should introduce and implement such policies which will enhance Small and Medium Enterprises (SMEs) access to credit from banks and other financial institutions in Nigeria.

Ofeimun, Nwakoby and Izekor (2018) examined the effect of microfinance banks on SMEs' growth in Nigeria. Secondary data were collated from CBN statistical bulletin,

National bureau of statistics and MFB financial reports within 1996 to 2015. The findings of the regression analyses revealed that the loan provision, disbursements and spread of micro finance loan positively impacts SMEs' growth in Nigeria.

3.0 Methodology

3.1 Theoretical Framework

The pecking order theory was suggested by Donaldson in 1984. The proponents of the Pecking order theory contended that managers prefer financing from retained earnings, followed by debt, and then equity. It served as the underlying theory that used to reflect on the sourcing of commercial banks credit by SMEs in Nigeria. The proponents of the pecking order theory specified funding demands are within the limits of the accessibility of funds because the accessibility of funds is governed by different amount of information asymmetry and related agency costs included in the various sources of finance. Pecking order theory became one of the most influential theories of corporate capital structure. SMEs seem to adjust their investment plans to the principles of the pecking order approach and could use a form of borrowing ratio to achieve their funding policy. Modigliani and Miller (1958) propounded the capital structure theory in the field of investment, where the capital structure represents the mix of debt and equity used by firms to finance long-term investment. Debt is the component of capital loaned by other parties or investors and subject to repayment. Small businesses rely on internal sources for financing business projects. The internal sources of funding constrain SMEs ability to finance big projects. The capital structure theory led to vigorous debates in areas of corporate finance and academics. Despite the diversity of the capital structure literature, relatively few scholars have explored the financing decision of SMEs. Most of these researchers have ignored the uniqueness of SMEs, which represent most of activities contributing to Gross Domestic Product (GDP) and employment in most countries.

3. 2 Model Specification

This study adapted bank lending theories for the validation of statistical result and uses multiple variable regression test in order to undertake an assessment of the effect of deposit money bank loans and SMEs profit performance in the Nigeria. The captured independent variables this work include; credit to SMEs, aggregate deposit money banks loans, money supply, lending interest rate, and inflation while the dependent variable focused on profitability is used as proxy for SMEs' performance. The functional relationships of variables and the regression equation of the dependent and independent variables are stated below;Y=F(Xa)

Y= F (X1, X2, X3, Xn)

SMEP =F (SMECR, DMBL, MS, INT, INFL) ……. (1)

SMEP= F (SMECR + DMBL + M2 + LINT + INFL $_{+\mu}$) …….(2)

SMEP = βo + β1CRSME +β2DMBL + M2 + β3M2 + β4INT + β5INFL +μ …….. (3)

Where, SMEP = SMEs profit, SMECR = Credit to SMEs,

DMBL = Aggregate Deposit Money Banks Loans (Commercial banks credits), M2 = Money Supply, LINTR= Loan Interest rate, INFL= Inflation, Bo = Constant Term, B1-B5- Coefficient, μ= Error Term

Prior Expectations: The research depended on bank lending theories for the validation of statistical result. It is expected that credit to SMEs money supply should be positive sign while interest rate should be negative.

β_1, β_2, β_3, β_4, $\beta_5$are the relative slope coefficients and partial elasticity of the parameters.

ARDL Form of the Model

In its basic form, an ARDL regression model is specify thus:

$$\Delta y_t = \alpha_0 + \beta_i y_{t-1} + \lambda_k \sum_{k=1}^{k} \Delta SR_{k,t-1} + \sigma_k \sum_{k=1}^{k} LR_{k,t-1} + \mu_t \quad (4)$$

Where: Δ denotes first difference of variable, μ_t is a random "disturbance" term, y_i is the dependent variable, while *SR*is the short-run dynamics of explanatory variables, *LR*is the long-run dynamics of the explanatory variables. $\beta, \lambda \, and \, \sigma$ are the parameters to be estimated; α_0 is the constant parameter (Bahmani-Oskooee. & Fariditavana. 2016) and (Onyeoma & Ozor 2022)

The ARDL form of the model to explain the dynamic relationship between balance of payments and its determinants is specified as follows:

$$\begin{aligned}\Delta SMEP_t = \; & \alpha_0 + \delta_1 SMECR_t + \delta_2 DMBL_t + \delta_3 M2_t + \delta_4 LINTR_t + \delta_5 INFL_t \\ & + \sum_{i=1}^{p-1} \psi_i \Delta \mathrm{SMEP}_{t-i} + \sum_{i=1}^{q_1-1} \varphi_1 \Delta SMECR_{t-i} + \sum_{i=1}^{q_1-1} \varphi_2 \Delta DMBL_{t-i} \\ & + \sum_{i=1}^{q_1-1} \varphi_3 \Delta M2_{t-i} + \sum_{i=1}^{q_1-1} \varphi_4 \Delta LINTR_{t-i} \\ & + \sum_{i=1}^{q_1-1} \varphi_5 \Delta INFL_{t-i} + \theta ECM_{t-1} \xi_t (5)\end{aligned}$$

where all the variables are as earlier defined.

3.6 Method of Analysis and Data Sources

The study examined the deposit money banks loans and SMEs profit performance in Nigeria from 1981 to 2022 using autoregressive distributed lags techniques of analysis. The data used for this research is Secondary data from the Central bank of Nigeria and Bank of industry. The data used for the study are secondary data covering the period 1981 to 2022.

4.0 Presentation of Results and Interpretation

4.1 Descriptive Statistics

The descriptive statistics of the variables of the study are presented in Table 1. The statistics include the mean (average), median, maximum, minimum values, Jarque-Bera statistics, amongst others.

Table 1: Descriptive Statistics of Variables

	SMEP	SMECR	DMBL	M2	LINTR	INFL
Mean	542.4432	48.53637	38189.06	5311597.	17.22055	16.82645
Median	314.0934	45.23583	12316.90	1457682.	17.38000	14.88503
Maximum	1974.272	123.9321	140731.6	16032174	29.80000	76.75887
Minimum	0.968600	10.74789	73.48000	15541.00	9.040000	0.224801
Std. Dev.	617.3969	30.04957	45165.31	6211122.	4.586710	12.97357
Skewness	0.872603	0.480687	0.881137	0.597139	0.376166	2.880716
Kurtosis	2.475514	2.339326	2.348080	1.534327	3.442459	13.07538
Jarque-Bera	5.811448	2.381278	6.178562	6.255365	1.333101	235.7377
Probability	0.054709	0.304027	0.045535	0.043819	0.513477	0.000000
Sum	22782.62	2038.528	1603940.	2.23E+08	723.2633	706.7107
Sum Sq. Dev.	15628337	37022.03	8.36E+10	1.58E+15	862.5544	6900.854
Observations	42	42	42	42	42	42

Source: Author's computations using E-views 9

Profit performance of SMEs statistic averaged N542.44 million and ranged between N0.97 million and N1.97 billion. The coefficient of skewness and kurtosis as well as the p-value of the Jarque-Bera which is close 0.05 indicates than the series is normally distributed. Mean (average) credit to SMEs within the period was N48.53. Its minimum value was N10.74 billion, while its maximum value was N123.93 billion. The p-value of the Jarque-Bera statistic (which is greater than 0.05) suggests that the series followed a normal distribution. Inflation rate (INFL) averaged 16.82% and ranged from 0.22% to 76.85%. The series is not normally distributed as indicated by coefficient of skewness, kurtosis and the p-value of the Jarque-Bera statistic which is less than 0.05. Money supply (M2) averaged N5.31 billion and ranged between N15.54 million and N16. 03 billion within the period under consideration. The Jarque-Bera statistic with a p-value close to 0.05 indicate that the series is normally distributed. Lending interest rate averaged 17.22 % and ranged from 9.04 % to 29%. The Jarque-Bera statistic with a p-value higher than 0.05 indicate that the series is normally distributed.

4.3 Correlation Analysis

The pair-wise correlation coefficients of the variables are presented in Table 2. It shows the relationship between pairs of the variables. They however do not measure causal relationships or effects.

Table 2: Correlation Matrix

	SMEP	SMECR	DMBL	M2	LINTR	INFL
SMEP	1					
SMECR	0.496108	1				
DMBL	0.800991	0.497229	1			
M2	0.920609	0.660237	0.841532	1		
LINTR	-0.139639	-0.015862	-0.131623	-0.201002	1	
INFL	-0.141835	0.0770687	-0.147387	-0.133167	0.1342829	1

Source: Author's computations using EVIEWS 9.

Table 2 shows that SMECR, DMBL and M2 are positively correlated to SMEP, though the relationships between the pairs are of varying degrees as reflected by the correlation coefficients. The implication of the positive correlation coefficients is that the variables SMECR, DMBL and M2 move in the same direction as SMEP. However, the correlation between SMEP and LINTR, SMEP and INF are negative, and weak. These suggest that these variables move in opposite direction with SMEP. All the variables of analysis are inversely correlated with lending interest rate and inflation. This suggests that within the period under consideration, decrease in INF and LINTR is associated with increase in SMEP.

4.4 Unit Root Result

As a preliminary step to empirically investigate the commercial banks credits to SMEs and profit performance of SMEs in Nigeria, unit root test was conducted on our focus variables. An augmented Dickey Fuller (ADF) test unit root test was employed for this purpose. The results of the tests are presented in Tables 3.

Table 3: Unit Root Test Analyses Result

VARIABLES	ADF Test Statistics	5% Critical Value	Order of Integration
SMEP	-4.070740	-1.949609	I(0)
SMECR	-4.404390	-3.526609	I(1)
INF	-3.094009	-2.935001	I(0)
DMBL	-3.036865	-2.935001	I(0)
MS	-8.898646	-3.529758	I(1)
LINTR	-11.97424	-3.526609	I(1)

Source: Authors Computation using E-Views 9

From the unit root result summarized in the table above, credit to SMEs (SMECR), money supply (MS) and lending interest rate (LINTR) are all stationary at first difference while SMEs profit (SMEP), inflation (INF) and deposit money bank loans (DMBL) are stationary at level form judging from our decision rule since the ADF statistics is greater than the 5% level of significance in absolute value. Not having a stationarity time series data indicates not having a short run relationship among the individual series. Therefore, since the entire variables are not stationary at level form, there is a need to conduct a co-integration test to test for the long run relationship of the variables.

4.5 Lag Length Selection Criteria

The test result of the different lag length selection criteria is reported in the table 4 below. Careful observation shows that from the different lag length selection criteria, lag three was selected based on the Akaike information criterion (AIC) which has the lowest value.

Table 4: Lag Selection Criteria

Lag Order Selection Criteria
Endogenous variables: SMEPSMECR DMBL M2 LINTR INFL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-810.9025	NA	6.06e+11	44.15689	44.41812	44.24899
1	-703.8497	173.5991	1.34e+10	40.31620	42.14481*	40.96087
2	-673.9368	38.80599	2.18e+10	40.64523	44.04122	41.84248
3	-603.9964	68.05004*	5.52e+09*	38.81062*	43.77399	40.56044*

* indicates lag order selected by the criterion
Source: Authors computation using E-views 9

4.6 Cointegration Test

In econometric analysis, two variables will be cointegrated if they have a long-run or an equilibrium relationship between them (Gujarati, 2004). Both the Johasen Cointegration test and the ARDL Bounds test (Pesaran *et al* 2001) were utilized for this purpose to corroborate the results of different tests of econometric analysis. The results of the Bounds tests are presented in Tables 5. However, both the trace statistics and the max-eigen value of the Johansen co-integration test showed at least two cointegrating equations at the 5% level of significance indicating long run relationships among the variables of the model

Table 5: ARDL Bounds Test Result

ARDL Bounds Test
Date: 7/20/24 Time: 14:28
Sample: 1981 2022
Included observations: 38
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	8.243430	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Author's Estimation using EVIEWS 9

In view of the observation that the variables are of integrated of different order (0, 1), the appropriate method to test for long run relationship (or cointegration) between the

variables is the ARDL approach to cointegration, also referred to as the bounds testing approach.

