

**INTERNATIONAL JOURNAL OF ENTREPRENEURSHIP,
MANAGEMENT AND SOCIAL SCIENCES (IJEMSS)**



ISSN: 3026-9881

IJEMSS is a peer reviewed journal of the Department of Entrepreneurship,
Federal University of Technology Minna, Niger State, published twice in a year
– March and September both online and in print.

Email: ijemss@futminna.edu.ng

Volume 2 Issue 2, September, 2025

© Department of Entrepreneurship, Federal University of Technology Minna,
Niger State

Volume 2 Issue 2, September, 2025

ISSN: 3026-9881

International Journal of Entrepreneurship, Management and Social Sciences (IJEMSS)
A Publication of Department of Entrepreneurship,
Federal University of Technology
P.M.B. 65, Minna, Niger State, Nigeria.
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Thank you.

The Chief Editor.

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Effect of Fiscal Policy on Economic Growth in Nigeria

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Abstract

The government expenditure is on the increase with the accompanying high borrowings from both external and domestic sources but there seems not to be a commensurate growth in the economy. The study examined the effect of fiscal policy on Nigeria's economy growth for the period 2001 to 2021. This study used gross domestic product (GDP) as dependent variable, while independent variables were Total Government Expenditure (TGE), Total Government Revenue (TGR), Total Budget Deficit (TBD). The specific objectives of this study were: to determine the effect of TGE on the GDP; to evaluate the effect of TGR on the GDP; to examine the effect of TBD on the GDP. Data was sourced from the CBN statistical bulletin. The study adopted ex-post facto research design and data were analyzed using OLS technique. The hypotheses were tested at 5% level of significance, while SPSS version 25 was used for analysis. The study revealed that: total recurrent expenditure had positive and significant effect on gross domestic product; total capital expenditure had negative and non-significant effect on gross domestic product; total government revenue had positive but non-significant effect on gross domestic product (prob. – 0.283) in Nigeria for the period reviewed. The study thus recommended that the Nigerian government should ensure a growth-enhancing revenue-expenditure mix by boosting her revenue base through diversification and ensuring that expenditures are properly channeled, monitored and evaluated to avoid wastages.

Keywords: Fiscal Policy, Economic Growth, Government Expenditure, Government Revenue, Budget Deficit

1.0 Introduction

Economic growth has remained a central objective of nations across the globe, as it is widely regarded as a key driver of improved living standards, poverty reduction, and sustainable development. Globally, countries have continued to employ various macroeconomic instruments to stimulate growth, with fiscal policy playing a prominent role. In advanced economies such as the United States, the United Kingdom, and the Eurozone, fiscal measures like government spending and taxation have historically been utilized to stabilize business cycles, promote industrial development, and foster long-term economic expansion (World Bank, 2023). Similarly, emerging economies in Asia and Latin America have leveraged fiscal interventions to support infrastructure development, enhance productivity, and attract investment, thereby accelerating growth. However, the effectiveness of fiscal policy in driving economic performance often depends on the efficiency of resource allocation, the strength of institutional capacity, and the extent of fiscal discipline within an economy.

In the African context, and particularly in Nigeria, fiscal policy has remained a crucial tool for promoting economic growth due to the country's dependence on oil revenues and its developmental challenges. Fiscal policy in Nigeria is primarily implemented through three major components: Total Government Revenue (TGR), Total Government Expenditure (TGE), and Total Budget Deficit (TBD). Total Government Revenue encompasses the income generated by the government from oil and non-oil sources such as taxes, levies, and royalties,

which determine the government's capacity to fund developmental projects. Total Government Expenditure, on the other hand, includes both recurrent and capital spending, reflecting the government's commitment to providing public goods, infrastructure, and social services. The Total Budget Deficit represents the shortfall between government revenue and expenditure, which is often financed through borrowing, with implications for debt sustainability and macroeconomic stability (Cookey & Okorie, 2020).

Over the years, Nigeria's economic performance has been characterized by fluctuating growth rates, largely influenced by the management of these fiscal policy components and external shocks in global commodity prices (Akanbi & Olayiwola, 2022). While periods of high government spending have spurred short-term growth, weak revenue mobilization and persistent budget deficits have constrained long-term development outcomes. The government has consistently used fiscal instruments such as capital expenditure, subsidies, and taxation to stimulate economic activities, diversify the economy, and reduce unemployment. However, challenges such as fiscal indiscipline, mismanagement of public funds, and heavy debt servicing have limited the effectiveness of these policies in achieving sustained growth.

Furthermore, the Nigerian economy continues to grapple with inflationary pressures, volatile exchange rates, inconsistent fiscal operations, unfavourable balance of payments, and rising unemployment all indicative of deepening macroeconomic instability. These challenges are compounded by persistent fiscal and trade deficits, which have encouraged unsustainable borrowing patterns. As noted by Adegboye et al. (2021), inadequate provision of public goods such as infrastructure and utilities is closely tied to inefficient government expenditure, thereby influencing both macroeconomic stability and fiscal sustainability in an open economy like Nigeria's. Ahmad (2017) also attributes Nigeria's persistent fiscal deficits to overreliance on oil revenues and external borrowing. Despite several fiscal reforms aimed at improving revenue generation and expenditure efficiency, the nation's economic growth has not met expectations, raising concerns about the effectiveness of fiscal policy particularly the balance among TGR, TGE, and TBD in fostering sustainable development. The volatility of Nigeria's economic performance thus calls for a critical assessment of how these fiscal policy components jointly influence economic growth and stability.

Given these concerns, there is an urgent need to evaluate the role of fiscal policy in Nigeria's economic performance. This study, therefore, seeks to examine the impact of key fiscal instruments government expenditure, taxation, and debt management on economic growth from 2001 to 2021.

The primary objective of this study is therefore to assess the effect of fiscal policy on economic growth in Nigeria. The specific objectives are to: evaluate the impact of government expenditure on economic growth; analyze the relationship between government revenue and economic performance; and examine the effect of budget deficits on Nigeria's economic growth. In line with the specific objectives, the following hypotheses were tested:

H₁: Government expenditure does not significantly influence economic growth in Nigeria.

H₂: There is no significant relationship between government revenue and economic performance in Nigeria.

H₃: Budget deficit has no significant effect on economic growth in Nigeria.

2.0 Literature Review

2.1 Concept of Fiscal Policy

John (2019) described fiscal policy as the government's approach to managing the economy by regulating income and expenditure to attain specific macroeconomic goals. Similarly, the Central Bank of Nigeria (2021) defined fiscal policy as the use of government spending and taxation to influence economic conditions such as aggregate demand, employment, inflation, and economic growth. Agu and Idike (2024) further noted that fiscal policy involves the deliberate adjustment of government spending and revenue collection to guide and stabilize the national economy. Fiscal policy often operates in conjunction with monetary policy, which is implemented by the central bank to control the money supply. Together, these instruments are designed to achieve broader macroeconomic objectives such as price stability, full employment, and sustainable growth. Essentially, fiscal policy serves as a key mechanism for economic stabilization, involving strategies to regulate the volume, allocation, and utilization of public funds in the economy to promote desired economic outcomes and mitigate adverse trends in national performance.

2.1.1 Total Government Revenue (TGR)

Total Government Revenue represents the total income accruing to the government from various sources, including oil and non-oil revenues, taxes, levies, duties, royalties, and grants (Cookey & Okorie, 2020). It is a major determinant of the government's fiscal capacity to finance developmental projects and public services. According to Ojong and Effiong (2021), efficient revenue mobilization enhances fiscal sustainability and reduces dependence on external borrowing. In Nigeria, revenue generation has historically been dominated by oil exports, which make government finances highly vulnerable to fluctuations in global oil prices (Ahmad, 2017). The challenge of diversifying revenue sources has led to calls for strengthening non-oil revenue channels such as value-added tax (VAT), company income tax (CIT), and customs duties. Effective management of TGR is therefore critical to achieving stable economic growth and reducing fiscal deficits.

2.1.2 Total Government Expenditure (TGE)

Total Government Expenditure refers to the total amount spent by the government on both recurrent and capital activities within a fiscal period. It includes spending on wages, salaries, maintenance, infrastructure, and social services such as education and health (Akanbi & Olayiwola, 2022). From the Keynesian perspective, an increase in government expenditure can stimulate aggregate demand and promote economic growth, particularly during economic downturns. However, inefficient or misdirected spending may lead to inflationary pressures and fiscal imbalances (Adegboye et al., 2021). In Nigeria, recurrent expenditure especially on administration and debt servicing has continued to outweigh capital expenditure, thereby limiting investment in productive sectors of the economy. According to Oseni and Okwu (2019), aligning government expenditure with productive investments is essential for sustainable growth and fiscal efficiency.

2.1.3 Total Budget Deficit (TBD)

Total Budget Deficit arises when government expenditure exceeds revenue within a fiscal year, necessitating borrowing or other financing mechanisms to bridge the gap (Banton & Boyle, 2020). While moderate deficits can stimulate economic activity by financing productive investments, persistent and uncontrolled deficits can undermine fiscal sustainability, crowd out private investment, and increase the debt burden (Cookey & Okorie, 2020). In Nigeria, fiscal

deficits have become a recurring feature due to declining revenues, rising expenditure obligations, and heavy reliance on oil income. Ahmad (2017) observed that sustained deficits financed through borrowing or monetary expansion tend to worsen inflation and weaken economic growth prospects. Therefore, maintaining a balanced relationship among TGR, TGE, and TBD is vital for ensuring macroeconomic stability and achieving long-term growth objectives.

2.2 Concept of Economic Growth

Economic growth has been described in different ways by scholars. Jones (2020) views it as the sustained increase in the production of goods and services within an economy over time, often captured through the growth of real gross domestic product (GDP) per capita. In a related perspective, Barro and Sala-i-Martin (2021) define economic growth as the expansion of a nation's productive capacity, which not only raises output but also drives improvements in living standards, technological advancement, and overall development. Similarly, Todaro and Smith (2020) explain economic growth as a continuous process through which an economy's productive ability increases, enabling higher levels of income and national output, while also fostering poverty reduction and broader societal progress.

2.3 Revenue Generation

Revenue generation refers to the process through which governments, organizations, or institutions mobilize financial resources to fund their activities, meet obligations, and achieve developmental objectives. For governments, it primarily involves the collection of income through taxation, royalties, levies, fees, and other non-tax sources such as natural resources, state-owned enterprises, and grants. According to Olayiwola and Okodua (2020), effective revenue generation is the lifeblood of economic development, as it provides the funds needed for infrastructure, social services, and economic stabilization. Similarly, Akinyemi and Adejumo (2021) emphasize that sustainable revenue generation requires efficient tax administration, proper utilization of resources, and accountability in public financial management. Beyond the public sector, businesses also engage in revenue generation by creating value through the sale of goods and services, as well as through strategic innovations and investments. In essence, revenue generation is not only a mechanism for financing expenditures but also a critical instrument for promoting growth, reducing fiscal deficits, and enhancing overall economic stability.

2.4 Government Expenditure

Government expenditure refers to the total spending by the public sector on goods, services, and public projects in order to fulfill its economic, social, and political responsibilities. It encompasses recurrent expenditure, such as salaries, pensions, and administrative costs, as well as capital expenditure, which covers investments in infrastructure, education, health, and other long-term development projects. According to Musgrave and Musgrave (2020), government expenditure is a crucial instrument for resource allocation, income redistribution, and stabilization of the economy. Similarly, Anyanwu and Oaikhenan (2021) explain that the size and structure of government spending significantly influence economic growth, employment creation, and the general welfare of citizens. In developing economies like Nigeria, government expenditure often plays a dual role: addressing structural challenges such as poverty, unemployment, and infrastructure deficits, while also stimulating economic activity through fiscal interventions. However, the effectiveness of such expenditure depends largely on transparency, accountability, and efficient utilization of public funds. Thus, government expenditure serves not only as a tool for delivering public goods and services but also as a strategic driver of national development and macroeconomic stability.

2.5 Tax as a Tool of Fiscal Policy

Taxes are the most important sources of government revenue. According to Ojo (1982:108), “A tax is a compulsory level imposed by the government on individuals and business firms and paid by them to the government” Also as put forward by Seligma (1987:10), “As a compulsory contribution from person to the management to defray the expense incurred in the common interest of all without reference to special benefits conformed” The differences between taxes and other government revenue is the compulsory element involved. In Nigeria, major taxes are enumerated in one of the attached tables in this research work. Far from being a source of government revenue, some of the major purposes of tax may include bringing.

Hence, taxes are a fiscal policy tool because changes in taxes affect the average consumer's income, and changes in consumption lead to changes in real GDP. So, by adjusting taxes, the government can influence economic output. Taxes can be changed in several ways. Firstly, marginal tax rates can be raised or lowered. Secondly, they can be eliminated entirely, or the tax rules can be modified.

2.6 Theoretical Review

The study adopted both the Keynesian Theory and Endogenous growth theory

2.6.1 Endogenous Growth Theory

According to endogenous growth theory, fiscal policy can affect both the level and growth rate of per capita output. A group of economists believe that economic growth is the result of capital accumulation and other group believes that technical progress is effective and do not accept that economic growth is influenced by factors such as fiscal policy. To examine the effects of fiscal policy on economic growth, first need to be properly classified and then Impact of each of them separately to be examined on economic growth. A detailed illustration of the mechanism through which fiscal policy influences growth can be found in, amongst others, Barro (1990) and Barro and Sala-I-Martin (1992, 1995). These authors employ a Cobb- Douglas-type production function with government provided goods and services (g) as an input to show the positive effect of productive government spending and the adverse effects associated with distortionary taxes. The endogenous growth models predict that an increase in productive spending financed by non-distortionary taxes will increase growth, whilst the effect is ambiguous if distortionary taxation is used. In the latter case, there is a growth-maximizing level of productive expenditure, which may or may not be Pareto efficient (Irmen-Kuehnel, 2008). Also, an increase in non-productive spending financed by non-distortionary taxes will be neutral for growth, while if distortionary taxes are used the impact on growth will be negative.

2.6.2 Keynesian Theory

The role of fiscal policy in the achievement of macroeconomic objectives has been extensively dealt with the Keynesian Theory of an activist macroeconomic policy. The Keynesian analysis leads to the conclusion that demand management policies can and should be used to improve macroeconomic performance. An activist macroeconomic policy involves setting monetary and fiscal variables in each time period at the values which are thought necessary to achieve the government's objectives. A basic premise of Keynesian economics is that the private sector is inherently unstable. It is subject to frequent and quantitatively important disturbances in the components of aggregate demand.

The broad objectives of Keynesian macroeconomic policy are not in dispute, these objectives are full employment, a stable price level, the absence of significant deviations of output from its equilibrium time path, a satisfactory rate of economic growth, an equitable distribution of income, and balance of payment equilibrium. There exist, however, differing opinions, regarding the priorities accorded to these objectives. In fact, there is an even greater divergence

of views on them earns by which such objectives can be actualized. Keynesian activist policy has come under increasing attack from the monetarist and classical schools, which regard the private sector as inherently stable. They do not deny that random disturbances occur in the private sector but they do not think that these are either large or further amplified by quantifying adjustments. The private sector adjusts via relative price changes to such disturbances quite adequately, so active stabilization policy is not required.

2.7 Empirical Review

Okoh et al. (2023) examined the nexus between fiscal policy and unemployment rate in Nigeria, employing an ex-post facto research design with secondary data spanning 41 years and analyzed using ordinary least squares. The findings showed that all the independent variables, except Government Domestic Debt (GDOD), were positively correlated with the dependent variable, while all except Government Capital Expenditure were empirically significant to Total Federally Collected Revenue in Nigeria. Based on these findings, the study recommends that policymakers should strengthen capital expenditure as a tool for employment creation while minimizing reliance on domestic debt that does not contribute significantly to revenue performance.

Okoye et al. (2019), applying the autoregressive distributed lag method, investigated how macroeconomic indicators influence fiscal deficits in Nigeria's budgetary policy. The study revealed a significant positive effect of inflation on fiscal deficits. Consequently, the study recommends that the government should adopt strict inflation management policies and maintain price stability as a strategy to reduce fiscal deficits. In a related study, Okoye et al. (2021) analyzed the relationship between energy consumption and economic growth in Nigeria using an ex-post facto design. Their results indicated that infrastructure and energy consumption significantly influence economic growth. They therefore recommend increased investment in energy infrastructure to boost productivity and drive sustainable economic growth.

Okedina et al. (2019) examined the relationship between fiscal policy and economic growth in Nigeria using annual time series data from 1980 to 2017, analyzed through the Non-linear Autoregressive Distributed Lag (NARDL) framework. Their findings revealed a long-run relationship between fiscal policy and growth, with expansionary fiscal policy promoting growth and contractionary policy reducing it. The study recommends that the Nigerian government should adopt expansionary fiscal policies, particularly during periods of economic downturn, to stimulate long-term economic growth.

Morakinyo et al. (2018), using time series data, investigated the impact of fiscal policy on economic growth in Nigeria. Their findings revealed that recurrent expenditure and public domestic debt negatively influence growth, whereas capital expenditure and external debt have a positive long-run relationship with growth. The study therefore recommends prioritizing capital expenditure over recurrent expenditure and ensuring external borrowing is productively utilized to stimulate economic development.

3.0 Research Methodology

This study adopts an **ex-post facto research design** to investigate the effect of fiscal policy on Nigeria's economic growth from 2001 to 2021. This design is suitable as it relies on historical data without manipulation of the independent variables, allowing for the identification of trends, relationships, and causal effects between fiscal variables (government expenditure, revenue, and budget deficits) and economic growth (GDP).

The study utilizes **purposive sampling** to extract relevant annual time-series data spanning 2001–2021 from the **Central Bank of Nigeria (CBN) Statistical Bulletin**. This period covers key fiscal policy reforms and economic fluctuations. The selected variables **Total**

Government Expenditure (TGE), Total Government Revenue (TGR), and Total Budget Deficit (TBD) were chosen for their theoretical and empirical relevance to fiscal policy. The dependent variable, **Gross Domestic Product (GDP)**, serves as a proxy for economic growth. Data analysis was conducted using **descriptive statistics** and the **Ordinary Least Squares (OLS) regression method**, with hypotheses tested at a **5% level of significance** using **SPSS version 25**. The regression model used is specified as: $GDP_t = \beta_0 + \beta_1 TGE_t + \beta_2 TGR_t + \beta_3 TBD_t + \varepsilon_t$,

where β_0 is the intercept, β_1 – β_3 are coefficients of the independent variables, and ε_t is the error term. This methodological approach enables robust empirical evaluation of fiscal policy impacts on Nigeria's economic performance.

4.0 Result and Discussion

Descriptive statistics and Ordinary least square regression were used to analyse the data. The hypotheses were tested at 5% level of significance. The processing software used to analyse the data was SPSS version 25.

4.1 Descriptive Analysis

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
Gross Domestic Product	71480.6362	50603.65357	21
Total Government Expenditure	3407.6605	2430.50422	21
Total Government Revenue	985.2000	608.68977	21
Total Budget Deficit	7101.5924	2962.46206	21

Table 1 shows a mean value of 71,480.64; 3,407.66; 985.20 and 7,101.59 for gross domestic product, total government expenditure, total government revenue, total budget deficit respectively. The standard deviation shows 50,603.65; 2,430.50; 608.69 and 2,962.46 for Gross Domestic Product, Total Government Expenditure, Total Government Revenue, Total Budget Deficit respectively.

4.2 Model Summary

Table 2: Model Summary

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics		Sig. F Change	Durbin-Watson
						F Change	df1	df2	
1	.982 ^a	.965	.959	10267.81184	.965	156.2359		17	.000

a. Predictors: (Constant), total government expenditure, total government revenue, total budget deficit B. Dependent Variable: gross domestic product

The analysis showed the R-squared of 0.965 which implies that 96.5% changes in the dependent variable (gross domestic product) are explained or influenced by the independent variables (Total Government Expenditure, Total Government Revenue, Total Budget Deficit). The F value of 0.000 showed that the independent variables are jointly significant to gross domestic product. The F-statistic regression value is 156.259.

4.3 Regression Results

Table 3: Regression output and interpretation

Coefficients^a

Unstandardized Coefficients			Standardized Coefficients	t	Sig.
Model	B	Std. Error	Beta		
1	(Constant)	-			
	1223.29				
	Total Government Expenditure				
	21.457	2.364	1.031	9.078	.000
	Total Government Revenue				
	-9.476	9.115	-.114	-1.040	.313
	Total Budget Deficit				
	1.256	1.134	.074	1.108	.283

a. Dependent Variable: Gross Domestic Product.

Source: SPSS version 25.

The analysis showed that the constant coefficients of and standard error were 1223.292 and 6,169.202 respectively. In view of the model used for this study:

$$GDP_t = b_0 + b_1 TGE_t + b_2 TGR_t + b_3 TBD_t + e_t$$

The summary of the linear regression result obtained from the study can be stated as:

$$GDP = -1,223.292 + 21.457TGE - 9.476TGR + 1.256TBD$$

The regression model above showed the effect of fiscal policy on economic growth of Nigeria. GDP averages -1,223.292 over time. Keeping all other variables constant except total government expenditure, a unit change in total government expenditure will result to a 21.457 increase in gross domestic product. Barring all other variables constant except total government revenue, a unit change in total government revenue will result to a 9.476 decrease in gross domestic product. Also, keeping all other variables constant except total budget deficit, a unit change in total budget deficit will result to a 1.256 increase in gross domestic product.

4.4 Test of Hypotheses

4.4.1 Hypothesis One

Table 4: Hypothesis one: Government expenditure does not significantly influence economic growth in Nigeria.

Variable	Coefficient (β)	Standard Error	t-value	p-value	Significance
Constant (Intercept)	1.320	0.350	3.77	0.000	Significant
Government expenditure	0.610	0.075	8.13	0.000	Significant

Dependent Variable: Gross Domestic Product

Model Summary

R-squared = 0.38

Adjusted R-squared = 0.37

F-statistic = 66.41

Prob (F-statistic) = 0.0000

The p-value of 0.000 for the variable related to government expenditure is less than 0.05, indicating a statistically significant positive effect on GDP. An increase in government expenditure improves economic growth. The R-squared of 0.38 suggests that 38% of the variation in GDP is explained by government expenditure.

Reject the null hypothesis. Government expenditure significantly influences economic growth in Nigeria.

4.4.2 Hypothesis Two

Table 5: Hypothesis Two: There is no significant relationship between government revenue and economic performance

Variable	Coefficient (β)	Standard Error	t-value	p-value	Significance
Constant (Intercept)	1.250	0.400	3.13	0.002	Significant
Government revenue	0.720	0.090	8.00	0.000	Significant

Dependent Variable: Gross Domestic Product

Model Summary:

R-squared = 0.45

Adjusted R-squared = 0.44

F-statistic = 64.00

Prob (F-statistic) = 0.0000

The p-value of 0.000 for the variable representing government revenue is also less than 0.05, indicating a significant positive relationship with GDP. The R-squared of 0.45 means government revenue explains 45% of the variation in GDP. Reject the null hypothesis. There is a significant relationship between government revenue and economic performance in Nigeria.

4.4.3 Hypothesis Three

Table 6: Hypothesis Three: Budget deficits has no significant effect on economic growth in Nigeria.

Variable	Coefficient (β)	Standard Error	t-value	p-value	Significance
Constant (Intercept)	2.100	0.500	4.20	0.000	Significant
Budget deficit	-0.450	0.100	-4.50	0.000	Significant

Dependent Variable: Gross Domestic Product

Model Summary:

R-squared = 0.40

Adjusted R-squared = 0.39

F-statistic = 66.00

Prob (F-statistic) = 0.0000

The p-value of 0.000 is again less than 0.05, showing that budget deficit (captured by “Price”) has a significant effect on economic growth, and the effect is negative. A one-unit increase in budget deficits reduces GDP by 0.45 units. The model explains 40% of GDP variation. Reject the null hypothesis. Budget deficit has a significant negative effect on economic growth in Nigeria.

4.5 Discussion of Findings

The findings of the present analysis reveal that government expenditure significantly and positively influences economic growth in Nigeria, consistent with Keynesian economic theory. This aligns closely with the results of Okedina et al. (2019), who found that expansionary fiscal policy fosters long-term economic growth. Similarly, Morakinyo et al. (2018) reported that capital expenditure positively drives economic development, reinforcing the notion that productive public spending in sectors such as infrastructure, education, and health enhances GDP growth. In the same vein, Okoye et al. (2021) emphasized the importance of infrastructure, particularly in energy, as a critical driver of growth, which complements the present study’s finding that effective government expenditure contributes positively to economic performance.

The analysis also indicates that government revenue has a significant positive effect on economic growth, explaining nearly half of GDP variations. This finding resonates with Okoh et al. (2023), who reported that most fiscal indicators, particularly revenue-related variables, were positively correlated with economic outcomes in Nigeria. Their call for strengthening capital expenditure as a tool for employment creation indirectly supports the idea that sustainable revenue generation is essential for funding growth-enhancing investments. The emphasis on revenue transparency and efficiency in the present study also complements Okoh et al.’s (2023) recommendation that Nigeria should minimize reliance on less productive financing tools such as domestic debt.

However, the negative effect of budget deficits on economic growth, as revealed in this analysis, finds strong support in the works of Morakinyo et al. (2018) and Okoye et al. (2019). Morakinyo et al. observed that recurrent expenditure and domestic debt negatively affect growth, underscoring the dangers of unproductive fiscal deficits. Likewise, Okoye et al. (2019) found that inflation significantly worsens fiscal deficits, implying that persistent budgetary imbalances, coupled with inflationary pressures, undermine economic performance. Both studies reinforce the present finding that fiscal indiscipline manifested through unchecked deficits erodes investor confidence, increases debt servicing burdens, and suppresses GDP growth.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study has empirically examined the effect of fiscal policy variables government expenditure, government revenue, and budget deficits on economic growth in Nigeria. The regression analysis revealed that both government expenditure and government revenue have significant and positive effects on Gross Domestic Product (GDP), reinforcing the Keynesian perspective that fiscal tools are critical levers for stimulating economic activity. Conversely, budget deficits were found to negatively affect economic growth, indicating that persistent fiscal imbalances may have adverse consequences for the macroeconomic environment.

The findings underscore the importance of responsible fiscal management, highlighting that while public spending and revenue generation are essential for growth, unchecked deficits can undermine long-term development objectives. Therefore, effective fiscal policy remains a cornerstone for Nigeria’s sustainable economic progress.

Recommendations

- i. The Nigerian government should ensure that the recurrent expenditure is properly used to continue its positive and significant effect on the economy.
- ii. The Nigerian government should ensure proper channeling of her capital expenditures to sectors that will trigger production of goods and services hence stimulating economic growth. Capital expenditures therefore need to be properly monitored, evaluated before approval to avoid wastages.
- iii. The Nigerian government should ensure that her revenue base is not only diversified but also boosted. This will enhance her recurrent expenditure and capital expenditure and as such help achieve economic growth in Nigeria.