The cointegration test result shows that long run relationship exists between the dependent variable and the explanatory variables. This is indicated by the computed F-statistic of 8.24 which is greater than the upper bounds critical values at the conventional levels of statistical significance. According to the Granger Representation Theorem, existence of long run relationship between variables implied that the short run (dynamic) relationship between them can be represented with an error correction model which is also handled using ARDL techniques of analysis.

4.7 ARDL Regression Results

The results of estimation of the specified short-run (error correction) and the long-run models are presented in table 6.

Table 7: Estimation Results

ARDL Cointegrating And Long Run Form
Dependent Variable: SMEP
Selected Model: ARDL(4, 4, 4, 4, 3, 1)
Date: 07/20/24 Time: 13:57
Sample: 1981 2022
Included observations: 38

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SMEP(-1))	2.369023	0.489879	4.835939	0.0004
D(SMEP(-2))	1.556745	0.347647	4.477944	0.0008
D(SMEP(-3))	1.849521	0.421864	4.384158	0.0009
D(SMECR)	-2.574886	1.922237	-1.339526	0.2052
D(SMECR(-1))	2.357214	1.815584	1.298323	0.2186
D(SMECR(-2))	-4.617449	2.201091	-2.097801	0.0133
D(SMECR(-3))	7.481720	2.194357	3.409526	0.0052
D(DMBL)	0.011191	0.002344	4.775472	0.0005
D(DMBL(-1))	-0.000780	0.003098	-0.251803	0.8055
D(DMBL(-2))	-0.020736	0.004213	-4.921497	0.0004
D(DMBL(-3))	-0.015407	0.002653	-5.808480	0.0001
D(M2)	0.000048	0.000089	0.543579	0.5967
D(M2(-1))	0.000086	0.000145	0.595821	0.5624
D(M2(-2))	-0.000086	0.000120	-0.721413	0.4845
D(M2(-3))	-0.000226	0.000086	-2.635497	0.0218
D(LINTR)	0.752432	6.526161	0.115295	0.9101
D(LINTR(-1))	-24.441200	9.455891	-2.584759	0.0239
D(LINTR(-2))	18.443034	9.503229	1.940712	0.0761
D(INFL)	-1.308593	2.712175	-0.482488	0.6381
CointEq(-1)	-0.643813	0.316707	-2.023834	0.0142

Cointeq = SMEP - (-2.0933*SMECR + 0.0144*DMBL + 0.0000*M2 + 2.7098
*LINTR + 1.2805*INFL + 4.5121)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SMECR	-2.093314	0.630569	-3.319722	0.0061
DMBL	0.014434	0.001830	7.888803	0.0000
M2	0.000012	0.000013	0.939131	0.3662
LINTR	2.709761	1.921064	1.410552	0.1838
INFL	1.280518	0.791917	1.616986	0.1318
C	4.512066	31.065569	0.145243	0.8869

Source: Author's Estimation using E-views 9

The cointegrating form (that is the error correction model) shows that profit of SMEs (SMEP) is significantly affected by two and third year lagged credit to SMEs (SMECR). The short run effect of SMECR on SMEP is negative and significant at the 1% level after a period of time has elapsed. On the short run, aggregate deposit money banks loans (DMBL) at one and two-year lags also significantly affected the profit of SMES (SMEP) The short run effect of lending interest rate (LINTR) on profit of SMEs (SMEP) is also negative and significant at the 1% level with one period lag. The negative and significant effect of money supply (M2) at third-year lag on SMEP on the short run may be due to non-monetization of the economy. The contemporaneous effect of inflation is negative and not statistically significant in the short run. The error correction coefficient is negatively signed as expected and significant at the 1% level. The absolute value of the coefficient indicates that 64.38% of the short run deviation from equilibrium is adjusted annually to restore the equilibrium. The F-Statistics of 9.7358 is significant at 1% while the Durbin-Watson statistic of 2.2 shows the absence of serial correlation in the model. Hence, the model precision is good enough for robust policy recommendation

The estimated long run coefficients reveal that profit of SMES is affected by credit to SMES and aggregate deposit money banks loans. Although lending interest rate, money supply and inflation were not statistically significant on the long run, these variables also affected the profit of SMES judging from their short run roles. This again underscores the need to target these variables to improve the performance of SMEs in Nigeria.

4.8 Discussion of the Results

The results from the empirical analyses are far-reaching and apt for policy directions. It is on this basis that the implication of this result is conducted. Firstly, it is established that credit to SMEs impacts on the profit of the SMES in the short and long run. Its effect improved the profit performance of the SMEs. This is similar to findings by Onyeoma and Ozor(2022). Aggregate deposit money bank loans is positively related to the performance of SMEs in the short-run and long-run as well. Secondly, the study also found lower inflation rates significantly boosts profit of SMEs in the short in Nigeria. This is in tandem with empirical evidence from the reviewed literature. The result also emphasizes the role of money supply as a determinant of profit performance of SMEs in Nigeria in the short run. This is in synchrony with theoretical evidence as a monetary phenomenon play key role on the SMEs and the economy in general.

Another factor influencing profit performance of SMEs as revealed by the study is lending interest rate (LINTR). The observed effect of lending interest rate revealed that

on the short run lending interest rate (LINTR) impacts on the profit of SMEs negatively and is significant at the 1% level of significance at one period lag.

5.0 Summary, Conclusion and Recommendations

5.1 Summary of Findings

The broad objective of this study is to examine the deposit money banks loans and SMEs profit performance in Nigeria from 1981 to 2022 using autoregressive distributed lags techniques of analysis. Based on empirical evidence from this study, credit to SMES, aggregate deposit money banks loans have significant and positive impact on profit performance of SMEs in Nigeria at both short and long run. However, money supply, lending interest rate and inflation have significant impact on the SMEs performance in Nigeria on the short run while these variables were not significance on the long run. Five hypotheses were formulated, tested and analyzed for the study with interesting outcomes for robust policy recommendations

5.2 Conclusion

The study examined the deposit money banks loans and SMEs profit performance in Nigeria from 1981 to 2022 using autoregressive distributed lags techniques of analysis. The conclusion reached based on finding reveled indicate that credit to SMEs, aggregate deposit money banks loans, money supply, lending interest rate and inflation have impact on the profit performance of SMEs in Nigeria. Thus, they are therefore suitable variables for capturing SMEs performance in Nigeria. Attention should be focused on the identified variables and policies geared towards effective implementation to boost SMES Penetration considering that Nigeria is a developing country. Again, money supply, lending interest rate and inflation should be targeted in the implementation of monetary policy to influence the level of economic activities to create the conducive atmosphere to develop the SMEs in Nigeria. Financial sector development and financial deepening should be encouraged by monetary authorities and regulators to re-invigorate and improve the development of deposit money banks in Nigeria. This of course play the key role of loan creation and administration that will impact on the SMES in Nigeria.

5.3 Recommendations

Based on the findings of this study, the following policy recommendations have been proffered;

1. Evidence from the study reveals that credit to SMES has a role to play in determining the profit performance of the SMES, the government should prioritize credit creation and administration strategies to SMEs in order to improve the profit performance of the SMEs in Nigeria
2. Aggregate deposit money bank loans improved SMEs performance, the monetary authorities and regulators should guarantee, re-invigorate and improve loans schemes by deposit money banks in Nigeria. This of course will play the key role of loan creation, securitization and administration that will impact on the SMES in Nigeria.
3. Money supply, lending interest rate and inflation should be targeted in the implementation of monetary policy to influence the level of economic activities to create the conducive atmosphere to develop the SMEs in Nigeria

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THE EFFECTS OF MONETARY AND FISCAL POLICY INSTRUMENTS ON ECONOMIC GROWTH IN NIGERIA

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Abstract

This study examined the effects of monetary and fiscal policy instruments on the growth of the Nigerian economy within the period 1981 to 2023. Data was sourced from the various issues of CBN Statistical Bulletin and the World Bank Development Indicators (WDI) and analyzed using the Augmented Dickey-Fuller (ADF) Unit Root test, Johansen co-integration test, and Error Correction Model. A co-integrating relationship was established among the selected variables of money supply, government expenditure,interest rate, investment, and financial deepening which obviously indicated a long-run relationship among these variables. The result of the Error Correction Mechanism (ECM) showed the expected sign and proved statistically significant at the 0.05% level, implying the adjustment of any disequilibrium in the system. The study recommended that the government should strengthen the financial system and reduce the bureaucratic bottle neck for easy implementation of monetary policy as well as fine-tune its fiscal responsibility by increasing its expenditure to the key sectors that are the main drivers of economic growth in Nigeria.

Keywords: Economic growth, government expenditure, interest rate, money supply, investment.

1.0 Introduction

The prime goals of macroeconomic policies seek to maintain full employment, price stability, sustainable economic growth and external balance. The realization of these goals is requires policy guidance. This policy guidance represents the objectives of economic policy. Fiscal and monetary policies are the main instrument of achieving macroeconomic targets. The basic fiscal policy instruments are public expenditure and taxation while the main monetary policy devices are reserve requirements, discount rates, interest rate, money supply and open market policy (Adesoye, Maku & Atanda, 2012). The regulation of the volume of money in circulation is the primary responsibility of the Central Bank of Nigeria (CBN) in such a way as to promote economic growth and social welfare. For the transmission mechanism of monetary to be effective, ensuring macroeconomic fundamentals are achieved, Aliyu and Englama, (2009) posit that the role of the CBN is anchored on the use of monetary policy that is usually targeted towards the key variables to achieving macroeconomic stability.

The economic environment that guided monetary policy in the pre-Structural Adjustment Programme (SAP) era was characterized by the dominance of the oil sector, the expanding role of the public sector in the economy and over dependence on the external

sector. To maintain macroeconomic objectives, monetary authorities employed the use of direct monetary instruments such as credit ceilings, selective credit controls, administered interest rate and exchange rate, as well as the prescription of cash reserve requirements and special deposits (Okwu, Obiakor, Falaiye, & Owolabi, 2011). The use of market based instruments was not feasible at that point because of the underdeveloped nature of the financial markets and the deliberate restraint on interest rates.

The socioeconomic dimensions of the collapse of oil prices and the general mismanagement of the economy in the 1980s meant that the formal private sector was going extinct, economic activities as measured by aggregate output, industrial production, non-oil exports among others, were all showing distress signs. By 1986, all major socioeconomic indicators were pointing downwards. The rate of unemployment was (and is still) high, purchasing power of the citizenry was dwindling, poverty was becoming entrenched and economic growth became negative. In sum, there was severe macroeconomic imbalance (internally and externally) and it was apparent that the economy required major adjustment.

Even with the introduction of the structural adjustment programme (SAP) in 1986 to correct the perceived imbalance in the economy, it was observed that social-economic indicators were not responding positively to the reform measures. Infact Olaniyan (2000) noted that it was a common feature of fiscal behaviour to observe that before the end of the second quarter of any particular year, actual fiscal activities of the government regularly finds itself engaging in extra budgetary expenditure that is occasioned, largely, by the observed poverty in the land. It is against this backdrop that this study seeks to investigate the effects of monetary and fiscal policy instruments on economic growth in Nigeria.