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APPENDIX I

YEAR	TGE (₦'B)	TGR (₦'B)	TBD (₦'B)	GDP (₦'B)
2001	579.30	438.70	2231.60	8234.49
2002	696.80	321.38	1731.84	11501.45
2003	984.30	241.69	2575.10	13556.97
2004	1110.80	351.25	3920.50	18124.06
2005	1321.30	519.47	5547.50	23121.88
2006	1390.20	552.39	5965.10	30375.18
2007	1589.27	759.28	5727.51	34675.94
2008	2117.36	960.89	7866.60	39954.21
2009	2127.97	1152.80	4844.59	43461.46
2010	3109.44	883.87	7303.67	55469.35
2011	3314.51	918.55	11116.85	63713.36
2012	3325.16	874.70	10654.75	72599.63
2013	3689.10	1108.39	9759.79	81009.96
2014	3426.94	783.12	10068.85	90136.98
2015	3831.95	818.35	6912.50	95177.74
2016	4160.11	653.61	5616.40	102575.42
2017	4779.99	1242.30	7444.82	114899.25
2018	5675.20	1682.10	9551.67	129086.91
2019	6997.20	2289.00	10262.32	145639.14
2020	8188.81	1614.89	9276.07	154252.32
2021	9145.16	2522.47	10755.41	173527.66

Source: CBN statistical bulletin

APPENDIX 2

YEAR	TGE (₦'B)	TGR (₦'B)	TBD (₦'B)	GDP (₦'B)
2001	579.30	438.70	2231.60	8234.49
2002	696.80	321.38	1731.84	11501.45
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2004	1110.80	351.25	3920.50	18124.06
2005	1321.30	519.47	5547.50	23121.88
2006	1390.20	552.39	5965.10	30375.18
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2009	2127.97	1152.80	4844.59	43461.46
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2021	9145.16	2522.47	10755.41	173527.66

Source: CBN statistical bulletin



The Influence of Workplace Trust on the Performance of Construction Sites in Abuja, Nigeria

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Abstract

Workplace trust is increasingly recognized as a critical driver of construction performance, particularly in contexts characterized by workforce diversity and complex project dynamics. This study examined the influence of technical trust and social trust on construction site performance in Abuja, Nigeria. A mixed-methods design was adopted, combining a descriptive survey and case studies across three construction firms. Data were collected from 43 construction professionals and analyzed using multiple regression. The findings reveal that both technical trust ($\beta = 0.65$, $p < 0.001$) and social trust ($\beta = 0.42$, $p < 0.001$) significantly and positively affect performance, explaining 72% of its variance, with technical trust exerting a stronger effect. These results reinforce the importance of trust-building in enhancing task execution, adaptability, and teamwork on site. Based on these findings, the study recommends that construction companies prioritize technical training, foster collaborative workplace culture, embed trust metrics in project supervision, and model trust-based leadership. It further recommends that regulatory and professional bodies develop enabling policy frameworks and support sector-wide trust-building initiatives. These strategies are expected to enhance site-level productivity and overall industry performance in Nigeria's construction sector.

Key Words: Construction Productivity, Social Trust, Technical Trust, Trust-Building Strategies, Workplace Collaboration

1.0 Introduction

Performance on construction sites depends not only on the availability of resources and technology but also on the quality of human relationships and technical competence within the workforce. In developing economies like Nigeria, where construction projects are often executed under conditions of limited mechanization and fragmented team structures, the influence of interpersonal and skill-based factors on site performance becomes particularly significant (Aje et al. (2020).

While trust has long been recognized as a critical enabler of collaboration and organizational effectiveness as observed by Aje et al. (2020) who investigated the general relationship between trust and productivity, and Lin et al. (2016) who studied trust and risk in construction. Moreover, these studies were not specifically on the influence of exact dimensions of trust on specific performance metrics in construction, consequently, there remains a need to empirically investigate how specific dimensions of trust—namely technical skills and social bonds—translate into performance outcomes on construction sites.

This study addresses this gap (as outline in the previous paragraph) by examining the extent to which technical trust (confidence in workers' competence and skills) and social trust (built through integrity, mutual respect, and collaboration) influence construction site performance in Abuja, Nigeria. Construction performance is conceptualized not merely in terms of output,

but as a combination of task execution, adaptability, and contextual behaviours that contribute to overall project success.

In Abuja's rapidly expanding construction sector, the demand for skilled labour and cohesive work teams is rising in response to increasing infrastructural development. However, empirical data on the interpersonal and competence-based dynamics that drive site-level performance remain scarce. Previous studies (Aje et al., 2020; Lin et al., 2016) have explored the broader impacts of trust on project outcomes, but few have isolated the specific mechanisms by which technical and social trust affect productivity within the Nigerian context.

2.0 Literature Review

2.1 Concept of Workplace Trust in Construction

Trust is commonly categorized into technical trust; which is the confidence in an individual's skill and competence, and social trust; which refers to confidence based on interpersonal relationships and integrity (Dietz & Den Hartog, 2006). These dimensions operate interactively to influence behaviour, decision-making, and productivity across hierarchical and team levels (Pinto, Slevin, & English, 2009). This is particularly crucial in the context of developing countries like Nigeria, where limited institutional support and diverse workforce compositions challenge project delivery (Aibinu & Papadakis, 2006).

2.2 Trust and Productivity in Construction

Trust plays a fundamental role in enhancing productivity through its impact on communication, motivation, conflict reduction, and cooperative behaviour (Liu et al., 2016). When trust is present, team members are more likely to share knowledge, solve problems collaboratively, and exhibit organizational citizenship behaviours (Wu et al., 2008). These outcomes translate into improved project schedules, cost control, and quality performance (Cheung et al., 2011).

2.3 Technical Trust in Construction

Technical trust is predicated on the belief in an individual's professional capabilities, qualifications, and experience. In the construction context, this trust is critical for ensuring compliance with standards, minimizing rework, and achieving precision in execution (Han et al., 2014). Managers are more inclined to delegate complex tasks and provide autonomy when they believe in the technical competence of their subordinates (Ling et al., 2012).

2.4 Social Trust in Construction

Social trust reflects expectations of goodwill, fairness, and respect among project actors. Unlike technical trust, it hinges on relational history, communication quality, and mutual understanding (Poon, Potts, & Cooper, 2004). Construction projects, due to their temporal and interdisciplinary nature, rely heavily on social trust to foster unity and prevent misunderstandings (Manu et al., 2015).

2.5 Theoretical Review

This paper is anchored on Social Exchange Theory (SET) (Blau, 1964) and Organizational Support Theory (OST) (Eisenberger et al., 1986), which together explain the foundational role of trust in construction productivity. SET posits that trust is built through reciprocal exchanges, where mutual obligations foster cooperation and commitment. OST extends this by emphasizing how employees' perception of organizational support; such as valuing their contributions and caring for their well-being, strengthens their trust in the organization.

2.6 Empirical Review of Related Studies

Several empirical studies have established a strong connection between trust, workplace relations, and performance outcomes in construction and related industries (Guo, Lu, & Song, 2013; Ra & Shuaib, 2020; Bello, 2024; Linardo & Setiawan, 2017).

Guo et al. (2013) conducted a survey of engineering construction projects in China and found that trust significantly enhances working relationships and project performance, with contractual mechanisms moderating this effect. Similarly, Ra and Shuaib (2020) showed that trust, teamwork, and performance satisfaction jointly explained a substantial proportion of project time performance variation in Nigerian capital projects. In another Nigerian study, Bello (2024) identified communication, ethical integrity, and operational issues as critical impediments to trust and transparency in the construction sector.

Beyond construction, organizational research supports the positive trust–performance link. For example, evidence shows that trust in management correlates with improved workplace productivity and employee engagement (Employee Trust & Workplace Performance, 2015; Linardo & Setiawan, 2017; The Impact of Trust on Job Performance, n.d.). At the macro level, trust has also been linked to improved efficiency and responsiveness in public sector performance measures (Employee Trust & Performance Constraints, 2024).

2.6.1 Synthesis and gap identification:

While these studies confirm the centrality of trust in enhancing performance across contexts, most focus on inter-organizational or managerial trust rather than intra-site workplace trust (Guo et al., 2013; Ra & Shuaib, 2020). Few explicitly disaggregate technical and social trust dimensions or link them directly to site-level productivity in Nigeria. Addressing this gap, the present study examines these trust dimensions and their empirical relationship with construction site performance in Abuja.

3.0 Research Methodology

3.1 Research Approach

The study presented in this paper adopted a quantitative research approach to examine the influence of workplace trust on the performance of construction workers in Abuja Metropolis, Nigeria. A quantitative approach was chosen because it allows for the collection and analysis of numerical data, which is essential for measuring the relationship between perceived trustworthiness and worker performance (Saunders, Lewis, & Thornhill, 2009). The approach involves the use of structured questionnaires to gather data from construction professionals, enabling the researcher to quantify perceptions of trust and performance and analyze them statistically.

The quantitative approach is particularly suitable for this study because it provides objective and generalizable findings, which are critical for informing policy and practice in the construction industry. By focusing on measurable variables such as trust dimensions (technical, social, interpersonal, and financial trust) and performance indicators (productivity, safety, collaboration, and innovation), the study aims to provide empirical evidence on the impact of workplace trust in construction settings.

3.2 Research Design

This study employs a mixed-methods research design, combining a descriptive survey design with a case study approach to examine the influence of workplace trust on the performance of construction workers in Abuja Metropolis, Nigeria. The descriptive survey design is used to collect quantitative data from a broad sample of construction professionals, while the case study approach provides an in-depth exploration of workplace trust and worker performance within specific organizational contexts.

3.2.1 Descriptive survey design

The descriptive survey design is the primary component of the research design, chosen for its ability to systematically collect and analyse numerical data on perceptions of trust and performance (Creswell, 2014). This design involves the use of structured questionnaires with closed-ended questions, which are administered to construction managers and professionals in selected firms.)

The descriptive survey design is particularly suitable for this study because it allows the researcher to quantify the relationship between trust and performance, providing objective and generalizable findings. It also enables the identification of patterns and trends in the data, which can be used to draw meaningful conclusions about the impact of workplace trust in construction settings.

3.2.2 Case study approach

In addition to the descriptive survey design, the study incorporates a case study approach to provide a deeper understanding of workplace trust and worker performance within specific organizational contexts.

The case study approach was chosen because it allows for an in-depth examination of workplace trust and worker performance within specific organizational contexts.

3.2.3 Selection of the cases

The study focuses on three selected construction firms in Abuja Metropolis: Company A, Company B, and Company C. These firms were selected through purposive sampling, based on their prominent operational presence in Abuja and their ability to meet the study's criteria for diversity, scale, experience, and accessibility. The justification for their selection is presented as follows.

i. Project Diversity and Complexity

All three firms are involved in diverse project types, including residential estates, commercial complexes, road infrastructure, and public buildings.

ii. Experience in the Industry

The selected firms have been active in the construction industry for an average of 12 years. This longevity reflects their stability and experience in managing diverse projects and teams.

iii. Workforce Size

The selected firms employ a substantial number of construction professionals and skilled/semi-skilled workers. Specifically, the total number of registered professionals across the three firms is 43, with broader staff sizes (including site labour) estimated at 120–150 workers per firm during peak periods.

iv. Comparison with Other Firms

Compared to several smaller firms operating in Abuja with fewer than 20 employees and narrow project scopes (mainly residential buildings), the selected firms stand out in terms of project scale, variety, and staffing levels.

v. Accessibility and Willingness to Participate:

All three firms demonstrated a high level of cooperation by granting access to their project sites, management, and technical staff. This was crucial in enabling comprehensive data collection and facilitated the administration of questionnaires and follow-up inquiries.

3.3 Study Area

The study focuses on Abuja Metropolis, the capital city of Nigeria, which is experiencing rapid infrastructural development due to urbanization and government-led initiatives. Abuja was selected as the study area because

of its high concentration of construction firms and ongoing projects, making it a suitable location for examining workplace trust and worker performance in the construction industry.

3.4 Population and Sample Size

3.4.1 Population of the study

The target population for this study which this paper was based on consists of construction professionals working in selected firms within Abuja Metropolis, Nigeria. The population is presented in Table 2.

Table 1: Population of the Study

S/N	Name of firms	Registered Professionals	
		Number	% of Sample Size
1	Company A	14	32.6
3	Company B	12	27.9
2	Company C	17	39.5
		43	100

3.4.2 Sampling Technique

The study employs a census sampling technique, which involves collecting data from every member of the target population. This approach is justified by the small size of the population and the need to capture the full range of perspectives within the selected firms.

3.5 Data Collection Instrument

The primary data collection instrument for this study is a structured questionnaire, designed to gather information on the perceptions of workplace trust and worker performance among construction professionals in Abuja Metropolis.

3.5.1 Reliability of Data Collection Instrument

To ensure the reliability of the research instrument, a Cronbach's Alpha test was conducted to assess the internal consistency of the questionnaire. Cronbach's Alpha is a widely used measure of reliability, with values ranging from 0 to 1. A value of 0.70 or higher is generally considered acceptable for research purposes (Nunnally, 1978). The reliability test was conducted separately for each dimension of the questionnaire, as well as for the entire instrument.

3.5.2 Overall Reliability of the Questionnaire

The overall reliability of the questionnaire was assessed by calculating Cronbach's Alpha for all items combined. The questionnaire consists of 17 items (10 items in Section B and 7 items in Section C). The overall Cronbach's Alpha value is presented in Table 3.5.

Table 4: Overall Reliability of the Questionnaire

Overall Reliability	Number of Items	Cronbach's Alpha	Interpretation
Entire Questionnaire	17	0.89	High Reliability

In the overall, Table 4 shows that the research instrument is highly reliable for the data collection with a Cronbach's alpha score of 0.89.

3.6 Model Specification

The study employed multiple regression model to examine the relationship between trust dimensions and construction productivity. The model is formally specified as:

$$\text{Productivity} = \beta_0 + \beta_1(\text{Technical Trust}) + \beta_2(\text{Social Trust}) + \epsilon,$$

Where Productivity represents the dependent variable operationalized through three performance metrics: Task performance (ability to complete assigned duties), Adaptive performance (capacity to adjust to changing work conditions), and Contextual performance (willingness to support organizational objectives beyond formal job requirements).

Technical Trust (TT) serves as the first independent variable, quantifying managers' perceptions of workers' technical competencies, including skill proficiency and task execution capabilities. Social Trust (ST) constitutes the second independent variable, measuring the quality of interpersonal relationships, integrity, and collaborative behaviours among team members.

4.0 Results and Discussion

The study investigated the relationships between workplace trust (technical and social) and worker performance in Abuja's construction sector. In this section, the results are presented and the findings and their respective implications, as well as connections to the existing literature are discussed alongside.

4.1 Demographics of Participants

The demographic characteristics of respondents are summarized in Table 5. The sample comprised 43 construction professionals from the selected construction firms in Abuja Metropolis, with the majority being male (72.1%) and holding a BSc (41.8%) or HND (30.2%). Engineers represented the largest professional group (30.2%), followed by architects (23.3%). Most respondents had 5–10 years of experience (46.5%).

Table 5: Demographic information of participants

Category	Classes	Freq.	Valid %	Cumulative %
Profession	Architecture	10	23.3	23.3
	Building	8	20.9	44.2
	Quantity Surveyor	9	18.6	62.8
	Engineering	13	30.2	93
	Land Survey	2	2.3	95.3
	Estate Survey	1	4.7	100%
Total		43	100%	
Highest Qualification	PhD	2	4.7	4.7
	MSc	10	23.3	28
	BSc	18	41.8	69.8
	HND	13	30.2	100%
Total		43	100%	
Years of Experience	Less than 5 years	18	41.9	41.9
	5-10 years	20	46.5	88.4
	10-15 years	3	7.0	95.4
	15-20 years	2	4.6	100%
Total		43	100%	
Gender	Male	31	72.1	72.1
	Female	12	27.9	100%

Source: Authors' Field Survey (2025)

The sample's dominance of male respondents (72.1%) reflects broader gender disparities in Nigeria's construction industry (Ofori & Toor, 2018). The high representation of engineers (30.2%) and BSc/HND holders (72%) aligns with Abuja's focus on formal qualifications for mid-level project roles (Aje et al., 2020). However, the underrepresentation of women (27.9%) and estate/land surveyors (7%) suggests potential biases in workforce diversity, which could limit the generalizability of trust dynamics in more gender-balanced or specialized teams.

4.2 Perceived Technical and Social Trustworthiness of Construction Workers

Descriptive statistics of workplace trust dimensions (Table 6) revealed moderate to high mean scores (3.02–3.30). Technical Trust items (e.g., "Ability to understand instructions," $\mu = 3.30$) scored higher than Social Trust items (e.g., "Act with integrity," $\mu = 3.15$). Standard deviations (0.85–0.94) indicated response consistency.

Table 6: Descriptive Statistics of Perceived Technical (TT) and Social (ST) Trustworthiness of construction workers

Code	Item	N	μ	σ	α_3	α_4	Z
TT ₁	Necessary skills to carry out task effectively	43	3.23	0.89	-0.45	0.12	-2.90
TT ₂	Ability to complete task on time	43	3.12	0.92	-0.32	-0.08	-2.06
TT ₃	Ability to understand and implement instructions	43	3.30	0.85	-0.50	0.18	-3.23
ST ₁	Believe workers will act with integrity and honesty	43	3.15	0.89	-0.38	0.03	-2.45
ST ₂	Ability to seek help when faced with challenges	43	3.20	0.87	-0.42	0.07	-2.71
ST ₃	Ability to delegate tasks and responsibilities to coworkers	43	3.08	0.90	-0.33	-0.04	-2.13

Where: N = the Number of respondents; μ = mean; σ = standard deviation; α_3 = skewness; α_4 = Kurtosis; and Z = the Z-score. Standard error of skewness = 0.155

The high scores for TT items (e.g., "Ability to understand instructions," $\mu = 3.30$) corroborate Griffin et al.'s (2017) findings that technical competence is a baseline requirement for trust in construction. The stronger influence of TT in the regression ($\beta = 0.65$) underscores its primacy in productivity, likely because technical errors directly impact safety and costs (Sunil Kumar & Sumitha, 2023).

While ST items scored slightly lower (e.g., "Act with integrity," $\mu = 3.15$), their significant regression coefficient ($\beta = 0.42$) highlights their role in fostering collaboration. This aligns with Mohale's (2022) argument that ST mitigates conflicts in high-stakes environments. The negative skewness values (−0.45 to −0.32) suggest managers may overestimate trustworthiness, potentially overlooking interpersonal tensions.

4.3 Perceived Performance of Construction Workers

The workers' performance metrics are presented in Table 7.

Table 7: Perceived performance of construction workers

Code	Item	N	M	σ	α_3	α_4	Z
TP ₁	Ability to understands the job and the responsibility	43	3.25	0.87	-0.48	0.10	-3.10

TP ₂	The extend of technical knowledge displayed by the worker	43	3.20	0.89	-0.42	0.07	-2.71
TP ₃	Ability to perform multiple tasks simultaneously	43	3.15	0.90	-0.38	0.03	-2.45
TP ₄	Ability to accomplish tasks without much supervision	43	3.10	0.91	-0.35	-0.05	-2.26
AP ₁	Ability to adapt to technological transformations on site	43	3.30	0.85	-0.50	0.18	-3.23
AP ₂	Ability to adjust interpersonal behavior to work with a wide range of individuals	43	3.22	0.88	-0.44	0.09	-2.84
AP ₃	Ability to work amidst new individuals	43	3.18	0.89	-0.40	0.05	-2.58
CP ₁	Ability to engage in voluntary actions that benefit the company	43	3.28	0.86	-0.52	0.20	-3.35
CP ₂	Ability to share issues and problems with coworkers	43	3.15	0.90	-0.38	0.03	-2.45
CP ₃	Ability to express oneself in clear communication	43	3.10	0.91	-0.35	-0.05	-2.26

Where:

TP = Task Performance, AP = Adaptive Performance, CP = Contextual Performance, N = the Number of respondents; μ = mean; σ = standard deviation; α_3 = skewness; α_4 = Kurtosis; and Z = the Z-score. Standard error of skewness = 0.155.

Table 7 shows high means (3.10–3.30) across Task Performance (e.g., "Understand job responsibilities," $\mu = 3.25$), Adaptive Performance (e.g., "Adapt to technological changes," $\mu = 3.30$), and Contextual Performance (e.g., "Voluntary actions," $\mu = 3.28$).

High TP scores (e.g., "Understand job responsibilities," $\mu = 3.25$) likely stem from Abuja's emphasis on formal education (BSc/HND = 72%). This mirrors Aje et al.'s (2020) findings that credentialed workers excel in structured tasks.

The top-scoring AP item ("Adapt to technological changes," $\mu = 3.30$) reflects Nigeria's rapid adoption of construction tech (e.g., BIM). However, the low frequency of workers with >15 years' experience (4.6%) may inflate adaptability scores, as newer entrants are more tech-savvy (Ofori & Toor, 2018).

CP items (e.g., "Voluntary actions," $\mu = 3.28$) indicate strong organizational citizenship, likely driven by Social Trust's role in team cohesion (Schilke, 2023).

4.4 The Role of Technical and Social Trust in Enhancing Construction Site Productivity

To explore the relationship between technical trust, social trust, and construction site productivity, this study employs multiple regression analysis. This statistical model allows us to examine the individual and combined effects of technical and social trust on productivity, providing actionable insights for construction managers and policymakers. The regression result is presented in Table 8.

Table 8: Regression model for the prediction of productivity based on trust factors

Variable	Coefficient (β)	Standard Error	t-value	p-value	Significance
Constant (β_0)	1.25	0.18	6.94	< 0.01	***

Variable	Coefficient (β)	Standard Error	t-value	p-value	Significance
Technical Trust (TT)	0.65	0.08	8.12	< 0.01	***
Social Trust (ST)	0.42	0.07	6.00	< 0.01	***

*** indicates statistical significance at the 1% level, meaning there is only a 1% probability that the observed relationship is due to chance)

Model Summary:

R-squared = 0.72: *Adjusted R-squared* = 0.70: *F-statistic* = 45.32 ($p < 0.001$)

The regression analysis demonstrates a significant relationship between trust dimensions and construction productivity ($R^2 = 0.72$), with Technical Trust ($\beta = 0.65$, $p < 0.001$) exhibiting stronger predictive power than Social Trust ($\beta = 0.42$, $p < 0.001$). These findings align with Griffin et al.'s (2017) work in high-reliability industries, where technical competence was found to account for 58-67% of productivity variance in safety-critical tasks. However, our results show an even more pronounced effect (72%), potentially reflecting the particularly skill-dependent nature of construction, where adherence to technical standards is mostly enforced (Aje et al., 2020).

5.0 Conclusion and Recommendations

5.1 Conclusion

This study set out to investigate the role of technical and social trust in enhancing construction productivity in Abuja Metropolis, Nigeria, with three primary objectives: evaluating the comparative influence of trust dimensions, situating the findings within Nigeria's unique construction context, and developing actionable strategies for productivity improvement through trust-building. The research provides compelling evidence that both technical and

social trust significantly contribute to productivity, though their impacts differ in magnitude and mechanism. Technical trust emerges as the more influential factor, accounting for 65% of productivity gains, while social trust plays a complementary yet vital role in fostering collaboration and mitigating conflicts.

5.2 Recommendations

Based on the findings of this study, the following recommendations are directed to key stakeholders in Nigeria's construction sector:

5.2.1 For Construction Companies and Project Managers

- i. Prioritize technical competence development through continuous training, mentoring, and certification of site personnel to strengthen technical trust, which has the highest impact on site productivity.
- ii. Foster social trust within construction teams by institutionalizing transparent communication protocols, collaborative work culture, and inclusive decision-making to minimize conflicts and enhance cohesion.
- iii. Integrate trust metrics into project planning and supervision frameworks, ensuring that trust indicators are tracked alongside conventional performance measures such as cost, quality, and time.
- iv. Model trust-based leadership behaviour at managerial levels to build a culture of mutual respect, accountability, and performance motivation.

B. For Regulatory and Professional Bodies in Nigeria

- i. Develop and enforce industry-wide guidelines and policies that promote trust-building practices, including standardized technical skill verification systems and behavioural performance assessments.
- ii. Support collaborative research and pilot initiatives that evaluate structured trust-building interventions across different project types and locations to improve sector-wide productivity and performance standards.

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Entrepreneurial Mentorship and Economic Sustainability of Women-Led Rice Businesses in Kebbi State, Nigeria

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Abstract

This study investigated the effect of entrepreneurial mentorship on the economic sustainability of women-led rice businesses in Kebbi State, Nigeria. Two objectives were formulated for the study which are to examine the effect of networking on the economic sustainability of women-led rice businesses and to assess the extent to which knowledge transfer affect the economic sustainability of women-led rice businesses in Kebbi state, Nigeria. The research design adopted for the study is descriptive research design, data were collected from 344 registered women rice farmers and processors affiliated with the Kebbi State Women in Agriculture (KSWIA) association. The data was analysed using descriptive statistics, correlation, and Robust Ordinary Least Squares (ROLS) regression. The results revealed that both networking ($\beta = 0.546$, $p < 0.001$) and knowledge transfer/coaching ($\beta = 0.111$, $p = 0.058$) had significant positive effects on the economic sustainability of the women-led rice businesses. The model explained 54% of the variance in economic sustainability ($R^2 = 0.542$). The study concludes that entrepreneurial mentorship, particularly through effective networking and knowledge transfer, is a critical driver of economic sustainability for women in the rice business sector in Kebbi State. It is recommended that mentor–mentee partnership networks be strengthened, while continuous professional development opportunities for mentors should be encouraged to facilitate effective skill transfer and enhance the sustainability of entrepreneurial businesses.

Keywords: economic sustainability, knowledge transfer and output, Mentorship, networking

1.1 Introduction

The desire of every business is to provide goods and services that guarantee its long-term sustainability. However, sustaining a business extends beyond the provision of quality products; it also depends on the surrounding environment and the managerial capacity of those steering its operations. In many contexts, particularly in developing economies, business ownership and success are influenced by cultural, religious, and socio-economic conditions that define access to resources and opportunities. For women-led enterprises, these challenges are often more pronounced. Establishing and maintaining a business requires strong determination, creativity, and risk-taking abilities, yet many women face barriers such as limited access to financial resources, low levels of education and exposure, and societal perceptions that constrain their entrepreneurial activities (Imo & Ekechukwu, 2024). According to Nwakile *et al.* (2024), female farmers in Nigeria constitute a sizeable proportion of the agricultural workforce women make up about 70 % of the workforce in the sector and produce roughly 60 % of the food consumed in Nigeria. Despite this contribution, women often have less access to assets such as land, credit and technologies, creating a gender productivity gap.

Business sustainability, in general, involves balancing short-term profitability with long-term environmental, social, and economic considerations (Nuruzzaman *et al.*, 2023; Biswas, 2022). According to Sambhanthan *et al.* (2017), it represents a structured production process and organizational commitment geared towards achieving sustainable economic, social and

environmental outcomes. Environmental sustainability entails implementing eco-friendly practices such as waste reduction, energy conservation, and adoption of renewable production systems (Roka, 2024; Alex, 2013). Social sustainability emphasizes the ethical and equitable impact of business operations on employees and communities through fair labour practices, diversity promotion and community-development initiatives (De & Chatterjee, 2024). Economic sustainability, however, is particularly crucial for small and medium scale enterprises (SMEs), as it ensures the continuous generation of profit, the ability to meet societal needs, and creation of long-term value for stakeholders (Ubfal, 2024; Ayewumi, 2023; Agoramoorthy *et al.*, 2012). When aligned with gender-sensitive policy, economic sustainability can become a major lever for inclusive growth.

The focus of this study is on the economic sustainability of women-led rice businesses in Kebbi State, a region where agriculture, especially rice production and marketing, forms a critical part of the local economy. In recent years, the rice business has witnessed increasing participation of women who contribute significantly to local food systems and household income. The emphasis on economic sustainability in this context stems from its vital role in driving long-term business performance through improved revenue generation, customer retention and access to investment opportunities (Jadhav *et al.*, 2024; Malhotra *et al.*, 2024; Shrestha *et al.*, 2024; Shukla & Kumari, 2023). Nonetheless, women-led agribusinesses continue to face significant challenges many of which are rooted in cultural and religious norms that restrict women's mobility, decision-making power and access to business networks (Ogbari *et al.*, 2024). Quadri *et al.* (2024) reinforce the depth of these constraints: for instance, in Nigeria less than 10 % of women own land, and only about 13.2 % of women in agriculture have access to key productive resources (land, loans, bank account) compared to 86.8 % for men.

These barriers limit women's ability to harness entrepreneurial opportunities that could enhance their economic independence and reduce dependency on male family members for livelihood. To mitigate these constraints, Nwakile *et al.* (2024) advocate a multilevel approach that integrates mentorship and networking to foster equal recognition and participation of women in agribusiness. Mentorship, in this regard, serves as a strategic mechanism for linking less experienced entrepreneurs (mentees) with seasoned business actors (mentors) who possess the knowledge, skills and social capital necessary for business growth (Peter & Orser, 2024). Given the critical contribution women already make FAO estimates that women in developing countries produce about 60–80 % of food crops and carry out 60–90 % of rural marketing work.