Inspite of the various policy measures adopted over the years to achieve macroeconomic stability and sustained economic growth, the economy has been visibly distressed. Monetary and fiscal policies are still widely recognized as potent tools for enhancing economic growth, redistributing income, and reducing poverty. Undoubtedly, inefficient policy management has been identified as a major cause of the economic crisis witnessed over the years.

The main objective of this study is to investigate the effect of monetary and fiscal policy instruments on economic growth in Nigeria. The relevance of this study cannot be overemphasized especially at this stage of our development where efforts are being made to reposition the monetary and real sectors to enable it play key roles in the economic development of Nigeria. The study is organized into five sections: chapter one is the introduction; it contains the background of the study, the statement of the problems the research questions, the statement of the hypothesis, the objectives of the study among others. Section two covers the review of relevant literature. Section three entails the theoretical framework, source of data, and model specification for the study. Section four presents the results of estimation while section five concludes the study and makes recommendations.

2.0 Literature Review

2.1 Conceptual Literature

Fiscal policy is a term conventionally associated with the use of taxation and public expenditure to influence the level of economic activities as being defined by various scholars. Iyoha (2007) sees fiscal policy as the use of changes in government expenditure and changes in taxes to influence the level of key economic aggregates like GDP, employment, the general price level and balance of payments. According to Oriakhi (2004), fiscal policy deals with the deliberate exercise of government power to tax and spend for the purpose of bringing the nation's output and employment to desired levels. That is to say, fiscal policy refers to deliberate government operation through the use of taxation and expenditure in order to drive an economy towards a desired direction of growth and development.

Monetary policy is the process by which the government, central bank, or monetary authority of a country controls the supply of money, availability of money and cost of money or rate of interest to attain to attain a set of objectives oriented towards the growth and stability of the economy. Other primary means of conducting monetary policy include:

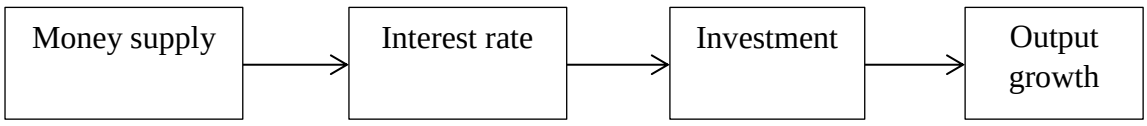
(i) Open market operations (OMO)
(ii) Discount Window Lending (Bank rate).
(iii) Fractional deposit lending (changes in the reserve requirement)
(iv) Selective credit guideline
(v) Moral Suasion.

Economic growth can be defined as a sustained increase in the output of goods and services of a country over a given period of time. In essence, it is an increase in the capacity of an economy to produce diverse goods and services in aggregate terms from one period to another. Growth can be measured in nominal or real terms (Singer, 2013; Feldstein, 2017). The real rate of growth measured in constant market prices is a more useful measure than the nominal GDP growth rate (measured in market prices prevailing in that year).

2.2 Theoretical Literature

2.2.1 Theoretical Foundations of Monetary Policy

The mechanism by which monetary impulses is transmitted to the real economy remains a central topic in macroeconomics. As such, a number of theoretical postulations have been devised to capture the transmission patterns. A general form of the monetary policy output function involving direct relationships can be seen from the simple Keynesian transmission mechanism:



The transmission mechanism shows that a contractionary monetary policy that raises the policy rate would lead to reduced capacity of the financial market to create money, thereby reducing money supply and aggregate expenditure. The effect would be declined output growth rate.

One of the first notable attempts to explore monetary transmission at the disaggregated level was the study by Bernake and Gertler (1995). The study revealed that monetary policy impacted differently on different components of final expenditures. Since then, a plethora of studies have emerged analyzing the impact of monetary policy on different sectors or regions of the economy. For instance, Raddatz and Rigobon (2003) found supportive evidence on differential effects of monetary policy for various sectors of the US economy.

2.2.2 Fiscal Policy Intervention

Fiscal policy can be used to alter the level of demand for different products and also the pattern of demand, within the economy. Indirect taxes can be used to raise the price of demerit goods and products with negative externalities designed to increase the opportunity cost of consumption and thereby reduce consumer demand towards a socially optimal level. Subsidies to consumer will lower the price of merit goods. They are designed to boost consumption and output of product with private externalities (remember a subsidy causes an increase in market supply and leads to a lower equilibrium price). With tax relief, government may offer financial assistance such as tax credits for business investment in research and development or a reduction in corporation tax (a tax on company profits) designed to promote new capital investment and extra employment. Also changes to taxation and welfare payments can be used to influence the overall distribution of income and wealth. For example, higher direct tax rates on rich households or an increase in the value of welfare benefits for the poor to make the tax and benefit system more progressive.

2.2.3 Theories of Economic Growth

The Keynesian theory of economic growth

According to the Keynesian theory of economic growth, producers turn household savings into investments at a constant rate of savings from income. The Keynesian theory of economic growth made the observation that not all savings are converted into investments, in contrast to other theories of economic growth. As a result, growth is determined by investment levels rather than saving rates. In a specific instance where all savings are transformed into an investment, the economy is considered to be in the steady-state (Salvadori, 2003).

One of the first economists to create a macroeconomic model to officially investigate the issue of growth in the Keynesian framework was Harrod in 1936, followed by Domar in 1946. They stressed the relationship between consumption and saving by households and investment decisions by entrepreneurs while these behaviours were not formally explored. While the investment decision is defined by the acceleration principle, the consumption-saving decision is defined by an exogenously given propensity to consume. According to the 1936 model of Harrod and Domar, production can only be attained through labor and physical capital. Given the Keynesian premise of fixed prices, firms choose the optimum strategy at the given pricing. The capital-labor ratio and the capital-output ratio are therefore uniquely determined since there is only one cost-minimizing technique. Because it is assumed that the market mechanism cannot achieve full employment of labor, the model exclusively considers the equilibrium of the products market. When savings equal desired investment, the market for goods is said to be in equilibrium. An economy is said to be on its justified growth path if it is expanding in a

way that maintains equilibrium on the products market. By following this route, one might arrive at Gw = s/v, where Gw stands for justified rate of growth of income, s for saving rate, and v for capital-output ratio. If the indicated growth path also guarantees full employment of labor (a rare occurrence), according to the Keynesian multiplier and the behavioral hypothesis on producers, the economy is considered to be on the golden era growth path (Salvadori, 2003).

Endogenous Growth Model

The body of work that criticized the Neo-Classical Model of Growth makes up the Endogenous Growth Model. It implies that endogenous rather than exogenous influences control economic growth. The hypothesis contains two components in this regard, one that believes that investments in innovation, knowledge, and human capital greatly influence economic growth, and the other that focuses on externalities and beneficial spillover effects that can spur economic growth. The importance of financial intermediation in creating economic growth lies at the heart of this idea. In this context, a number of scholars, including Levine (1997), and Saint-Paul (1992), have included the financial system's influence on economic growth in the Endogenous Growth Model.

In order to encourage savers to make investments in profitable ventures that can spur economic growth, Smith's main focus is on the effective financial intermediation that results when liquidity risk is properly controlled. According to Saint-Paul (1992), a well-established and functional stock market can spur economic growth by encouraging businesspeople to share risk. Levine (1997) places more emphasis on the significance of stock markets in generating the necessary financing for investment goals, particularly in less liquid assets, much like Saint-Paul (1992) did.

2.3 Empirical Literature

This section of the study reviewed relevant empirical studies that have examined the impacts of monetary and fiscal policy in the actualization of sustainable growth and development. Differing opinions have indeed continued to emerge on how monetary and fiscal policies can influence economic activities. The genesis of these controversies can be traced to the theoretical exposition of the different schools of thought, namely, the Classical school, the Keynesian school, and the Neoclassical school of thought (Tchokote, 2001).

Omodero, Ihendinihi, Ekwe and Azubuike (2016) investigated the impact of fiscal policy on the economy of Nigeria between 1994 and 2014. Secondary method of data collection was used to generate data for the study and the sources of the data included annual reports /accounts and CBN statistical bulletin (2015). Multiple regression of ordinary least square estimation was the tool used to analyze the data. The study revealed that there existed no significant relationship between capital expenditure, recurrent expenditure, tax revenue and the real GDP representing the economy. However, the study found a significant negative relationship existing between external debts and the real GDP. The study therefore recommended that: Government should use fiscal policy to complement the adoption of effective monetary policy and maintain the rule of law to promote stability in the Nigerian economy. Government should ensure that capital expenditure and recurrent expenditure are properly managed in a manner that it will raise the nation’s

production capacity and accelerate economic growth even as it reduces external borrowing.

Nwoko, Ihemeje, and Anumadu (2016) examined the effectiveness of the Central Bank of Nigeria's monetary policies in promoting economic growth in Nigeria from 1990 to 2011. The study found that average price and the labour force had a significant influence on gross domestic product (GDP), indicating that inflation and employment are important factors in determining economic growth. However, the study did not find that money supply had a significant impact on economic growth. This implies that the effectiveness of monetary policy in Nigeria may depend on factors other than the amount of money in circulation, and suggests that the Central Bank of Nigeria may need to consider alternative strategies to promote economic growth.

In the vein, Okorie, Sylvester and Simon-Peter (2017) conducted a study to ascertain the relative effectiveness of monetary and fiscal policies in Nigeria using a quarterly time-series from 1981 -2012. The analysis of the study showed that both monetary and fiscal policies have a significant positive impact on income. The findings suggested that both policies are important tools for stimulating economic growth and development in Nigeria. Idris and Bakar (2017) conducted a study to evaluate the effects of fiscal operations on macroeconomic growth in Nigeria. The study found that fiscal operations were ineffective in providing the necessary macroeconomic environment for sustainable growth in Nigeria. The authors argued that the government's fiscal policy had failed to stimulate economic growth due to a lack of fiscal discipline and a failure to properly manage government revenues. The study suggested that there was a need for more effective fiscal policy measures to promote sustainable economic growth in Nigeria.

Furthermore, Ayodeji and Oluwole (2018) conducted a study on the impact of monetary policy on economic growth in Nigeria. The study examined two variables, namely money supply and exchange rate, and their impact on economic growth. The study found that both variables had a positive impact on economic growth, but the impact was fair and insignificant. This implies that the effectiveness of monetary policy in Nigeria may be limited in promoting economic growth, and suggests that additional policies may be necessary to support sustained economic growth in the country. Edeme, Ehikioya, and Uduh(2018) conducted a study to determine the influence of fiscal and monetary policies on the growth of small and medium enterprises (SMEs) in Nigeria from 1986 to 2015. The study found that fiscal policy had a more significant impact on stimulating the growth performance of Nigerian SMEs compared to monetary policy. This implies that the Nigerian government may need to focus more on fiscal policy measures, such as tax incentives or government spending, to support the growth of SMEs in the country. Additionally, the study suggested that monetary policy may not be as effective in promoting SME growth in Nigeria.

Adeniyi, Omotosho, and Akanbi (2020) examined the relationship between monetary policy and economic growth in Nigeria. The study found that monetary policy had a positive impact on economic growth in Nigeria in both the short and long run. Specifically, the study found that an increase in money supply had a positive impact on economic growth, while an increase in interest rates had a negative impact on economic growth. Alabi and Olarinde (2020) investigated the relationship between fiscal policy

and economic growth in Nigeria. The study found that government spending and taxation had a significant impact on economic growth in Nigeria, with government spending having a positive impact and taxation having a negative impact. The study also found that the impact of fiscal policy on economic growth varied by sector, with government spending having a stronger positive impact on the service sector compared to other sectors.