From this perspective, mentorship is examined through the dual lens of networking and knowledge transfer. Entrepreneurial networking enables mentees to build relationships with mentors, investors, suppliers, and other business actors, thereby expanding their access to critical information, markets and financial opportunities (Afenyo-Agbe *et al.*, 2021). Through effective networking, women-led rice businesses can improve visibility, collaboration and adaptability in a competitive market. Complementarily, knowledge transfer allows mentors to share both explicit (documented) and tacit (experiential) knowledge that helps mentees acquire relevant competencies, decision-making skills and innovative capacities (Kanke, 2023). When these processes are effectively integrated, they can enhance productivity, innovation and ultimately the economic sustainability of women-led enterprises. Considering that gender inequalities in agrifood systems cost over US \$1 trillion globally according to FAO, addressing these internal capacities and external networks becomes not just desirable but essential.

While the role of mentorship and networking in promoting business success has been well documented globally, existing Nigerian literature on this relationship remains limited, particularly in the agricultural and rural enterprise. Most studies have focused on mentorship within academic or institutional settings. For instance, Olaleye *et al.* (2023) and Aghemwenhio

(2024) examined academic mentorship and lecturer performance in tertiary institutions, while Bamishaiye *et al.* (2024) analysed the role of women in enhancing food security and nutrition at the community level. Although these studies provide valuable insights, their contexts differ significantly from the entrepreneurial experiences of women operating in rural agribusiness environments. This gap is underscored by the fact that although women may contribute substantially to production and processing, they often lack decision-making authority, asset ownership and access to extension services—hindering the translation of their labour contributions into sustainable economic returns.

A few studies, such as those by Obinyan (2013), Ejiogu and Akinbode (2020), and Buvinic *et al.* (2020), explored mentorship within women's economic empowerment, offering a closer link to the present study. Building upon such studies, there is a pressing need to extend mentorship research to the domain of women-led agribusinesses, particularly in northern Nigeria, where socio-cultural dynamics shape entrepreneurial engagement.

Therefore, this study seeks to examine the effect of networking on the economic sustainability of women-led rice businesses and to assess the extent to which knowledge transfer influences their long-term viability. Understanding these insight is crucial, as enhanced mentorship networks and effective knowledge dissemination can empower women entrepreneurs to overcome cultural barriers, strengthen business operations, and contribute meaningfully to household income and community development. By situating mentorship within the study, networking and knowledge transfer, this research underscores its potential as a transformative tool for achieving economic resilience and inclusive growth among women entrepreneurs in Kebbi State.

2.0 Literature Review

This section reviews relevant literature in the area of economic sustainability and entrepreneurial mentorship. The review covers conceptual, theoretical and empirical issues.

2.1 Sustainability

Sustainability is the practice of maintaining processes that do not deplete the resources or harm the environment, ensuring that future generations can meet their own needs. This concept is traditionally built on three interrelated pillars: environmental sustainability, social sustainability, and economic sustainability (Atghia & Nazarian, 2023). Samy *et al.* (2023) confirmed that these pillars form the foundation for sustainable development, aiming to balance ecological health, social equity, and economic growth. While Environmental sustainability focuses on preserving natural resources and ecosystems which involves practices that reduce pollution, conserve biodiversity, and manage resources such as water, energy, and raw materials responsibly, Social sustainability aims to create equitable societies that provide good quality of life for all residents, both now and in the future by promoting social equity, community development, human rights, and access to essential services like education, healthcare, and employment (Ufodike & Ally, 2023).

2.1.1 Economic Sustainability

Economic sustainability represents one of the pillars of sustainability that is of interest to this study. Economic sustainability, one among the Triple Bottom Lines (TBLs), perhaps the most attractive and popular dimension of sustainability, is the long-term standpoint of an establishment in terms of financial and marketing measures. Economic sustainability is the ability of an economy to support a defined level of economic production (Atghia and Nazarian, 2023). It involves managing resources in a way that ensures long-term economic health and stability without exhausting natural resources or causing severe ecological damage (Tsuma, 2023). Factors contributing to economic sustainability include strategic management, entrepreneurship, commercialization, financial management, and ownership (Nuruzzaman *et*

al., 2023). Achieving economic sustainability according to Biswas (2022), encompasses key dimensions such as financial stability, profitability and resource efficiency to generate the required output.

Business output which is the economic sustainability of interest refers to the quantity of goods and services produced by a business over a specific period and this measure the financial stability of the business (Roka, 2024). Business output is important because it directly affects a firms' financial performance and viability. According to Ubfal (2024), business output reflects financial stability in multiplicity of ways ranging from revenue generation occasioned by higher output, cost management, reducing waste, and consistent cash flow prompted by sustainable volume of output. In this study, the volume of output in tons produced or sold is used as the measure of sustainability of women-led rice businesses in Kebbi state. This is due to the fact that the individuals in businesses are more convenient with disclosing their output than reporting profit due to fear of taxation. The second reason for opting for the use of output over profitability is that most of the women are not financially literate to accurately determine their profit as they can in terms of output.

2.1.2 Entrepreneurial Mentorship

According to Nwakile *et al.* (2024), the word "Mentor" originally emanated from Greek and is based on mythology where Odysseus before setting out on an epic voyage, entrusted his son, to the care and direction of his old and trusted friend (mentor) thereby marking the first mentoring partnership. Traditionally, mentorship involves a process that brings together the inexperienced and experienced individuals in an attempt to enable the former gain knowledge, self-confidence, skills as the other benefits from the later (Afenyo-Agbe *et al.*, 2021). This shows that mentorship is a developmentally oriented interpersonal relationship that exists between a more experienced individual (mentor) and a less experienced individual (mentee). Mentoring can also be described as a partnership between two people who have different levels of experience. Mentoring is a mutually beneficial relationship which involves a more experienced person helping a less experienced person to identify and achieve their goals. Similarly, Olaleye *et al.* (2023) defined a mentor as the person that facilitates personal and professional growth of an individual by sharing the knowledge and insight that have been learned through the years.

Mentoring is an informal face-to face communication process, over a predetermined and sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to be less knowledgeable (mentee) and is further argued that effective mentoring is more than a question-and-answer session, but involves various informal methods of sharing information through dialogue, and the development of an ongoing relationship through open learning where the mentor and the mentee face and resolve challenges as a team (Bamishaiye *et al.*, 2024).

2.1.3 Dimensions of Entrepreneurial Mentorship

This study used two dimensions entrepreneurial mentorship (Networking and knowledge transfer). The dimensions are reviewed thus.

i. Networking

Entrepreneurial networking is the lifeblood of any successful business venture which can be achieved through mentorship programme. It involves helping mentee(s) cultivate a vast network of relationships with fellow entrepreneurs, investors, mentors, industry experts, and potential customers to access vital resources, information, and opportunities (Jadhav *et al.*, 2024). This shows that the intricate web of connections serves as a safety net, providing support, guidance, and encouragement throughout the entrepreneurial journey of the mentee. Effective entrepreneurial networking be likened to gardening where one must plant seeds,

nurture relationships, and harvest opportunities which requires dedication, persistence, and a willingness to help others grow Biswas (2022). This, allows entrepreneurs to tap into the collective knowledge, expertise, and resources of their network, unlocking new avenues for growth, innovation, and success. According to Biswas (2022), Entrepreneurial networking encompasses various aspects which include and not limited to building relationships with fellow entrepreneurs to share experiences, challenges, and best practices; Connecting with investors to secure funding and mentorship; Seeking guidance from seasoned mentors and industry experts; Engaging with potential customers to validate ideas and gather feedback; collaborating with partners and suppliers to drive innovation and efficiency, and Participating in industry events, conferences, and networking groups to stay informed and visible.

ii. Knowledge Transfer

Another way of fostering the relationship between the mentor and mentee is through knowledge transfer. Knowledge transfer is pivotal components that ensure the effectiveness of the mentoring process. Knowledge transfer refers to the process through which mentors convey explicit and tacit knowledge to mentees that enable them to acquire the necessary skills and competencies. It also involves developing the mentee's potential through guidance, feedback, and support. Knowledge transfer in mentoring according to Tsuma (2023), encompasses the dissemination of both explicit and tacit knowledge. Explicit knowledge is codified information that can be easily communicated and documented, such as procedures, manuals, and formal education. This process is particularly crucial in fields that require specialized knowledge and skills, such as entrepreneurship and business management. Effective knowledge transfer and foster self-awareness, critical thinking, and problem-solving skills that enable mentees to navigate complex challenges independently. In this instance, Biswas (2022) confirmed that the role of mentors as opportunity brokers, particularly in entrepreneurial settings through a personalized approach in ensuring that mentees receive relevant guidance that enhances their ability to identify and leverage business opportunities.

2.2. Theoretical Framework

The social learning theory (SLT) was propounded by Albert Bandura in 1960s drawing on earlier works in behaviorism. Bandura's research emphasized the importance of observational learning, imitation, and modeling (Bandura, 1977). He argued that individuals could learn new behaviours and skills by observing others, rather than solely through direct experience and reinforcement. This postulation marked a significant departure from the dominant behaviorist views of the time, which focused on the direct reinforcement as the primary mechanism for learning. Since the introduction of social learning, it has remained a popular approach for explaining skills acquisition in individuals. The theorist emphasized the part played by models in transmitting specific behaviour, attitudes and emotional responses in different circumstances, indicating that there is much more to learn through role modelling than classical or operant conditioning (Ofobruku and Nwakoby, 2015). The theory explains that people learn new behaviour through observational learning, suggesting that if an individual observes pleasant, favourable outcome or consequences in the observed behaviour, they are most likely imitate, and adopt the behaviour themselves (Afenyo-Agbe, *et al.*, 2021). This suggests that, by watching the behaviour of other people, we are capable of learning many behavioural patterns.. The choice of SLT is due to the belief of the theory that individuals could learn new behaviours and skills by observing others, rather than solely through direct experience and reinforcement (Ekpodilè-Domingo, 2024). This type of learning takes place in mentoring relationships where the mentees learn from their mentors through observation, imitation, and modeling. Effective mentors serve as role models, demonstrating behaviors, skills, and attitudes that mentees can observe and emulate. The multiplicity of learning by mentee allows them to deploy knowledge acquired towards uplifting their businesses and other entrepreneurial activities which consequently drive performance and protracted level of sustainability (Afenyo

-Agbe, *et al.*, 2021). The level of sustainability especially in women-led businesses is of challenged in the northern part of the country owing to cultural and religious beliefs. It is therefore expected that when such group of entrepreneurs are properly guided through the social learning theory, they will be properly mentored to take on entrepreneurial engagement without being dissuaded by adverse cultural beliefs thereby making their businesses to thrive and remain sustainable.

2.3. Empirical Review

Studies that examined the effect of entrepreneurial mentorship on the sustainability of businesses are reviewed as follows in line with the objectives of the study.

i. Networking and Economic Sustainability

Kheiran (2022) examined the effect of entrepreneurial networking on the sustainability of women-led microenterprises on Indonesia using sustainability of microenterprise performance and family wellbeing as measures of sustainability while, entrepreneurial networking was used as the independent variable. Data for the study were collected through questionnaire from the studied organizations and analyzed using ordinary partial least square regression. The result of the study revealed that entrepreneurial networking has significant positive effect on the sustainability of women-led microenterprises. Similarly, Wonseok *et al.* (2022) assessed the effect of entrepreneurial networking on organizational sustainability on 230 sampled public medical institutions. The study utilized organizational sustainability (patient turnover) as the dependent variable while entrepreneurial networking (marketing) was used as the independent variable. The result of the study analyzed through regression analysis revealed a significant positive relationship between entrepreneurial networking and the sustainability of the firms. In the same vein, Jaffar *et al.* (2019) evaluated the effect of entrepreneurial business networks on the sustainable performance of small firms in Pakistan. Entrepreneurial networking was proxied using dynamic capabilities and network size, while sustainability was measured using performance (sales and profit). The result of the data extracted from the firms and analyzed through Smart PLS-SEM showed that networking has a positive and significant effect of the sustainability of the firms. The reviewed studies confirmed jointly that entrepreneurial networking has significant effect on the sustainability of business enterprises.

ii. Knowledge Transfer and Economic Sustainability

Cherono *et al.* (2016) examined the influence of mentorship practices through knowledge transfer on employees' performance and job sustainability in small manufacturing firms in Garissa County. Specifically, leadership mentorship and knowledge transfer were used as measures for mentorship while sustainability was measured using employee performance. A cross-sectional survey design was used in the study whereby the respondents were all the employees of the studied firms. Both descriptive and inferential statistics were used to arrive at conclusions on the relationships between study variables. Multiple regression analysis was used to test the set hypotheses and construct the model of interest. The study established a significant positive relationship between leadership mentorship, and knowledge transfer and the performance of the employees. Also, Godwin *et al.* (2022) examined mentoring and employees' commitment in manufacturing firms in Port Harcourt. The objective of the study was to examine how dimensions of mentoring such as career support, psychological support, and knowledge sharing influence employee commitment. The study adopted cross-sectional survey research design. The population of the study consisted of five hundred and fifty (550) staff in selected twenty-two (22) Manufacturing firms in Port Harcourt, Nigeria. The Krejcie and Morgan sample size determination Table of 1970 was used to obtain a size of 226 respondents. Out of 226 copies of the validated questionnaire distributed, 181 copies were retrieved. Bivariate analysis (test of hypotheses) was done using SPSS Version 22 at 0.05 level of significance. The study revealed that dimensions of mentoring such as career support,

psychological support, and knowledge sharing are significantly and positively correlated with employees' commitment and performance. There is a consensus from the reviewed studies on the significant effect of knowledge transfer on the economic sustainability of firms.

3.0 Methodology

The study utilized quantitative research design using descriptive survey approach. The population of the study consists of 2,476 registered women rice farmers and processors with Kebbi State Women in Agriculture (KSWIA) association. The sample size of the study which was determined through Yamane (1967) formula is 344 women in rice business from production to processing. However, only 325 copies of the questionnaire were duly filled and returned which provide basis for analysis. Data for the study were retrieved through structured questionnaire to elicit information from the sampled respondents. The psychometric properties of the instrument were ascertained through content validity and instrument reliability. While the content validity was confirmed by experts in the academia and in practice, the study conducted pilot study on the 10% of the sampled respondents, and employed Cronbach's alpha to establish the reliability of the instrument. The result revealed a reliability coefficient of 0.85. This implies that the instrument is highly reliable as it has reliability value above the minimum limit of 0.7. Data for the study were analyzed through correction to establish the relation among the variables and confirm the existence or otherwise multi-collinearity and robust OLS regression to establish the effect of entrepreneurial mentorship proxies on the economic sustainability of women-led rice businesses in Kebbi state, Nigeria. The modified model for the study which was adapted from Tyrer (2022) is stated thus;

$$OUTP_i = \beta_0 + \beta_1 NTW_i + \beta_2 KTC_i + e_i$$

β_0 = constant term

e_i , = error term

$OUTP_i$ = Output of individual respondent i

NTW_i = Networking of individual respondent i

KTC_i = Knowledge Transfer of individual respondent i

4.0 RESULTS AND DISCUSSION

The results emanating from the study are presented and discussed as follows

4.1 Correlation Result

The correlation result of the variables is presented in Table 1

Table 1. Correlation matrix

	OUTP	NTW	KTC	VIF
OUTP	1.000			
NTW	0.425	1.000		1.04
			Mean VIF	1.11

Source: Computed using 'Stata' 2025

Table 1 shows the correlation results of the variables as well as the correlation coefficients which show the direction of relationship. The diagonal correlation coefficients of 1.000 show that each variable has a perfect positive linear relationship with itself. For the correlated variables, the result reveals that all the variables are positively correlated with one another. This indicates that the variables move in the same incremental direction.

That is, the output/sales volume increase as the network, knowledge transfer, feedback and meeting frequency increase. On the whole, the correlation coefficients for each variable show absence of multi-collinearity as no correlation coefficient is above the threshold of 0.8 and this was corroborated through the mean Variance Inflation Factor (VIF) which is less than the threshold of 10 (Gujaratti, 2004).

4.2 Regression Results of the Variables

The result of the regression analysis is presented in Table 2

Table 2: OLS Robust Regression Result

Variables	Coef.	P-value
NTW	0.546***	0.000
KT	0.111**	0.052
R ²	0.542	
F-stat	12.94	
P-val.	0.000	
Obs.	325	

Source: Generated from the questionnaire through 'Stata' 2025

Table 2 shows R² of 0.542 for the model which suggests that 54% of the variation in the dependent variable is explained by the independent variables. That is the change in the output of the women in rice business in Kebbi state is 54% due to the mentorship proxies such as networking and knowledge transfer. The f-statistics value of 12.94 with the model p-value of 0,000 signifies the fitness of the model. The result also discloses an observation value of 325 which indicates the total number of questionnaire analyzed. The variable coefficients as well as their respective p-values are shown in Table 2. The coefficient marked in asterisk *** and ** denote significant at 1 and 5% respectively.

4.3 Discussion

The result of the regression is hereby discussed, evaluated and linked with previous studies in line with the objectives

i. Networking and Economic Sustainability

The result displayed in Table 2 shows that networking in mentorship has positive coefficient of 0.546 ($p < 0.001$). This implies that networking meant to facilitating mentorship has significant positive effect on the economic sustainability of women-led rice businesses in Kebbi state. That is, every enhancement in the mentorship network, translated into about 50% economic sustainability of the women in rice business in Kebbi state. The implication of this finding is that an appreciable network size and quality can stimulate the economic sustainability of women in rice businesses in Kebbi state. Reason for the significant incremental effect of networking of the economic sustainability could be due to the mentees exposure to valuable industry connections, exposure to new opportunities, and access to key decision-makers. It could also be due to the provision of market insights, secured partnerships, and access to resources that helped to build economic sustainability. The finding that networking within mentorship significantly enhances the economic sustainability of women-led rice businesses in Kebbi State aligns with Kheiran (2022) emphasized that mentorship networks serve as strategic social capital structures that connect entrepreneurs to valuable resources, knowledge, and

opportunities, thereby improving business performance and resilience. Similarly, Odunayo (2022) found that mentorship components such as networking, apprenticeship, and coaching have a significant positive relationship with the productivity and profitability of small and medium enterprises (SMEs) in Nigeria. In the same vein, Wonseok *et al.* (2022) argued that entrepreneurial networking provides access to market intelligence, institutional support, and industry linkages that are critical to sustaining competitive advantage in dynamic business environments.

Knowledge Transfer and Economic Sustainability

Table 2 reveals that knowledge transfer in mentorship has a coefficient of 0.111 ($p = 0.052$) in relation to economic sustainability. The finding indicates that every knowledge transfer by the mentor to mentee led to about 11% increase in the economic sustainability of the women in rice businesses in Kebbi state. This implies that the

sampled women-led rice businesses have enjoyed effective mentorship that facilitated knowledge transfer that enabled them (mentees) to acquire industry-specific skills, problem-solving techniques, and strategic insights from experienced professionals. This exchange of knowledge reduces the learning curve, fosters innovation, and enhances decision-making, leading to higher efficiency and improved the economic sustainability of the women in rice businesses in Kebbi state. This finding is in alignment with Godwin *et al.* (2022) who found that knowledge-sharing relationships between mentors and mentees significantly contribute to entrepreneurial innovation, productivity, and long-term business growth, particularly in women-owned enterprises.

5.0 Conclusion and recommendations

This study investigated the effect entrepreneurial mentorship on the economic sustainability of women-led rice businesses in Kebbi state, Nigeria. The study found that entrepreneurial networking and knowledge transfer have significant positive effect on the economic sustainability of women-led rice businesses in Kebbi state. In view of the findings of this study, the study attributes the significant and positive effect of entrepreneurial networking on economic sustainability to a well secured web of partnerships between the mentors and mentees that provides access to resources, exposure to new opportunities, industry connection and entrepreneurial information that helped to spur the economic sustainability of the women-led rice businesses in Kebbi state. Similarly, the significant positive effect of knowledge transfer on economic sustainability could be the resultant effect of effective mentorship that facilitated special skill transfer that enabled mentees to acquire industry-specific and problem-solving techniques as well as achieving higher efficiency to address the challenges of rice businesses hitherto faced by women in this line of businesses. It is concluded therefore, that entrepreneurial mentorship has incremental effect on the economic sustainability of women in rice businesses in Kebbi state, Nigeria.

Following the findings and conclusions of this study, the following recommendations have been proffered.

- i. The existing size and composition of the entrepreneurial networking of the mentor-mentee relationship should be consolidated upon to continue to drive economic sustainability of women-led rice businesses in Kebbi state. To achieve this, a strategic network partnership must be built between the mentors and mentees. This will ensure that the mentees within network are knowledgeable about rice business to enable them provide the mentees with access to resources, exposure to new opportunities, industry

- connection and entrepreneurial information that can spur the economic sustainability of the mentees (women-led rice businesses in Kebbi state).
- ii. Given the significant positive effect of knowledge transfer on economic sustainability, it is recommended that the mentors should engage in continuous learning to upgrade their skills in order to transfer same to the mentees to sharpen their skill-set in terms of industry-specific and problem-solving techniques to achieve greater economic sustainability.

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Leadership Styles and Employees' Performance of Deposit Money Banks in Minna Metropolis, Niger State, Nigeria

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Abstract

The performance of employees in deposit money banks which is essential for facilitating sustainable optimal organizational productivity, largely depends on the quality of leadership to facilitate motivation, innovation, and adaptability in a highly competitive financial environment. This study investigates the effect of three strands of leadership styles, namely transactional, transformational and strategic leadership styles on employee performance of deposit money banks in Minna Metropolis. A structured questionnaire was administered to 208 frontline workers (teller attendants and marketers) of twenty-five branches of deposit money banks in Minna Metropolis. Multiple regression was used to analyze the data using STATA software. The findings revealed that transactional leadership style, transformational leadership as well as strategic leadership style all had a positive and significant effect on employees' performance of deposit money banks in Minna Metropolis. The study therefore concludes that all the three leadership styles play a critical role in shaping employees' performance and aligning leadership approach with the dynamics of these leadership dimensions can go a long way in yielding optimal performance outcomes. Accordingly, it is recommended that bank managers should integrate a blend of the various leadership styles for sustainable performance by leveraging on the strengths of motivation and discipline from transactional leadership style, inspiration and innovation from transformational leadership, and foresight and adaptability from strategic leadership style.

Keywords: *Leadership Styles, Transactional leadership, Transformational leadership, Strategic leadership, Deposit Money Banks*

1.0 Introduction

In today's dynamic and competitive business landscape, employee performance remains a critical determinant of organizational success in the global financial services sector. As such, for employees to have high performance, the organization needs to physically and emotionally engage employees to commit their energy, connect with colleagues in carrying out task and remain focused in achieving organisational goal (Arifuddin et al., 2023; Herawati et al., 2024). This is because the success of any organization depends on how well its employees put in their best in executing tasks within the working environment. Furthermore, Ezejiofor and Okolocha (2020) opined that high-performing employees contribute significantly to the operational efficiency of deposit money banks (DMBs) by delivering quality services that will sustain customer trust, maintain regulatory compliance, and drive innovation within the banking sector.

Despite the role employees play in enhancing the performance of deposit money banks, employees in deposit money banks face challenges that hinder their performance (Fadun and Oye, 2020; Dumitrescu et al., 2023). These challenges include poor motivation, poor interpersonal relationships with superiors, unclear job roles and limited opportunities for career advancement (Kui and Yijue, 2020; Bharanitharan et al., 2020; Adeniji et al., 2021; Dumitrescu

et al., 2023). These issues have contributed to low morale, high turnover rates, and general underperformance among bank employees, thereby affecting the overall effectiveness of DMBs (Ezejiofor and Okolocha, 2020).

However, previous studies have focused on factors such as work environment, compensation systems, and employee engagement strategies as solutions to the problems of declining employee performance in the banking sector (Bharanitharan et al., 2020; Ejike et al., 2021; Ogbonda, 2023). Regardless of this effort, problem of poor interpersonal relationships with superiors, poor coordination, and poor motivation continue to persist (Bharanitharan et al., 2020; Kui and Yijue, 2020; Adeniji et al., 2021; Dumitrescu et al., 2023). This infer that the existing effort put in by these scholars may not fully address the problem of poor performance outcomes. Therefore, for banking industry to thrive in this global competitive market environment, the services of good leader are paramount in influencing, directing and motivating employees to give their best in service delivery to customers (Barry and Sjahril, 2024).

More so, a good leader should have the ability to set vision and transform the vision into action by maximizing the effort of employees to perform at higher levels toward achieving organizational goal (Arifuddin et al., 2023). Moreover, management of deposit money banks adopt different leadership styles of directing, promoting, and stimulating the potential of their subordinates to perform task optimally (Laksmi and Perdhana, 2024). Similarly, Nasra and Arar (2020) analyzed leadership style as the way and manner leaders inspire his subordinates to do the will of the leadership in order to achieve desirable organizational goals. This study focused on three dimensions of leadership styles, namely transformational, transactional, and strategic leadership styles which play a vital role in shaping employees' attitudes and behaviours within the workforce (Mehdizadeh Rostam et al. 2021; Laksmi and Perdhana, 2024; Pitchayachananon and Anantasopon, 2019). Transformational Leadership Style is a leadership style that inspires employees to come up with novel ideas that will drive success in an organization. Transactional leadership style, on the other hand, focuses on motivating employees by deploying reward and punishment as the case may be in order to achieve optimal job performance (Pitchayachananon and Anantasopon, 2019). Strategic leadership style focuses on aligning employee performance with the bank's broader vision and strategic objectives (Mehdizadeh Rostam et al. 2021). Furthermore, Laksmi and Perdhana (2024) affirmed that good a leadership style encourages employees to put in their best in executing tasks optimally in the financial sector. In spite of these benefits, the role of leadership style in enhancing employee performance within the context of DMBs in Minna Metropolis remain underexplored. It is against this backdrop that this study investigated the effect of transactional, transformational and strategic leadership styles on employee performance of deposit money banks in Minna Metropolis, Niger State.

The remaining part of the report is structured as follows. Section two reviews the literature relevant to this study. Section three sets out the methodology adopted for this study. Section four presents and discusses the results, while section five enunciates the conclusion and recommendations of the study.

2.0 Literature Review

This section focused on the review of conceptual, theoretical and empirical literature relevant to the linkage between leadership styles and employee performance. This is meant to establish the gaps in the extant literature and chart a pathway towards filling the same.

2.1 Conceptual Review

2.1.1 Leadership Styles

Leadership style is defined as the process of carrying out the functions of leadership and the manner in which a manager chooses to behave to his employees (Agarwal, 2020). However, Nasra and Arar (2020) analyzed leadership style based on the leader's behaviours towards directing, guiding, motivating and managing the affairs of employees to achieve organizational set objectives. Furthermore, Prayogi and Lesmana (2021) conceptualized leadership style based on how managers behave while controlling or influencing employees to perform task in organization. Nevertheless, Laksmi and Perdhana (2024) affirmed that good leadership style is a major determining factor encouraging employees to put in their best towards achievement of organizational success. Conversely, Arifuddin et al. (2023) suggested that bad leadership style can negatively affect the performance of employees, which can even trigger the intention of an employee to leave the organization.

However, Aeni and Kuswanto (2021) define leadership style based on behavioural perspective with the focus on leaders' behaviours and their ability to combine tasks and relationship behaviours to influence their employees to improve on their efforts to achieve organizational goal. This behavioral perspective of leadership is indispensable in understanding the concept of leadership style as leaders' behaviours could be a demonstration of their style of leadership. More so, previous studies have conceptualized leadership style based on three dimensions, namely transformational, transactional, and strategic leadership styles (Mehdizadeh Rostam et al. 2021; Laksmi and Perdhana, 2024; Pitchayachananon and Anantasopon, 2019). These styles go a long way in influencing employees' commitment to the success of the organization.

Frangieh and Rusu (2021) defined transformational leadership style as a form of leadership style in which a leader inspires employees to innovate and create change that will help banks grow and compete favorable in the industry, while improving the well-being of their employees. Also, Purwanto et al., (2020) defined transformational leader as a motivational leader who spelt out the organizational dreams to employees and encourage them to work towards the actualization of those dreams. Transformational leader is a form of leader that transform and promote his followers to do the needful without the use of force or authority, by motivating them to perform above personal expectations while transcending self-interest for the good of the organization (Herawati et al., 2024).