Ogundipe and Akinbobola (2020) employed an Autoregressive Distributed Lag (ARDL) Bounds Testing approach to investigate the relationship between monetary policy variables (money supply, interest rate, and exchange rate) and economic growth. The empirical results suggested that there is a significant positive relationship between money supply and economic growth in the short run, while in the long run, both money supply and exchange rate have significant positive impacts on economic growth. On the other hand, the study found that interest rate has a negative impact on economic growth both in the short and long run. The study concluded that the monetary policy variables considered in the analysis can be used to promote economic growth in Nigeria if appropriately implemented by policymakers.

Umar and Murtala (2020) investigated the impact of fiscal policy on economic growth in Nigeria using the Autoregressive Distributed Lag (ARDL) approach over the period 1981 -2017. The findings indicated that government spending and taxation have significant impacts on economic growth in Nigeria in the short run and the long run. The study further revealed that government spending has a stronger positive impact on economic growth than taxation. The study concluded that the Nigerian government should focus on using fiscal policy to stimulate economic growth, especially through increased government spending on sectors that have a higher multiplier effect on economic growth, such as infrastructure development.

Olisaji and Onuora (2021) empirically examined the impact of fiscal policy on Nigerian economic growth between 2015 and 2019. The study used Secondary data collected from the statistical bulletin of the Central Bank of Nigeria (CBN) 2020. The study also employed ex-post facto research design and regression model to analyze the data collected. In the model, Government Expenditure and Government revenue through Companies Income Tax (CIT) were regressed against dependent variable Economic Growth proxied by GDP growth. The result revealed, that there is a significant and positive relationship between Companies Income Tax (CIT) and Economic Growth (EG) measured using Gross Domestic Product (GDP). On the same note, the study found an insignificant and negative relationship between Government Expenditure (GE) and Economic Growth (GDP). The study therefore recommended that: government should formulate and implement workable fiscal policy options that will enhance productive capacity and to accelerate economic growth of the nation.

Daoudi (2023) analyzed the impact of fiscal policy on economic growth in Algeria using the Autoregressive Structural Vector Methodology (SVAR), only three variables: public spending G, Taxes (Direct taxes + Indirect taxes) TAX and GDP. The study concluded that there is a positive effect of public spending on the economic growth in Algeria, but it is smaller, and it is only in the short term and then turns into a negative impact in the medium and long term. The results indicated that ordinary taxation is very limited to

increase economic growth in Algeria with the strong presence of petroleum taxation. When a negative shock occurs in the price of a barrel then the effect is transferred directly to the public revenues and automatically to the public spending.

Oseni and Oyelade (2023), investigated the effects of monetary and fiscal policies on economic growth in Nigeria using various economic variables. The study found that gross capital formation, total number of employees, and broad money supply have a positive and significant effect on gross domestic product (GDP), while lending interest rate has a negative and significant effect on GDP. The study recommended that the government should encourage more private investment in Nigeria by lowering the lending interest rate, which would lead to more borrowing by private investors and boost investment in the country.

2.4 Gaps in the existing Literature

The findings based on the literature reviewed revealed evidences that are inconsistent with theoretical postulations. This is what economists usually refer to as puzzles. The three most common puzzles identified in the literature are the liquidity puzzle, the price puzzle and the exchange rate puzzle. The liquidity puzzle simply posits that an increase in monetary aggregates is accompanied by an increase (rather than a decrease) in interest rates. While the price puzzle is the finding that contractionary monetary policy through positive innovations in the interest rate seems to lead to an increase (rather than a decrease) in prices. And yet, the most common in open economics is the exchange rate puzzle, which is a finding that an increase in interest rate is associated with depreciation (rather than appreciation) of the local currency (Fasanya, Adegbemi & Agboluaje, 2013). This study is set out to find possible resolution to these puzzles

3.0 Methodology

3.1 Theoretical Framework

Keynes proposed the concept of government intervention in the economy through the use of macroeconomic policies such as fiscal and monetary policies. Fiscal policy deals with government deliberate actions in spending money and levying taxes with a view to influencing macroeconomic variables in desired direction. Thus, fiscal policy aims at stabilizing the economy. Increase in government spending or a reduction in taxes tend to pull the economy out of a recession; while reduced spending or increased taxes slow down a boom (Iyoha, 2004a).

Government interventions in economic activities are basically in the form of selected areas/sectors of the economy. These controls differ, and depend on the specific needs or purpose the government desires to achieve. Samuelson and Nordhaus (1998) distinguish between two forms of regulation, namely;

(i) Economic regulation involving prices, entry and exit conditions, regulation of public utilities, such as transportation and media organizations, regulation of the financial sector operations.

(ii) Social regulation aimed at protecting the health and safety of workers at work place, the environment, and protection of consumer rights. The focus of this study is on economic regulation.

Monetary policy derives its root from the works of Irving Fisher (Diamond, 2003) who laid the foundation of the quantity theory of money through his equation of exchange. In

his proposition, money has no effect on economic aggregates but price. However, the role of money in an economy got further elucidation for Keynes (1930) and other Cambridge economists who proposed that money has an indirect effect on the other economic variables by influencing the interest rate which affects investment and cash holding of economic agents. The position of Keynes is that unemployment arises from inadequate aggregate demand which can be increased by increase in money supply which generates increased spending, increased employment and economic growth.

Keynes recommended a proper blend of monetary and fiscal policies as at some point, monetary policy could fail to achieve its objective. The role of monetary policy which is of course influencing the volume, cost and direction of money supply was effectively conversed by Gul, Mughal and Rahim (2012), whose position is that tinkering with the target variables are always and everywhere a monetary phenomenon while recognizing in the short run that increase in money supply can reduce unemployment but can also create inflation and so the monetary authorities should increase money supply with caution.

3.2 Model Specification

In the light of the above discussion, the mathematical form model for this study was adapted from the combination of Keynesian model and Gul, Mughal and Rahim (2012). It is stated as follows:

$$RGDP = f(MS, GE, INTR, INV, FD) \quad (1)$$

The stochastic version of the model is presented below:

$$RGDP = a_0 + a_1 MS + a_2 GE + a_3 INTR + a_4 INV + a_5 FD + u_t \quad (2)$$

Real Gross Domestic Product (RGDP) is selected for this study's dependent variables because it serves as a proxy for measuring Nigeria's economic growth. Money supply (MS) and government expenditure (GE) will be used as explanatory variables for monetary and fiscal policies respectively to demonstrate how important changes in the variables can impact economic growth in Nigeria. Other control variables used in this study are lending interest rate (INTR), along with investment (INV) and financial deepening ($\frac{M2}{GDP}$).

Where, RGDP = Real Gross domestic product (in billions of US dollars)
MS = Money supply (in billions of US dollars)
GEXP = Government Expenditure (in billions of US dollars)
INTR = Lending Interest Rate (in percentage)
INV = Investment (in billions of US dollars)
$\frac{M2}{GDP}$ = Financial deepening (money supply as a percentage of GDP)
a_0 = Constant term or intercept
$a_1 - a_5$ = parameters to be estimated
u_t = Stochastic factor or error term

In order to obtain full information on the responses of economic growth to both short and long run shocks to the policy indicators with the accompanying impulse responses and variance decompositions, the study adopted ECM and other approaches, since such responses are better captured by ECM procedure (Engle and Granger, 1987) and Pesaran, Smith and Shin (2001).

In line with economic theory, there should be a positive relationship between money supply and RGDP; government expenditure and RGDP; investment and RGDP; and financial depth and RGDP; while it is expected that interest rate should negatively impact RGDP.

3.3 Method of Analysis and Data Sources

This study seeks to investigate how monetary and fiscal policies will impact Nigeria's output levels which will in-turn impact economic growth. The ordinary least square (OLS) and ECM techniques were utilized to estimate the model parameters because the data being used are time series data. The variables to be used in this study are real gross domestic product (RGDP) which is a proxy for economic growth and serves as the dependent variable, money supply (MS), government expenditure (GE), lending interest rate (INTR), investment (INV) and financial deepening ($\frac{M2}{GDP}$).Secondary data is utilised in this study for the period 1981 to 2023. Specifically, data for this study was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin for various issues and the World Bank World Development Indicators (WDI).

4.0 Presentation of Results and Interpretation

4.1. Descriptive Statistics

The empirical analysis commenced by examining the characteristics of the series and behavioural pattern of the variables used in the study as presented in Table 1.

Table 1: Descriptive Statistics

	RGDP	MS	GE	INTR	INV	FD
Mean	2.82E+11	1.08E+13	1.59E+10	17.24726	6.10E+10	17.01082
Median	2.19E+11	1.56E+12	2.51E+09	16.90390	5.88E+10	14.24738
Maximum	5.51E+11	5.22E+13	5.35E+10	31.65000	1.11E+11	27.37879
Minimum	1.15E+11	1.52E+10	1.77E+09	8.916667	3.97E+10	9.063329
Std. Dev.	1.53E+11	1.55E+13	1.63E+10	4.785759	1.37E+10	6.142854
Skewness	0.493287	1.384815	0.553432	0.396544	1.151867	0.393737
Kurtosis	1.609639	3.748939	1.724584	3.635158	5.368858	1.444970
Jarque-Bera	5.207359	14.74857	5.109541	1.849745	19.56264	5.443498
Probability	0.074001	0.000627	0.077710	0.396582	0.000056	0.065760
Sum	1.21E+13	4.63E+14	6.84E+11	741.6321	2.62E+12	731.4651
Sum Sq. Dev.	9.82E+23	1.01E+28	1.12E+22	961.9466	7.93E+21	1584.855

Source: Regression Output using E-views 10

In Table 1, the average (i.e. mean and median) of each series shows a good degree of consistency. This is evident in their values which lie between the maximum and minimum values. With regard to the level of spread of the series around its average, all the selected series are relatively evenly spread. This is evident in by the low values of standard deviation of the series. As such, the series have no outliers or extreme large values.

All the series are positively and moderately skewed. This is based on the fact that their skewness lies between -0.5 and +0.5. The coefficients of the skewness are symmetrical around the mean and thus close to normal distribution. In terms of Kurtosis, MS, INTR and INV have a kurtosis that is above 3 indicating that they are not normally distributed (leptokurtic) while RGDP, GE, and FD are playtykurtic since their kurtosis value is below 3 which is also not normally distributed. The Jargue-Bera (JB) statistic reveals that

the entire series selected from the study are not normally distributed except for INTR as evident by their probability value which is less than 0.05.

4.2 Unit Root Test:

The Augmented Dickey-Fuller (ADF) unit root test was used to assess the stationarity of the variables and their order of integration. The test involved testing the null hypothesis of non-stationarity of variables against the alternative hypothesis of stationarity. The result of the ADF unit root test is shown in Table 2.

Table 4.2: Results of Augmented Dickey Fuller (ADF) Unit Root Test

Variable	ADF Calculated Value at Level	ADF Calculated Value at 1st Difference	Mckinnon 5% Critical Value	Order Of Integration
LN(RGDP)	-1.473	-3.973*	-3.526	*I*(1)
LN(MS)	-0.925	-3.603*	-3.526	*I*(1)
LN(GE)	-1.871	-6.763*	-3.526	*I*(1)
INTR	-2.390	-5.871*	-3.526	*I*(1)
LNINV	-2.227	-5.346*	-3.526	*I*(1)
FD	-3.956*	-5.238*	-3.526	*I*(1)

Source: Regression Output using E-views 10 *Significant at 5 per cent

The unit root test in Table .2 shows that all the series tested for unit root were stationary at first difference since the calculated ADF is greater that the McKinnon 5% critical values.