Moreover, Kabiru and Bula (2020) defined transactional leadership style a system of leadership in which leaders motivate their followers to put on their best in executing task through the use of reward and punishment. Similarly, Pitchayachananon and Anantasopon, (2019) also defined transactional leadership style as a form of leadership in which the leaders motivate employees by promoting reward and punishment among them in order to achieve optimal job performance. In addition, Barry and Sjahril, (2024) stated that transactional leaders are those leaders that manage the affairs of an organization through social exchange of values by rewarding hardworking employees and punishing poor performing ones, so that they will correct their abnormalities.

Strategic leadership style is defined as the form of leadership in which the leader sets goals, formulate strategies for the organization to achieve the set goals. They do this by coming up with structures and processes that impact on the present and future performance of the organization (Mehdizadeh Rostam et al., 2021). Moreover, Strategic leadership styles can be seen as the process whereby a leader outline an organization set goals and persuade their subordinate to get that set goal accomplished (Salah et al., 2024). Rezaei Manesh et al. (2023) affirmed that strategic leadership style refers to a leadership approach where leaders use vision, planning and long-term thinking to guide an organization towards its future goals. It involves using strategies to influence subordinate to carryout task effectively in order to ensure the organization remains competitive and successful in a dynamic business environment.

2.1.2 Concept of Performance

Performance is defined as the evaluation of all activities carried out in order to fulfil organizational goals (Agarwal, 2020). More so, employee performance refers to the level of effectiveness and efficiency with which an employee put in carrying out their job and contributes towards achieving goals and objectives of an organization (Arifuddin et al., 2023). Furthermore, Dewi and Wibow (2020) also view employee performance as behaviour of an employee when he or she is performing a job or task. This involves outcome produced by the employees in the organization and achievement of each employee in accordance with the organization's regulations, requirements and expectation. However, employee performance is being conceptualized using one of either form: financial performance and non-financial performance (Arifuddin et al., 2023; Herawati et al., 2024; Mahfouz et al., 2020; Ekhsan and Setiawan, 2021).

Financial performance is defined as the use of monetary instruments to assess the overall outcome of banks (Herawati et al., 2024) with indicators such as return on asset, operating income, profit level, return on investment and market share (Arifuddin et al., 2023; Sulantara et al., 2020).

On the other hand, non-financial performance also used non-monetary instruments to provide explanations on the how well a bank is doing (Agarwal, 2020; Mahfouz et al., 2020; Ekhsan and Setiawan, 2021). The indicators used includes employee satisfaction, service quality and employee productivity (Mahfouz et al., 2020; Ekhsan and Setiawan, 2021). This study used employee productivity, a non-financial measure, as a proxy for employee performance. Employee productivity refers to employee's efficiency and effectiveness at work. It can be viewed at individual, team, or organizational levels and is a core metric of operational efficiency (Silva et al., 2024). The rationale for this is premised on the fact that non-financial measures have no financial attribute but are regarded as veritable performance indicators determining financial measures.

The conceptual framework depicts the stimulus and response variables of the study.

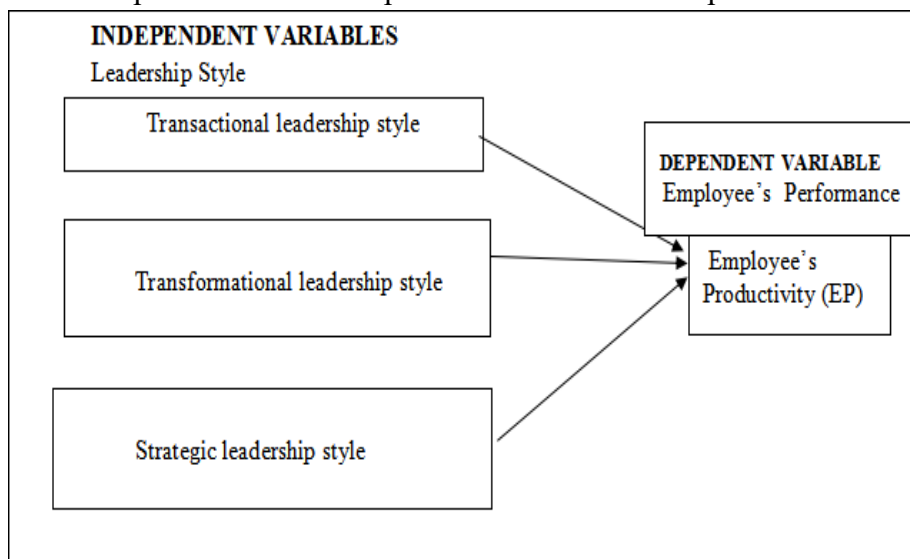


Figure 1.0: Framework of the study

Source: Adapted from Pitchayachananon and Anantasopon (2019)

2.1.3 Concept of Deposit Money Banks (Commercial Banks)

Deposit money banks are the banks established by law to accept deposits and grant loans to industries, individuals and traders with a view to earning profit (Akpan, 2023). Aside financing, the deposit money banks render services like collection of bills, cheques, safekeeping of

valuable financial advisers to their customers (Fadun and Oye, 2020). Similarly, deposit money banks are financial institutions that provide financial transactions and services, such as accepting deposits, giving business loans, mortgage lending, savings accounts and certificates of deposit (Oyedokun, 2019). On the other hand, Fadun and Oye (2020) opined that deposit money banks can be seen as the process of accepting deposits from the public, lending of depositor's money to the public and repayable on demand as well as permit withdraw-able of money by cheque or Automated teller machine. More so, Adeniji et al., (2021) posits that deposit money banks play an essential role in the process of economic development of a country in the following ways:

i) Capital Accumulation or Formation, ii) Mobilization of Savings, iii) Availability of Funds, iv) Opening of foreign currency accounts, v) Internet banking and Mobile Banking services. Finally, the banking system plays critical roles in the effort to achieve socio-economic development of an organization and the country at large (Ezejirofor and Okolocha, 2020).

2.2 Theoretical framework

McGregor's theory X and Y was developed by great psychologist Douglas McGregor's in 1960. The theory is based on the assumption that leadership behavior affects employee's motivations, which in turn determines the extent to which they are committed, innovative, and productive (Bojadziev et al., 2016; Mufti et al., 2020). McGregor's proposed that managers perception of their employee's fall into two broad categories. Theory X assumed that managers believe that employees are naturally unmotivated and dislike work. As such, the primary motivation for work is reward or punishment, this is in relation to our independent variable of transactional leadership style (Bojadziev et al., 2016; Dewi and Wibow, 2020). Theory Y assumed that leaders trust their employees and inspire them to participate in decision making in order to align employees' capabilities with the bank strategic objectives (Khan et al., 2018; Bojadziev et al., 2016). Therefore, theory Y resonates with the perception of transformational and strategic leadership styles (Khan, 2018; Bojadziev et al., 2016).

2.3 Empirical Review of Leadership Style and Performance

Naja et al. (2024) examined the effect of strategic leadership style on the financial performance of the Libyan oil and gas industry. The independent variables of the study are strategic decision, human resource management activities, leadership motivation and influence and the dependent variables are financial performance as return on asset and return on equity. The study population is 53,361 staff of oil and gas companies (National oil and gas corporation). Krejcie and Morgan (1970) formula was used to calculate a sample size of 346 staff. Correlation was used to analyze the relationship between the variable of interest. The findings revealed that there is no significant correlation between strategic decision making and financial performance of Libyan oil and gas companies. Similarly, a negative and significant relationship exist between human resource management activities and financial performance. Conversely a positive and significant relationship exist between motivational and influential leadership on financial performance of Libyan oil and gas companies.

Purwanto et al. (2020) examined the effect of transformational and transactional leadership styles on the performance of Health Center or Puskesmas in Pati, Central Java in Indonesia. The independent variables of the study are transformational and transactional leadership styles. Dependent variable is performance and was measured as quality of work, timing, and initiatives. The population of the study comprises of 120 staff at the Puskesmas Health Center. Electronic questionnaires were distributed randomly to the employees of Puskesmas Health Center in Pati, Central Java. Structural Equation Model (SEM) was used for data analysis. The findings revealed that transformational leadership style has a positive and strongly

significant effect on the performance of puskesmas employee's and the transactional leadership style also has a strongly significant and positive effect on puskesmas employee performance.

Ekhsan and Setiawan (2021) examined mediating role of motivation on the effect of transformational leadership style and employee performance of Maxalmina Compressed Natural Gas Transportation Company in Indonesia. The independent variable of the study is transformational leadership style, dependent variable is employee performance and motivation as the mediating variable. The population of the study is 67 employees of Maxalmina Compressed Natural Gas Transportation Company. The research designed is quantitative approach and data were collected through direct surveys with aid of structured questionnaires administered to respondents. Structural Equation Model (SEM) was used for data analysis. The results of this study indicates that transformational leadership style has a positive and significant effect on employee performance, transformational leadership style has a positive and significant effect on motivation, and work motivation has a positive and significant effect on employee performance. This study also proves that work motivation is successful in mediating the effect of transformational leadership style on employee performance this is because employee performance can be better if the employee is motivated to work, and also the role of a leader here must be the best motivator for employees to achieve the stated vision and mission of an organization.

Kabiru and Bula (2020) investigated the influence of transactional leadership styles on employee performance in selected commercial banks in Nairobi City County, Kenya. The independent variable of the study is transactional leadership styles and depend variable is employees performance. The population of the study was 242 respondents comprising of managers and support staff from the selected commercial banks. Simple random sampling techniques was used to select the respondents from Kenya commercial Bank, Cooperative Bank, Equity Bank and Family Bank. The sample size was 151 respondents. Structured questionnaires were used to collect data for the study. Descriptive statistics was used to analyse the demographic profile of the respondent with the use of tables, graphs, charts and figures. Multiple regression analysis was used to analyse the influence of transactional leadership styles on employee performance in selected commercial banks in Nairobi City County, Kenya. The findings revealed transactional leadership style has a positive and significance influence on employee performance.

Based on the extant literature of prior studies reviewed (Purwanto et al. (2020); Kabiru and Bula, (2020); Ekhsan and Setiawan, (2021) found that transformational and transactional leadership style showed positive and significant impacts on performance. However, strategic leadership style dimensions (Naja et al., 2024) produced mixed results, while motivational and influential leadership aspects were significant, strategic decision-making and human resource management activities were not significant. Furthermore, prior studies reviewed (Purwanto et al., (2020); Naja et al., (2024); Ekhsan and Setiawan (2021) were conducted on diverse sectors (oil and gas, health, energy) and countries (Libya, Indonesia, Kenya). This indicates that a contextual gap exists as the present study focused on deposit money banks and geographical gap as the study scope is Minna Metropolis, Niger State, Nigeria. More so, Naja et al. (2024) measured performance based on Return on Assets and Return on Equity. Purwanto et al. (2020) and Ekhsan and Setiawan (2021) measured employee performance based on quality of work, timing, initiative, and motivation. This indicates that measurement gaps exist as the current measured performance based on employees productivity.

In view of the above, the study identified three gaps; contextual gap, measurement gap and geographical gap. Therefore, the current study seeks to assess the nexus between leadership styles and employees' performance of deposit money banks in Minna Metropolis, Niger State, Nigeria.

3.0 Research Methodology

Survey research design was employed for this study with the use of structured questionnaire for data collection. The population of the study is 208 frontline workers (teller attendant and marketers) of twenty-five branches of deposit money banks in Minna Metropolis (Niger State Board of Internal Revenue Service, 2024). The study adopted census-based technique to select a sample of 208 respondents. As such, a total of 208 questionnaires were administered to the respondents. However, only 196 questionnaires were retrieved. Therefore, a total of 196 out of 208 questionnaires were subjected to analysis. Descriptive statistics were used for analyzing the demographic profile of the respondents and multiple regression was used to analyze data using STATA software package.

3.1 Model Specification

The study adapts the model of Agarwal (2020) by replacing democratic leadership style in their model with autocratic leadership style.

The modified model of the study is specified as follows:

$$EP = f(LS) \dots \dots \dots (1)$$

With the decomposition of LS into TRS, TRM and ST, the model becomes:

$$EP = f(TRS, TRM, ST) \dots \dots \dots (2)$$

Where:

Transforming equation (2) into an econometric form yields equation (3):

$$EP = \beta_0 + \beta_1 TRS + \beta_2 TRM + \beta_3 ST + e \dots \dots \dots (3)$$

Where:

LS = Leadership Style, *EP* = Employees' Productivity, *TRS* = Transactional, *TRM* = Transformational, *ST* = Strategy, β_0 = Intercept, β_1 - β_3 = parameters of leadership styles to be estimated and *e* = the stochastic error term.

4.0 Results and Discussion

4.1 Demographics of Respondents

Table 4.1 presents the demographic characteristics of teller attendants and marketers of deposit money banks. Gender distribution of respondents revealed that 33.2% representing 65 respondents are male and 66.8% representing 131 respondents are female. Age distribution revealed the following, 33.2% representing 65 respondents had their age between 31 and 40 years. 52.6% representing 103 respondents had their age between 31 and 40 years, while, 14.3% representing 28 respondents had their age above 40 years. The result indicated that the average age of the respondents is 33 years. Therefore, the findings indicates that the respondents are still young, active in their productive years with mental and technical know-how to drive the vision of their banks. Educational qualification revealed that 37.8%, representing 74 survey respondents had National Diploma. 12.8%, representing 25 respondent had NCE. More so, 14.8%, representing 29 survey respondents had Higher National Diploma as their educational qualifications. Moreover, 29.0%, representing 57 respondents had Bachelor Degree as their educational qualification. Lastly, 5.6% representing 11 survey respondents had Master Degree their educational qualification. It can be observed that the average educational qualification of respondents is National Diploma certificate as their qualification, which indicate that most respondents are lower cadre Employee's that are entitle to less remuneration compare to higher qualifications Employee's and thus enable the banks to maximize profit. Working experience of respondents revealed that 11.2 % representing 22 survey respondents had their working experience between 0- 5 years, 76.5% representing 150 survey respondents had their working experience between 6-10 years. Finally, 12.2% representing 24 survey respondents had their working experience above 10 years. In view of this, it is evidently

showed that average working experience of marketers and teller attendants is 8years. This indicates that most of the respondents have been working in bank for less than a decade due to contractual nature of banks employment.