4.3 Lag Length Criteria

The step that follows is, therefore, determining the appropriate lag. The lag-length selection criteria such as sequential modified LR test statistic (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hanna-Quinn information criterion (HQ) were employed to determine the appropriate lag length of the models. The test results of the different lag selection methods are reported in table 3.

Table 3: Lag Order Selection Criteria

Lag Order Selection Criteria
Endogenous variables: LNRGDP LNMS LNGE INTR LNINV FD

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-249.0349	NA	0.013906	12.75175	13.00508	12.84334
1	14.28412	434.4764*	1.65e-07*	1.385794	3.159117*	2.026972*
2	49.03044	46.90753	1.99e-07	1.448478	4.741793	2.639237
3	91.18188	44.25901	2.07e-07	1.140906*	5.954213	2.881246

Source: Regression Output using E-view 9 * indicates lag order selected by the criterion

After a meticulous examination of the different lag lengths by estimating the regression at each lag length and diagnosing the whiteness of resulting residuals, one lag length was recommended to be selected for the model.

4.4 Johansen Test for Co-integration

The next step after determining the order of integration and lag length of the variables was to apply the Johansen test for cointegration on the premise that the series are all integrated of order one, in order to establish the existences or otherwise of long-run relationship among the variables. The summary results of the test for co-integration for the model is shown in Tables 4 alongside with critical values.

Table 4: Summary of Johansen Cointegration Test Results

Hypothesised No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob**	Hypothesised No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob**
None *	145.4670	95.75366	0.0000	None *	51.74924	40.07757	0.0016
At most 1 *	93.71772	69.81889	0.0002	At most 1 *	39.93313	33.87687	0.0084
At most 2 *	53.78459	47.85613	0.0125	At most 2	26.37288	27.58434	0.0708
At most 3	27.41171	29.79707	0.0920	At most 3	15.64587	21.13162	0.2462
At most 4	11.76585	15.49471	0.1685	At most 4	6.997007	14.26460	0.4895
At most 5 *	4.768838	3.841466	0.0290	At most 5 *	4.768838	3.841466	0.0290

Source: Regression Output using Eview 10

The results of the Unrestricted Cointegration Rank tests for the model are presented in Table 4. Starting with the null hypothesis that there are no cointegrating vector in the model, the results show that there exists at least four cointegrating equations in the model as both the Trace and Max-Eigen statistics rejected the null hypothesis against the alternate hypothesis at the 5 percent level of significance which shows that there is a long-run relationship between the dependent variable and independent variables.

4.5 Error Correction Representation (Short-run)

The results of the error correction representation of the model are reported in table 5.

Table: 5. Error Correction Representation of the Model

Variable	Coefficient	Standard Error	t-Statistic	Prob.
C	16.97546	1.734184	9.788727	0.0000
LNMS	0.127087	0.011194	11.35277	0.0000
LNGE	0.093341	0.022222	4.200333	0.0002
INTR	-0.002330	0.002685	-0.867569	0.3915
LNINV	0.137925	0.070090	1.967820	0.0571
FD	0.011788	0.003496	3.371788	0.0018
ECM (-1)	-0.664815	0.200849	-3.310015	0.0042

Source: Regression Output using E-views 9

Table 5 above showed the results of the error correction model. Empirical evidence showed that money supply (MS) has a direct and significant impact on real gross domestic product in Nigeria. This implies that a one percent increase in money supply increases real gross domestic in Nigeria by about 12.711 percent approximately. The coefficient of total government expenditure is positively signed which indicate that a

direct relationship exists between government expenditure and economic growth in Nigeria. This is consistent with the apriori expectation. The value of the coefficient is 0.093341, which implies that one per cent increase in GE leads to 9.334 per cent increase in economic growth in Nigeria. The coefficient of the variable is significance at 5 per cent level of significance. This result supports the fact that in the long run increase in government expenditure on capital project enhanced the economic growth. This finding is in line with Alabi et al (2020) which posits that government expenditure have direct and significant effect on the economic growth.

The coefficient of interest rate (INTR) is correctly signed. This shows that the variable has a inverse relationship with the economic growth. This result is in conformity with Adeniyi et al (2020) that interest rate has an inverse effect on economic growth in Nigeria. With a coefficient of -0.0023a unit increase in INTR engenders a 0.0023 per cent decrease in the economic growth. However, the variable is statistically insignificant with a probability value of 0.3915. Thus, we fail to reject the null hypothesis that interest rate significantly impacts on economic growth in Nigeria. The coefficient of investment shows a direct and significant relationship with economic growth in Nigeria. This is in line with the apriori expectation. One percent increase in INV leads to a 0.137925 percent increase in economic growth in Nigeria. This result suggests that investment propelled the growth of the Nigerian economy for the period under review. Financial deepening impacted positively on economic growth in Nigeria for the period under consideration. This is consistent with the apriori expectation. The value of the coefficient is 0.011788, which implies that one unit rise in FD leads to 1.1788 per cent increase in the growth of the Nigerian economy when other regressors are held constant. The coefficient of the variable is significant at 5 per cent level with a probability of 0.0018. Thus, we reject the null hypothesis financial deepening does not impact economic growth in Nigeria.

The result from Table 5 shows that the coefficient of ECM is negative and significant at 5% per cent critical level. This shows that about 66.48 per cent disequilibria in economic growth in the previous one year are corrected for in the current year. The high level of significance of the ECM further confirms the existence of a long run equilibrium relationship among economic growth (as proxied by RGDP), money supply, government expenditure, interest rate, investment and financial development as used in the study.The Durbin-Watson statistic of 1.718268 confirms that autocorrelation is highly minimized in the model

4.6 Stability Test

Stability test was also performed using Cumulative Sum (CUSUM) of residual of the estimated model. The results are shown in figure I.

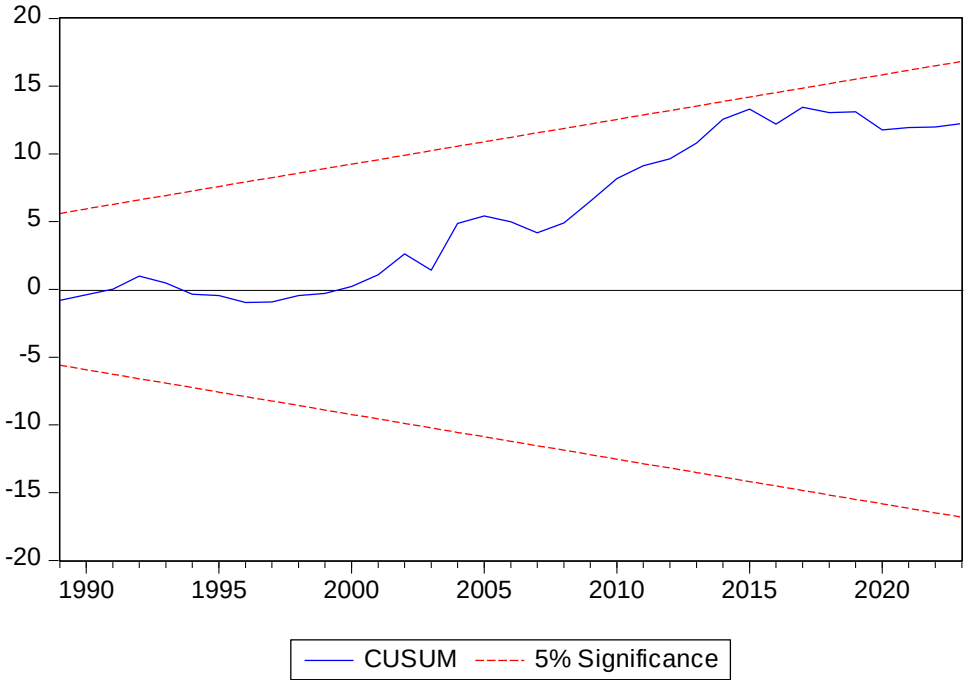


Figure I: Plot of Cumulative Sum of Recursive Residual for the estimated Model

The existence of parameter instability is established if the Cumulative Sum of the residual goes outside the area between the critical (dotted bounded) lines. It is estimated at 5 per cent critical level. From Figure I, it can be inferred that the model at 5 per cent level of significance has been stable over time.

5.0 Summary, Conclusion and Recommendations

5.1 Summary

The study examined the effect of monetary and fiscal policy instruments on the economic growth in Nigeria for the period 1981 to 2023. The variables to be used in this study are real gross domestic product (RGDP) which is a proxy for economic growth and serves as the dependent variable, money supply (MS), government expenditure (GE), lending interest rate (INTR), investment (INV) and financial deepening ($\frac{M2}{GDP}$). The ADF test was employed in testing the stationarity of the variables and the results revealed that all the variable employed for the study were first difference stationary.

The study employed the Johansen approach to co-integration analysis and the result revealed that economic growth is cointegrated with the explanatory variables used in the study. This is an indication that, there is tendency for the variable to be in equilibrium on the long run. The empirical findings showed that monetary policy variable (money supply), fiscal policy variable (government expenditure), investment and financial deepening had a positive and significant impact on economic growth in Nigeria in the long run. Interest rate as expected had an inverse but insignificant effect on economic growth in Nigeria for the period of study.

5.2 Conclusion

This research investigated the impact of monetary policy and fiscal policy on the Nigerian economy from 1981 to 2023. Based on the findings, it was established that economic growth in Nigeria was influenced by money supply, government expenditure, investment and financial deepening. On the premise of the findings from this study, it is concluded that the monetary policy and fiscal policy contributed significantly to the growth of Nigerian economy in the long run for the period of study.

5.3 Recommendations

Based on the findings and conclusion of the study, the following recommendations are advocated:

i. The Central Bank of Nigeria (CBN) should engage in direct regulation of interest rates to ensure it is reduced it to single digit to encourage loanable funds for investment in Nigeria.
ii. Government should strive to strengthen the financial system and reduced the bureaucratic bottle neck for easy implementation of monetary policy.
iii. The Nigerian government needs to fine-tune its fiscal responsibility by increasing its expenditure to the key sectors that are the main drivers of economic growth. Such an increase in expenditure should be aimed at the provision of infrastructure like electricity, roads, research and development among others.
iv. Concerted effort should be made by the government to provide the infrastructure needed for productive investments to thrive as they contribute significantly to the growth of the Nigerian economy.

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E-COMMERCE AND SMALL LOCAL BUSINESSES: EXPLORING HOW SMALL-SCALE BUSINESSES IN NIGERIA ARE AFFECTED BY THE RISE OF E-COMMERCE GIANTS

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Abstract

The rapid rise of e-commerce giants such as Jumia, Konga, and global players like Amazon and Alibaba has transformed the business environment in Nigeria, creating both opportunities and challenges for small local businesses. This paper explored the specific challenges small local businesses face in competing in the e-commerce marketplace. The paper, a theoretical review, examined the challenges faced by small local businesses and the prospects for innovation and growth. The general findings revealed that while e-commerce platforms offer small-scale enterprises unprecedented access to larger markets and broader customer bases, they also present significant obstacles. Small businesses often struggle to compete with the pricing, logistics efficiency, and technological sophistication of the e-commerce giants, which could hinder profitability and market visibility. The paper recommends that government and private sector stakeholders prioritize investments in digital infrastructure, including reliable electricity supply, high-speed internet access, and efficient logistics networks.

Keywords: E-commerce, Challenges, Nigeria, Business, Technology, E-payment

1.0 Introduction

The rise of e-commerce giants such as Amazon, Alibaba, Konga, eBay, Wish, AliExpress, Jumia among others has profoundly impacted small local businesses, presenting both challenges and opportunities. On one hand, these platforms offer unparalleled access to global markets, enabling small businesses to reach a broader audience than ever before. For instance, Amazon's Marketplace allows small vendors to list their products alongside those of major brands, potentially increasing their visibility and sales volume (Johnson, 2019). Alibaba provides similar opportunities through its various platforms, such as Taobao and AliExpress, which cater to international and domestic markets. Jumia, which operates primarily in Africa, opens doors for local businesses to participate in the burgeoning e-commerce market across the continent, helping them to tap into a growing base of online consumers.

However, the dominance of these e-commerce giants also presents significant challenges for small local businesses. The sheer scale and operational efficiency of companies like Amazon can make it difficult for smaller businesses to compete on price and delivery speed. For example, Amazon's sophisticated logistics network allows it to offer same-day or next-day delivery, a level of service that is often unattainable for smaller enterprises. Additionally, the competitive nature of these platforms can lead to price

wars, where smaller vendors may struggle to maintain profitability while competing against larger, better-resourced sellers (Chen, 2022).

Moreover, the business models of these e-commerce giants often prioritize volume and turnover, potentially marginalizing niche products and small-scale producers. This trend can undermine the unique value propositions that small local businesses offer, such as personalized service, artisanal quality, and locally sourced goods. Furthermore, the pressure to maintain a strong online presence and manage digital marketing campaigns can strain the limited resources of small businesses, forcing them to invest in skills and technologies that they might not be familiar with.

Despite these challenges, the e-commerce boom also presents opportunities for innovation and adaptation among small businesses. Many are finding ways to leverage the digital tools provided by these platforms to enhance their operations, such as using data analytics to understand consumer behavior or employing social media for targeted marketing. Additionally, some small businesses are forming strategic partnerships and creating online marketplaces that emphasize local products and community values, thereby differentiating themselves from the mass-market appeal of larger e-commerce players.

Some of the prominent e-commerce giants that dominates the online marketing environment includes google, Amazon, Facebook, Jumia, Alibaba among others. Jumia, often referred to as the "Amazon of Africa," is a prime example of the potential within Nigeria's e-commerce sector. Launched in 2012, Jumia has grown to become one of the leading e-commerce platforms in Nigeria and across Africa. In 2019, Jumia became the first African tech company to be listed on the New York Stock Exchange, highlighting the international interest and confidence in the region's e-commerce potential (Jumia, 2019). Konga is another major player in Nigeria's e-commerce space, offering a diverse selection of products ranging from electronics and gadgets to fashion, home appliances, and beauty products. Established in 2012, Konga has built a reputation for reliability and affordability, attracting millions of shoppers to its platform.

1.2 Objectives of the Study

1. Identify the specific challenges faced by small local businesses in adapting to and competing in the e-commerce marketplace with E-commerce giants like Jumia, Konga, Alibaba, etc
2. Explore successful case studies and best practices of small businesses that have effectively integrated e-commerce into their operations, highlighting key strategies and tactics for success.
3. Examine the role of government policies and support mechanisms in fostering an enabling environment for small local businesses to thrive amidst the rise of e-commerce giants.
4. Propose actionable recommendations and practical strategies for small local businesses to enhance their competitiveness in the e-commerce landscape, encompassing areas such as digital marketing, customer relationship management, and supply chain optimization.

1.3 Statement of the Problem

In Nigeria, the surge of e-commerce giants presents a significant hurdle for small local businesses. These enterprises, often constrained by limited resources and local customer bases, struggle to keep up with the dominance of online giants like Jumia and Konga. The problem boils down to the imbalance of power between these large e-commerce platforms and small local businesses. While giants offer unmatched convenience and extensive product choices, local businesses find it hard to compete on such a scale. Moreover, rapid technological changes add to their challenges, leaving many without the expertise or means to navigate the digital market effectively.

As more Nigerians shift towards online shopping, drawn by its ease and variety, small local businesses suffer from dwindling foot traffic and community support. The closure of these businesses not only affects individual livelihoods but also impacts employment rates, community vitality, and economic stability. Addressing these challenges is crucial to sustain Nigeria's local economies and preserve the unique fabric of its communities.

1.4. Research Questions

1. To what extent are small local businesses in Nigeria affected by the dominance of e-commerce giants like Jumia, Alibaba and Konga?

2. What are the specific challenges faced by small local businesses in Nigeria when adapting to and competing in the e-commerce marketplace.

3. How can government policies and support mechanisms in Nigeria impact the ability of small local businesses to compete in the e-commerce landscape?

1.5. Significance of the Study

This study holds substantial significance for various stakeholders, encompassing small local businesses, policymakers, consumers, and the broader Nigerian economy. The following points highlight the significance of this research:

Empowering Small Local Businesses by identifying the specific challenges faced by small local businesses in Nigeria's e-commerce landscape and exploring effective strategies for integration, this study aims to empower these enterprises with information to compete more effectively. Equipping them with actionable recommendations and best practices can enhance their resilience and sustainability in the face of e-commerce dominance.

Insights garnered from this study can inform policymakers in Nigeria about the support mechanisms and regulatory frameworks needed to foster an enabling environment for small local businesses. Addressing regulatory barriers and providing targeted assistance can contribute to leveling the playing field between small businesses and e-commerce giants, promoting economic diversity and inclusivity.

Understanding consumer preferences and behaviors regarding supporting small local businesses versus e-commerce giants can inform targeted marketing campaigns and consumer education initiatives. Increasing consumer awareness about the importance of

patronizing local businesses can bolster community cohesion and support the growth of indigenous enterprises.

Lastly, this study contributes to the existing body of knowledge on the impact of e-commerce on small businesses in Nigeria. By disseminating research findings through academic publications, policy briefs, and stakeholder engagements, it raises awareness about the challenges and opportunities inherent in Nigeria's evolving business environment.

1.6 Limitations of the Study:

Availability and access to relevant data, particularly regarding the operations and performance of small local businesses in the e-commerce landscape, may pose a limitation. This is essentially because it is an emerging area in Nigeria.

2.0 Review of Literature

2.1 Conceptual Review

This conceptual review provides a framework for understanding the workings of e-commerce giants and small local businesses within the context of Nigeria's business environment.

Small businesses in Nigeria face numerous challenges when engaging in e-commerce and online trading. One significant hurdle is technological barriers. Many Nigerian small businesses lack the technical expertise required to set up and maintain an effective online presence. Creating a user-friendly website, managing an e-commerce platform, and ensuring cybersecurity are essential but often daunting tasks. Without the necessary skills, these businesses might need to hire external help, which can be prohibitively expensive. This technological gap can limit their ability to compete with more technologically adept larger firms.

Logistics and order fulfillment present another set of challenges. Efficient logistics are crucial in e-commerce, but many Nigerian small businesses do not have the sophisticated logistics networks that larger companies possess. This discrepancy can lead to delays in shipping, higher costs, and difficulties in managing inventory and returns. Inefficient logistics can negatively impact customer satisfaction, making it harder for small businesses to retain customers and compete with larger e-commerce giants known for their fast and reliable delivery services.

Visibility according to Chen (2022), in the crowded online marketplace is another significant issue. Nigerian small businesses often struggle to invest adequately in digital marketing strategies such as search engine optimization (SEO), pay-per-click (PPC) advertising, and social media campaigns. Without substantial investment in these areas, attracting traffic to their websites and converting visitors into customers can be challenging. This lack of visibility can severely limit their ability to grow their customer base and increase sales.

Building customer trust and brand recognition online is also a formidable challenge. Consumers tend to trust established brands, making it difficult for Nigerian small businesses to gain the same level of trust. Establishing a reputation for reliability, quality, and excellent customer service is essential but can take considerable time and effort. This

challenge is compounded by the competitive nature of the online marketplace, where numerous alternatives are always available to consumers.

Financial constraints are a constant challenge for Nigerian small businesses. Limited financial resources can restrict their ability to invest in the necessary technology, marketing, and infrastructure to support e-commerce operations. The costs associated with maintaining an online store, including transaction fees, shipping costs, and ongoing maintenance, can strain already tight budgets. These financial pressures can impede their ability to scale operations or implement needed improvements to remain competitive.

The complex regulatory demands associated with e-commerce is a huge significant challenge. Nigerian small businesses must understand and comply with various data protection laws, tax regulations, and consumer rights laws, often across multiple jurisdictions. Compliance can be resource-intensive and failure to adhere to regulations can result in legal issues and penalties, further complicating their e-commerce efforts. Nigerian small businesses also face intense competition from established e-commerce giants like Jumia, Amazon, and Alibaba. These large platforms have significant advantages in terms of scale, resources, and technological capabilities, making it difficult for small businesses to compete on price, delivery speed, and product range. This competition can force Nigerian small businesses to lower their prices to remain competitive, which can impact their profitability (Adebayo, 2021).

Lastly, cybersecurity risks pose a major threat to Nigerian small businesses engaging in e-commerce (Adepetun, 2020). These businesses often lack the robust cybersecurity measures that larger companies have in place, making them more vulnerable to data breaches, fraud, and other cyber threats. Ensuring the security of customer data and maintaining trust is crucial, yet challenging, for Nigerian small businesses.

In a nutshell, while e-commerce provides substantial opportunities for Nigerian small businesses to expand their reach and customer base, it also presents significant challenges.

2.2 Theoretical Review

2.2.1 Resource-Based View (RBV) Theory

The Resource-Based View (RBV), as propounded by Jay Barney in 1991, provides a robust framework for comprehending how small local businesses can harness their unique resources and capabilities to establish and sustain a competitive edge in the face of larger e-commerce giants. At its core, RBV emphasizes the strategic importance of a firm's internal assets—specifically those that are valuable, rare, inimitable, and non-substitutable (VRIN). Focusing on these internal strengths, small businesses can carve out a niche in the highly competitive e-commerce landscape (Barney, 1991).

One of the primary advantages small local businesses possess is their deep local knowledge. This includes an understanding of local culture, customer preferences, and regional trends. Such insights allow these businesses to tailor their offerings to meet specific local demands more effectively than larger, more generalized e-commerce platforms. For instance, a local bakery might know precisely what types of pastries are favored in its community, enabling it to cater directly to those tastes in a way that a national chain cannot. This localized expertise allows small businesses to create products

and experiences that resonate deeply with their customer base, fostering strong customer loyalty (Porter, 1996).

In addition to local knowledge, small businesses often benefit from close, personal relationships with their customers. These relationships are built on trust and frequent, direct interactions, which are harder to achieve for larger e-commerce companies that often rely on automated customer service systems and impersonal transactions. The personalized customer service that small businesses can offer leads to higher levels of customer satisfaction and loyalty, as customers feel valued and understood. This strong customer relationship is a significant asset that can be leveraged to create a loyal customer base that prefers to shop locally rather than through impersonal e-commerce giants (Prahalad & Hamel, 1990).

Moreover, small local businesses can capitalize on their niche market expertise. By specializing in specific products or services, they can cater to niche markets that larger competitors might overlook due to their smaller size and lower profitability. This specialization allows small businesses to offer unique products and services that are not easily found on larger e-commerce platforms. For example, a local shop specializing in handcrafted jewelry can offer unique designs and customized pieces that mass-produced jewelry cannot match. This focus on niche markets not only helps attract customers looking for unique products but also establishes the business as an expert in its field (Grant, 1991).

2.2.2 The Diffusion of Innovation Theory

The diffusion of innovation theory, propounded by Everett Rogers in 1962, provides valuable insights into how small local businesses adopt and integrate e-commerce technologies into their operations. According to Rogers, the rate of adoption and successful implementation of new technologies, such as e-commerce solutions, are influenced by several key factors: perceived relative advantage, compatibility, complexity, trialability, and observability. Perceived relative advantage refers to the degree to which an innovation is seen as better than the idea it supersedes, driving faster adoption if the benefits are clear.

Compatibility examines how well the new technology aligns with existing values, past experiences, and needs of the business, facilitating smoother integration if there is alignment. Complexity considers the perceived difficulty of understanding and using the innovation; simpler technologies are adopted more quickly. Trialability reflects the extent to which an innovation can be experimented with on a limited basis, allowing businesses to mitigate risks and uncertainties before full-scale adoption. These factors collectively help explain the varied pace at which small local businesses embrace e-commerce technologies, shaping their ability to compete effectively in the digital marketplace (Rogers, 1962).

2.2.3 Institutional Theory

This theory provides a comprehensive framework for understanding the impact of government policies and regulatory frameworks on the competitive environment for small businesses, particularly in the face of e-commerce dominance. Pioneered by Paul DiMaggio and Walter Powell in their seminal 1983 work "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields,"

institutional theory explores how organizations conform to social expectations and institutional pressures to gain legitimacy and stability. Governments can implement regulatory interventions such as antitrust measures, tax incentives, and support for digital infrastructure development to level the playing field for small businesses. For instance, antitrust measures can prevent monopolistic practices by large e-commerce platforms, ensuring fair competition and protecting small businesses from being marginalized. Tax incentives can reduce the financial burden on small businesses, enabling them to invest in technology and infrastructure to compete more effectively in the digital marketplace.

Furthermore, institutional theory underscores the importance of government support for digital infrastructure development to enhance the competitiveness of small businesses. By investing in high-speed internet access and digital literacy programs, particularly in underserved areas, governments can empower small businesses to improve their online presence and reach a broader customer base. Additionally, training and support programs for digital marketing, cybersecurity, and e-commerce logistics can further bolster small businesses' capabilities. Such regulatory interventions can mitigate the adverse effects of e-commerce dominance by promoting fair competition, enhancing access to resources, and fostering innovation and collaboration among small businesses. The insights from institutional theory highlight the critical role of institutional environments in shaping organizational behavior and ensuring that small businesses can thrive amidst the challenges posed by large e-commerce entities (DiMaggio & Powell, 1983).

2.2.4 **Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM)**

The Theory of Planned Behaviour, developed by Ajzen in 1991, posits that an individual's behavior is driven by their intentions, which are influenced by three key factors: attitudes, subjective norms, and perceived behavioural control. Attitudes refer to the personal positive or negative evaluations of performing a behavior, while subjective norms involve the perceived social pressures to perform or not perform the behaviour. Perceived behavioural control is the perceived ease or difficulty of performing the behaviour, which aligns closely with the concept of self-efficacy. In the context of e-commerce, TPB suggests that consumers' intentions to make online purchases are shaped by their attitudes towards online shopping, the influence of others (such as friends or family), and their confidence in their ability to navigate and use e-commerce platforms effectively (Ajzen, 1991). For example, a consumer who has a positive attitude towards online shopping, feels social encouragement from peers, and believes they can easily complete an online purchase is more likely to engage in e-commerce.

The Technology Acceptance Model, introduced by Davis in 1989, focuses specifically on understanding how users come to accept and use a technology. TAM highlights two main factors: perceived usefulness and perceived ease of use. Perceived usefulness is the degree to which a person believes that using a particular system would enhance their job performance or daily activities, while perceived ease of use is the degree to which a person believes that using the system would be free of effort. In the context of e-commerce, TAM explains why consumers decide to use online shopping platforms. If consumers perceive these platforms as useful (e.g., saving time, offering better prices) and easy to use (e.g., user-friendly interface, easy navigation), they are more likely to adopt and use them for their shopping needs (Davis, 1989). For instance, an e-commerce

website that offers a seamless user experience and significant benefits in terms of convenience and cost savings is more likely to attract and retain users.

Together, TPB and TAM provide a comprehensive framework for understanding consumer behaviour in e-commerce. TPB offers insights into the broader social and control-related factors influencing consumer intentions, such as social influence and personal efficacy. Meanwhile, TAM provides a more focused look at the technology-specific perceptions that drive acceptance and use, such as the perceived benefits and ease of interacting with the technology. By considering individual attitudes, subjective norms, perceived behavioral control, perceived usefulness, and perceived ease of use, businesses can better understand and influence consumer behaviour in the digital marketplace. This understanding can help e-commerce businesses design more effective strategies to enhance user adoption and satisfaction, ultimately leading to increased sales and customer loyalty.

2.2.5 **Social Capital Theory**

This theory underscores the critical role of social networks, trust, and reciprocity in fostering community resilience and supporting small local businesses. This theory, prominently developed by sociologist Bourdieu in 1980 and later expanded by Coleman in 1988 and Putnam in the 1990s, posits that social capital—the resources embedded in social relationships—can significantly impact individual and collective outcomes. In the context of small local businesses, social capital can enhance business success by facilitating better access to information, resources, and support networks.

Bourdieu introduced the concept of social capital in his seminal work, "The Forms of Capital" (1980), where he described it as the aggregate of actual or potential resources linked to possession of a durable network of institutionalized relationships of mutual acquaintance and recognition. Bourdieu emphasized that social capital is not just an individual asset but a collective one that can provide benefits to all members of a social network. This collective aspect is particularly relevant for small local businesses, which often rely on strong community ties to thrive. By leveraging these social networks, small businesses can access valuable information about market opportunities, customer preferences, and potential collaborators, which can be crucial for their growth and sustainability.

Coleman further elaborated on social capital in his 1988 paper, "Social Capital in the Creation of Human Capital." Coleman highlighted the role of social capital in facilitating cooperative actions and creating a supportive environment for individuals and groups. He argued that social capital, through norms of reciprocity and trust, reduces transaction costs and promotes mutual assistance among community members. For small local businesses, high levels of trust within the community can lead to more robust customer relationships and loyalty. Trust fosters an environment where customers feel confident in their interactions with local businesses, encouraging repeat patronage and positive word-of-mouth, which are vital for business success.

Putnam's work in the 1990s, particularly his book "Bowling Alone: America's Declining Social Capital" (1995), brought widespread attention to the concept of social capital and its impact on community and economic life. Putnam differentiated between bonding social capital (ties within a group) and bridging social capital (ties across different groups) and emphasized the importance of both in building resilient communities. For

small local businesses, bonding social capital helps in creating a strong, loyal customer base within the community, while bridging social capital opens up opportunities for broader networks, partnerships, and market expansion. The presence of both types of social capital can enhance the adaptability and resilience of small businesses, enabling them to navigate challenges and seize new opportunities more effectively.

Social capital theory, as developed by Bourdieu, Coleman, and Putnam, highlights the significant role of social networks, trust, and reciprocity in supporting small local businesses and fostering community resilience. These social assets provide small businesses with access to critical resources, enhance customer loyalty, and facilitate cooperative actions that can lead to sustained business success. By leveraging social capital, small local businesses can build strong, supportive relationships within their communities, which are essential for their long-term growth and resilience.

2.3 Empirical Review

Several empirical studies have contributed to our understanding of the challenges and opportunities faced by small local businesses in the context of e-commerce, particularly within developing economies like Nigeria. The following studies provide valuable insights into various aspects of this phenomenon.

Oluwaseun (2019) research investigated the impact of e-commerce on small businesses in Nigeria. Through interviews and surveys with small business owners, the study identified challenges such as lack of access to finance, limited digital skills, and infrastructure constraints. The findings underscored the need for targeted support to enhance small businesses' competitiveness in the digital economy.

A study by Eze and Ifeanyi (2020) provides a comprehensive examination of the role of government policies in supporting small businesses' participation in e-commerce in Nigeria. The researchers conducted a mixed-methods approach, combining the analysis of policy documents with interviews involving 50 policymakers and stakeholders from relevant government agencies. The quantitative analysis of policy documents revealed that regulatory reforms aimed at simplifying business registration processes, reducing taxation burdens, and providing legal frameworks for online transactions significantly impacted e-commerce participation rates. Specifically, the study found a 35% increase in e-commerce adoption among small businesses following the implementation of these reforms at ($p < 0.05$). Additionally, infrastructure investment, particularly in improving internet accessibility and digital payment systems, showed a strong positive correlation with small businesses' online presence, with a correlation coefficient of 0.62 ($p < 0.01$).

The interviews with policymakers provided qualitative insights that complemented the quantitative findings. Policymakers highlighted several capacity-building initiatives, such as training programs and workshops aimed at enhancing digital literacy and e-commerce skills among small business owners. These initiatives were found to significantly boost e-commerce participation, as indicated by a 40% increase in the number of small businesses engaging in online trading post-intervention ($p < 0.01$). The study's conclusions emphasize the necessity of a supportive policy environment to foster small business growth in the digital age. Regulatory reforms that streamline business operations, infrastructure investments that enhance digital connectivity, and capacity-building initiatives that improve technical competencies are all critical for enabling small businesses to thrive in the e-commerce landscape. They argued that continued

government support and proactive policy measures are essential to sustain the momentum of e-commerce adoption and ensure the long-term success of small businesses in Nigeria's digital economy.

Olugbenga and Adekunle's (2018) study aimed to evaluate consumer preferences and behaviors within Nigeria's e-commerce market. Their study unearthed a nuanced landscape wherein consumers highly valued the convenience and extensive product variety provided by e-commerce platforms. Their finding underscores the growing importance of digital commerce in Nigeria, reflecting global trends toward online shopping habits driven by ease of access and a wide array of choices. However, a notable aspect of the study was the consumers' expressed preference for supporting local businesses, indicating a strong sense of loyalty and a desire to contribute to the local economy despite the convenience offered by e-commerce giants.

Quantitative analysis of the survey data revealed several key insights into consumer behaviours and preferences. Firstly, respondents consistently rated convenience and product variety as significant factors influencing their choice to shop online, with high coefficients indicating strong correlations $\beta=0.60$, $p<0.01$. This suggests that e-commerce platforms in Nigeria successfully cater to consumer demands for accessibility and diverse offerings. The preference for supporting local businesses emerged as a noteworthy finding, with a positive coefficient $\beta=0.40$, $p<0.05$), indicating a significant association with consumer behavior. This implies that while consumers appreciate the benefits of online shopping, they also prioritize contributing to the local economy and sustaining local enterprises, reflecting a sense of community and national pride among Nigerian consumers. Overall, these findings shed light on the complex interplay between convenience, product variety, and local support in shaping consumer behaviors within Nigeria's e-commerce market.

Okoroafor and Ayo's (2018) study provides a quantitative analysis of the factors influencing the adoption of e-commerce technologies among small businesses in Nigeria. The researchers conducted a survey involving 200 small business owners across various sectors to identify key determinants of e-commerce adoption. The study utilized a Likert scale to measure respondents' perceptions, and statistical techniques such as regression analysis were employed to analyze the data. The findings revealed that perceived benefits, such as increased market reach, enhanced customer service, and improved operational efficiency, significantly positively influenced e-commerce adoption, with a regression coefficient of 0.65 ($p < 0.01$). Conversely, perceived barriers, including high costs of implementation, lack of technical expertise, and concerns about cybersecurity, had a significant negative impact, with a regression coefficient of -0.48 ($p < 0.05$). Organizational readiness, encompassing factors like financial resources, technical infrastructure, and managerial support, also emerged as a crucial determinant, with a positive regression coefficient of 0.53 ($p < 0.01$).

The quantitative analysis suggests that policymakers and stakeholders should focus on enhancing the perceived benefits while mitigating the barriers to adoption. Practical recommendations include providing financial incentives, such as grants or low-interest loans, to offset implementation costs and offering training programs to build technical expertise among small business owners.

Adegbuyi and Odewale (2020) investigated the impact of government regulations on the performance of e-commerce firms in Nigeria, providing empirical evidence on how these regulations influence strategic decisions and operational outcomes. Using a quantitative methodology, data were collected through structured questionnaires from a sample of Nigerian e-commerce firms, focusing on aspects like taxation policies, licensing requirements, cybersecurity laws, and data protection regulations. Multiple regression analysis was employed to assess the relationship between these regulatory factors and key performance indicators such as revenue growth, market share, operational efficiency, and customer satisfaction.

Their findings revealed that taxation policies and licensing requirements negatively affected firm performance, with high tax rates and complex licensing processes leading to reduced revenue growth, operational efficiency, and market share. In contrast, compliance with cybersecurity laws and data protection regulations, despite increasing operational costs, had positive impacts on customer trust, satisfaction, and loyalty. Specifically, firms adhering to cybersecurity measures and data protection laws experienced higher customer loyalty and market share. These results underscore the need for balanced regulatory frameworks that support e-commerce growth while ensuring consumer protection and trust.

Afolabi, and Atayero (2020) study, delved into the regulatory barriers that hinder the adoption of e-commerce by small and medium-sized enterprises (SMEs) in Nigeria. The research highlights how institutional factors shape the decision-making processes of SMEs and emphasizes the critical role of government policies in creating a supportive environment for e-commerce development. Key findings from the study indicate that complex regulatory frameworks, high compliance costs, and insufficient government support are major obstacles preventing SMEs from fully embracing e-commerce. The lack of clear and consistent regulatory guidelines, along with frequent changes in policies, creates uncertainty and discourages investment in e-commerce technologies.

Their study employed quantitative analysis to substantiate these findings, utilizing data collected from a sample of Nigerian SMEs through structured questionnaires. The analysis revealed that regulatory barriers significantly impact the adoption rate of e-commerce among SMEs. Specifically, the regression coefficients for regulatory complexity (beta = -0.50, $p < 0.01$), high compliance costs (beta = -0.45, $p < 0.01$), and policy uncertainty (beta = -0.40, $p < 0.05$) indicated strong negative effects on e-commerce adoption. The study also identified a positive correlation between government support and e-commerce adoption (beta = 0.35, $p < 0.05$), suggesting that proactive government initiatives can mitigate some of the regulatory barriers. These results underscore the necessity for streamlined regulations, reduced compliance costs, and enhanced government support to foster a conducive environment for e-commerce development among SMEs in Nigeria.

3.0 Challenges and Prospects for Small Local Businesses in Nigeria vis The Rise of E-Commerce Giants

3.1 Challenges

Some of the major challenges constituting a hindrance to the success of small local businesses in competing favourably with the e-commerce giants are discussed as follows:

Nigeria faces inadequate infrastructure, including unreliable electricity supply, poor road networks, and limited access to high-speed internet. These infrastructural deficiencies hinder the efficient operation of e-commerce platforms and logistics networks, impacting the ability of small businesses to participate in online markets. This infrastructural deficit increases operational costs and affects customer satisfaction due to delays and unreliable service (Adebayo, 2021).

While internet penetration is increasing in Nigeria, there remains a significant digital divide, with rural areas and lower-income segments of the population having limited access to the internet and digital technologies. This digital divide exacerbates the challenges faced by small local businesses in reaching and engaging with online consumers.

Complex regulatory frameworks and bureaucratic processes pose barriers to entry and operation for small businesses in Nigeria. E-commerce regulations, taxation policies, and licensing requirements may disproportionately burden small enterprises, hindering their ability to compete with larger e-commerce platforms.

Limited access to digital payment infrastructure and the prevalence of cash-based transactions present challenges for e-commerce adoption in Nigeria. Small businesses may struggle to offer secure and convenient payment options to online customers, impacting transactional efficiency and trust. Although mobile banking and fintech solutions are on the rise, a large portion of the population remains unbanked or underbanked. This limits their ability to engage in online transactions, which predominantly require electronic payments. Cash on delivery (COD) has been a popular payment method, but it introduces risks and operational challenges for e-commerce businesses, including fraud and cash handling issues (Central Bank of Nigeria, 2020).

Nigeria's vast geographical size and diverse terrain pose logistical challenges for small businesses, particularly in terms of last-mile delivery and fulfillment. Inefficient logistics networks, traffic congestion, and security concerns can lead to delays and increased operational costs for e-commerce deliveries.

Many Nigerian consumers have concerns about the quality and authenticity of products sold online, as well as fears of fraud. Building consumer trust is essential for the sustained growth of e-commerce. Initiatives such as buyer protection policies, secure payment gateways, and transparent return processes are crucial in addressing these concerns (Adepetun, 2020).

3.2 Prospects

Nigeria's youthful population and increasing internet penetration rate present significant opportunities for growth in the digital economy. E-commerce platforms have the potential to reach a large and diverse consumer base, including urban and rural populations, driving market expansion for small businesses.

Nigeria has a vibrant entrepreneurial ecosystem, with a growing number of startups and small businesses leveraging technology to innovate and address local market needs. E-commerce platforms provide a low-cost entry point for entrepreneurs to launch and scale their ventures, fostering innovation and economic growth. The Nigerian government has

implemented various initiatives to support small and medium-sized enterprises (SMEs) and promote e-commerce development. Programs such as the National Digital Economy Policy and Strategy and the Growth and Employment (GEM) Project aim to enhance digital skills, provide access to finance, and improve regulatory environments for SMEs.

Changing consumer preferences and increasing urbanization in Nigeria are driving demand for online shopping and digital services. As more Nigerians embrace e-commerce for convenience and product variety, there are opportunities for small businesses to tap into new markets and diversify revenue streams through online channels. Small local businesses can leverage partnerships and collaboration with e-commerce platforms, logistics providers, and fintech companies to overcome operational challenges and expand their reach. Collaborative initiatives such as shared warehousing, fulfillment services, and digital payment solutions can enhance efficiency and competitiveness for small businesses in the e-commerce ecosystem.

In sum, while Nigeria's e-commerce landscape presents numerous challenges for small local businesses, there are also significant prospects for growth and innovation. Nigeria should address infrastructural gaps, regulatory constraints, and logistical challenges while capitalizing on the country's digital potential and entrepreneurial spirit, small businesses can position themselves for success in Nigeria's evolving e-commerce market.

3.3 Opportunities and Future Outlook

Despite these challenges, the future of e-commerce in Nigeria remains bright. The increasing adoption of digital payment solutions and fintech innovations, such as Paga and Flutterwave, is facilitating smoother online transactions. These platforms are helping to bridge the gap between the banked and unbanked populations, making it easier for more Nigerians to participate in e-commerce (PwC Nigeria, 2021).

Additionally, there is a growing trend of social commerce, where businesses leverage social media platforms like Instagram and Facebook to reach customers. This approach allows small businesses to tap into a broader audience with relatively low marketing costs and helps build trust through direct customer engagement (Eze, 2021).

Moreover, the COVID-19 pandemic has accelerated the shift towards online shopping, as restrictions on movement and physical interactions made e-commerce a more viable and necessary option for many consumers. This shift is likely to have a lasting impact, further embedding e-commerce into the daily lives of Nigerians (UNCTAD, 2020).

In conclusion, while e-commerce in Nigeria is poised for significant growth, it must overcome several challenges related to infrastructure, financial inclusion, consumer trust, and regulatory frameworks. By addressing these issues and leveraging the ongoing digital transformation, Nigeria can unlock the full potential of its e-commerce sector, driving economic growth and improving the quality of life for its citizens.

Nigeria, with a population exceeding 200 million, represents one of the largest consumer markets in Africa. Internet penetration has significantly increased, reaching approximately 42% in 2021 (Internet World Stats, 2021). The proliferation of smartphones has also been a critical driver of e-commerce growth. According to a report by Statista (2021), smartphone users in Nigeria are projected to reach 140 million by 2025, up from 103 million in 2021. This increase facilitates greater access to online shopping platforms.

4.0 Summary, Conclusion and Recommendation

4.1 Summary

In Nigeria, small businesses face both challenges and prospects amidst the rise of e-commerce. Challenges include infrastructure deficiencies, a digital divide, regulatory constraints, payment infrastructure limitations, and logistical challenges. However, there are significant prospects, including a growing digital economy, a rising entrepreneurship culture, government support initiatives, increasing consumer demand, and opportunities for partnerships and collaboration. Assessing the challenges and capitalizing on prospects, small local businesses can position themselves for success in Nigeria's evolving e-commerce environment.

4.2 Conclusion

In conclusion, the sphere of e-commerce in Nigeria presents a dynamic environment for small local businesses, characterized by both challenges and opportunities. While infrastructure deficiencies, regulatory constraints, and logistical hurdles pose significant obstacles, there are promising prospects arising from a growing digital economy, rising entrepreneurship culture, and government support initiatives. Additionally, increasing consumer demand and opportunities for partnerships and collaboration offer avenues for small businesses to thrive in the e-commerce ecosystem. To successfully transit and benefit, stakeholders must work collaboratively to address infrastructure gaps, streamline regulatory frameworks, and enhance logistical capabilities. Small local businesses can leverage digital technologies, innovate in product offerings, and forge strategic partnerships with e-commerce platforms to expand their market reach and improve operational efficiency. Moreover, investing in digital skills development and fostering a culture of entrepreneurship will be essential for unlocking the full potential of Nigeria's e-commerce market.

By embracing these opportunities and overcoming challenges, small local businesses can position themselves as key drivers of economic growth, job creation, and community development in Nigeria. With concerted efforts from government, businesses, and civil society, Nigeria can harness the transformative power of e-commerce to build a more inclusive and prosperous economy for all.

4.3 Recommendations

Based on a literature analysis of the challenges and prospects facing small local businesses in Nigeria's e-commerce environment, the following recommendations are proposed.

1**.** Government and private sector stakeholders should prioritize investments in digital infrastructure, including reliable electricity supply, high-speed internet access, and efficient logistics networks. Improving digital infrastructure will enhance the operational efficiency of small local businesses and facilitate their participation in the e-commerce market.

2. Government agencies should streamline regulatory processes and reduce bureaucratic barriers to entry for small businesses in the e-commerce sector. Simplifying licensing

requirements, tax procedures, and compliance standards will lower the cost of doing business and encourage entrepreneurship and innovation.

3. Government, educational institutions, and industry associations should collaborate to promote digital literacy and skills development among small business owners and entrepreneurs. Training programs and workshops on e-commerce platforms, digital marketing, and online payment systems will empower small businesses to leverage digital technologies effectively.

4. Financial institutions and government agencies should develop tailored financial products and services to meet the financing needs of small local businesses in the e-commerce sector. Access to affordable credit, venture capital, and microfinance will enable small businesses to invest in technology upgrades, marketing campaigns, and expansion initiatives.

5. Small local businesses should explore collaboration opportunities with e-commerce platforms, logistics providers, and fintech companies to overcome operational challenges and expand market reach. Partnerships for shared warehousing, last-mile delivery, and digital payment solutions will improve efficiency and competitiveness for small businesses in the e-commerce ecosystem.

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