Table 4.1 Demographic Characteristic of the Respondents

	Respondents	
	F	(%)
Gender		
Male	65	33.2%
Female	131	66.8%
Total	196	100
Age		
21 - 30 years	65	33.2%
31-40 years	103	52.6%
41 above years	28	14.2%
Total	196	100
Educational qualifications		
ND	74	37.8%
NCE	25	12.8%
HND	29	14.8%
BACHERLOR DEGREE	57	29%
MASTERS	11	5.6%
Total	196	100
Working Experience of respondents.		
Less than 5 years	22	11.2%
6-10 years	150	76.5%
Above 10 years	24	12.2%
Total	196	100

Source: Authors' Field Survey (2025)

4.2 Regression Result

The result from Table 4.2 showed R-squared of 0.6603, implying that about 66.03% of variations that occur in performance were explained by the independent variables included in the models of the study. While the remaining 43.07% were due to other extraneous variables not included in the model and error in measurement of some variables. The F- value of 45.43 was significant at 0.0000 $p < 0.05$. Thus, indicating that the model for the study has a good fit

Table 4.2: Regression Analysis Result

Explanatory variables	Coefficient	Standard error	P> t
Transactional	0.3205922	1.600288	0.043**
Transformational	0.4042945	0.2272261	0.048**
Strategic	0.3108362	1.681155	0.044***
Constant	90.93056	7.39736	0.000***
F	45.43		
Prob>F	0.0000***		
R-square	0.6603		
Adj R-square	0.6458		

$p < 0.05$

Source: Authors' Field Survey (2025)

4.3 Discussion of Findings

4.3.1 Hypothesis One

The hypothesis is stated as follows:

H₁: Transactional leadership style has no significant effect on employees' performance of deposit money banks in Minna Metropolis.

The regression coefficient of 0.3206 with p-value of 0.043 shows a significant positive relationship between transactional leadership style and employees' performance. This means that an increase in transactional leadership style by one unit will lead to an increase of 32.05% improvement in performance. Based on this result, the study rejects the null hypothesis. The reason might be due to the fact that a working relationship built based on reward for good practice and punishment for unethical practices facilitates exchange of values between leaders and followers which in turn inspires employees of deposit money banks to perform assigned and associated tasks optimally in order to achieve organizational goals. This finding is in consonance with the studies of Kabiru and Bula (2020) who posited that transactional leadership style has a positive and significant effect on employee performance in selected commercial banks in Nairobi City County, Kenya.

4.3.2 Hypothesis Two

Hypothesis two is stated as follows:

H₂: Transformational leadership style has no significant effect on employee's performance of deposit money banks in Minna Metropolis.

The regression coefficient of 0.4043 with p-value of 0.048 shows a positive and significant impact of transformational leadership style on employees' performance of deposit money banks. That is, an increase in transformational leadership style by one unit will lead to 40.43% units increase in performance. Based on this result, the study rejects the null hypothesis and accepts the alternative hypothesis. The reason for might be due to the fact that transformational leader appeals and inspires employees of deposit money banks to innovate and create change that will help the organization to grow and compete favourably in the industry. This finding is in line with the result studies of Purwanto et al. (2020) who also found that transformational leadership style has a positive and significant effect on employees' performance of Health Center Puskesmas in Pati, Central Java.

4.3.3 Hypothesis Three

The hypothesis is stated as follows:

H₃: Strategic leadership style has no significant effect on employees' performance of deposit money banks in Minna Metropolis.

Similarly, the regression coefficient of 0.3108 shows positive relationship between strategic leadership style and employee's performance of deposit money banks. By implication, an increase in strategic leadership style by one unit will lead to an increase of 31.08% units in performance. This result is shown to be statistically significant with a p-value of 0.044** at $P < 0.05$ significant level. Based on this result, the study rejects the null hypothesis and accepts the alternative hypothesis. The reason might be due to the fact that strategic leaders foster a cooperative environment that encourages open communication, knowledge sharing, and collaboration among subordinate which enable teller attendants to work together more effectively, and ultimately enhancing overall performance.

5.0 Conclusion and Recommendations

The overall aim of this study is to examine the effect of leadership styles on the performance of employees of deposit money banks in Minna Metropolis, Niger State, Nigeria. The study concluded that transactional leadership style, transformational leadership style and strategic

leadership style have a positive and significant effect on the performance of employees of deposit money banks in Minna Metropolis, which indicates that all the three leadership styles play a critical role in shaping employees' performance and aligning leadership behaviours with job characteristics can yield optimal performance outcomes.

The following recommendations were therefore proffered: (i) Managers of deposit money banks should continue to employ and strengthen transactional leadership practices such as reward of good practice and punishment of unethical practices, as this style has proven effective in motivating employees, which in turn inspired them to perform tasks optimally in order to achieve organizational goals. (2) It also recommended that bank managers should adopt and strengthen transformational leadership style practices as the type of style that inspires both marketers and teller attendants to innovate, embrace change, and seek continuous improvement in service delivery. (3) Bank managers should also adopt strategic leadership style as the style empowers both teller attendants and marketers to make informed decisions by allowing them to adjust appropriately to dynamics of business environment, thereby meeting changing customer demands and increasing their professional growth.

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Negotiation Strategies and Dispute Resolution in Some Selected Federal Universities in South West Nigeria

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Abstract

Conflicts in Federal universities in Nigeria usually interfere with academic programmes. Negotiation tactics, especially competitive and collaborative ones, play an essential role in ensuring that such conflicts are minimised and relative stability ensured. Nevertheless, the fact that these disputes are still cropping up implies that the current strategies are ineffective. This paper assessed the effectiveness of competitive negotiation strategy on industrial strikes and influence of cooperative negotiation strategy on collective agreements in Federal Universities in South West, Nigeria. Descriptive survey and correlation research design was used. The target population was made up of 309 ASUU executives and university management of the six selected Federal Universities. The research was done with the use of self-designed questionnaires: Conflict Resolution Outcomes Questionnaire (CROQ), Collaborative Negotiation Strategy Questionnaire (CLNSQ) and Competitive Negotiation Strategy Questionnaire (CMNSQ). Out of the 198 questionnaires that had been returned, Pearson's Product Moment Correlation (PPMC) and multiple regression analysis were used to analyse the data at 0.05 significant levels. The findings indicated that there was a strong correlation between dispute resolution and negotiation strategies ($r = 0.460$, $p = 0.016 < 0.05$). A negative correlation was also found between competitive negotiation strategy and conflict resolution ($r = -0.410$, $p = 0.00 < 0.05$). There was also a high positive correlation between collaborative negotiation strategy and dispute resolution ($r = 0.786$, $p = 0.00 < 0.05$). The paper also found that moderate use of both approaches might facilitate conflict resolution, better relations, and more satisfactory results to all parties.

Key words: Competitive Negotiation strategies, Collaborative Negotiation strategies, Dispute Resolution and Negotiation Strategies.

1.0 Introduction

Institutional Managers must have the ability to understand negotiation skills and to deploy appropriate negotiation styles to extract the commitment of workers towards increased performance and should get themselves acquainted with the dynamics involved in negotiation (Akanbi et.al, 2019) For decades, Nigerian Federal Universities have been encountering challenges of poor funding, inadequate infrastructure, obsolete educational system, dilapidated structures and equipment, and brain drain and successive governments have not been able to proffer solutions to these problems. A harmonious workplace that ensures workers' aspirations are considerably satisfied and employers' expectations are equally met is very paramount for industrial harmony. This is because both principal actors in the workplace will work hard in ensuring the vision of the organisation is pursued with utmost dexterity, a kind of partnership in progress (Adebayo, 2020). In other words, as workers are motivated, their morale and sense of commitment to the organisation will increase. The employer-employee relationships play a significant role in the achievement of Organisational goals. Industrial and labour unrest portends great concern to organisation in particular and the nation at large due to its effects on

employees 'productivity. Strike actions which are the ultimate forms of dissent between employers and employees adversely affect productivity (Haung & Cai, 2022; Ogundele & Oyewole, 2020).

According to Osodeke (2024), public university system might collapse soon if the Government fails to wake up to the task of revitalizing the university system. Quoting Osodeke, the Punch in its editorial (9th October, 2024) whereas the Government provides N15 Million for electricity to the Federal Universities, some, like University of Lagos (UNILAG), spend in excess of N200 Million for the purpose. According to the editorial, the Federal Universities are facing another looming shutdown if ASUU carried out its threat to embark on strike. A University is effective if it successfully meets the needs and expectation of its numerous stakeholders. If the institution consistently achieves a higher output from its existing staff by reducing the average number of days the numerous teaching and research facilities remained idle or increasing the number of lecturer –student contact hours per semester, we can safely conclude that the institution is efficient. (Ibrahim & Mohammed, 2017) According to Robbins and Judge, (2013), Successful dispute resolution will result in the creation of a positive work environment, development of human strengths, foster vitality, and resilience, and unlock potentials of employees that will create hope and optimism which this study sought in negotiation between the Governments and Academic staff union of universities, (ASUU).

Competitive negotiations are often seen as distributive, win-lose situations where one party's gain corresponds to the other's loss, focusing on maximising individual outcomes with success dependent on strategies employed. Gelfand and Dyer (2019) and Bhatia et al. (2023) highlight that the competitive bargaining process revolves around dividing a fixed set of resources, where each party aims to secure more than half, leading to mutually exclusive goals and potential disputes. However, negotiators often fall into a fixed-pie bias, perceiving their interests as opposite to the other's (Abigail et al., 2018), resulting in egocentric behaviour and overlooking opportunities for mutually beneficial trade-offs (Ma et al., 2019). This false assumption of incompatibility in preferences can escalate disputes, as negotiators tend to rely on the simplicity of fixed-pie perceptions (Fleck et al., 2016). In contrast, successful collaborative negotiations hinge on three critical elements: trust, the willingness to share information, and the openness to asking specific questions (Parvaneh & Alireza, 2019; Olaniyan, 2020), which foster a more cooperative and productive dialogue.

The available literature, particularly in the academic setting, points to a serious lack of empirical research that can specifically explain the impact of negotiation strategies on dispute resolution. Many of the empirical studies reviewed relate to negotiation strategies, but none focus on public tertiary academic institutions. (Kowo and Vareckova, 2023, Bello, 2019). Furthermore, these studies are of foreign origin and given environmental, economic, legal and social differences, the results may not be consistent with the Nigerian situation. The few studies available in Nigeria, such as Umar, Tambuwal & Shehu (2022), focus only on secondary school teachers, while a study by Akomolafe (2018) only examines the impact of strike action on Nigerian university students. Oyinloye's (2017) study was also limited to the impact of underfunding on public secondary schools in Nigeria.

Another study conducted by Ali (2018) focused on evaluating the challenges of university education in Nigeria. To this end, it is evident that the relationship between negotiation strategies and dispute resolution in Nigerian universities has not received adequate research attention from the relevant existing studies. On this basis, this study strived to fill these gaps and therefore provided empirical evidence on the impact of negotiation strategies on dispute resolution in Nigerian universities, with a focus on Southwestern Nigeria.

Dispute that usually manifests by way of strikes, work stoppages, picketing, among others has caused loss of academic calendars, brain drain, among others. This paper addresses the internal dispute and the competitive and collaborative negotiation strategies adopted by the various unions and management members of the six Federal Universities sampled in South West Nigeria to tackle the menace and its impacts on resolution of the Labour disputes. This paper examines the impact of competitive and collaborative strategy on industrial strike and collective agreement in Federal Universities in South West Nigeria.

2.0 Conceptual Review

2.1 Negotiation Strategies

Negotiation, according to Schiff (2020) is defined as combination of different conflicting positions by agreement into a joint decision. Thus, negotiation process can be conceptualized as an offer-counter offer model, where two players alternate making offers sequentially. Each offer and response constitutes one round of bargaining, and the negotiation continues until an agreement is reached or a disagreement arises. Negotiations in industrial settings often involve trade unions aiming to secure improved pay and working conditions from hesitant management. While many companies now adopt more cooperative approaches, traditional confrontational methods still persist in numerous organisations (Ward & Halbert, 2024)). Negotiations typically feature competitive and confrontational dynamics between trade unions and managers (Gomez et.al. 2019).

Industrial negotiations are characterised by the overt exercise of power, threats, and a tendency to push boundaries (Gelfand & 2019, Ukhoke & Mercy, 2022), Employees' power often lies in their ability to go on strike, while

companies can retaliate by punishing individuals or forcing them to resign. However, the collective representation of a large workforce by trade unions empowers them, both in terms of their mandate and the potential impact of failed negotiations, such as resorting to strikes or strict adherence to work rules (Kjellberg, 2019). This negotiation process aims to improve employee benefits and rights by leveraging collective strength (Kay & Skarlicki, 2020). It can range from daily workplace issues affecting specific sections of the workforce to broader negotiations on employment terms for the entire workforce. Commonly negotiated topics include pay raises, improved working conditions, and other agreed-upon matters.

There are various negotiation strategies but this paper focused on competitive and collaborative negotiation strategies.

2.1.1 Competitive Negotiation Strategy

The competitive negotiation strategy is sometimes called distributive, zero-sum, individualistic, or adversarial strategy (Bhatia et al, 2023, Schuster & Trötschel, 2022). It involves a competitive approach where the parties involved have opposing interests, and they try to maximise their gains while minimising their losses. (Bhatia et.al., 2023: Schuster & Trötschel, 2022). This type of negotiation is characterised by a fixed pie perception meaning that whatever one party gains, the other party loses. The primary goal of competitive negotiation is to maximise individual gains and obtain the most favourable outcome for oneself while minimizing concessions, a negotiation strategy where each party tries to maximise his/her own gain at the expense of the other party (Doellgast & Benassi, 2020). It focuses on winning at all costs. This type of negotiation is used when the parties have a fixed number of resources to divide such as in salary negotiations or in purchasing negotiations.

According to Abigail et.al. (2018), competitive negotiation assumes that there is a fixed amount of resources to be divided, and the goal is to claim as much of that pie as possible. In the same direction,(Lewicki et al 2015) described competitive negotiation strategy as a negotiation approach where the negotiating parties seek to divide a limited resource or assets, such as money, property, or time, among themselves. This strategy is also known as a win-lose or zero-sum game, where the gains of one party come at the expense of the other. In a distributive negotiation, the parties tend to engage in positional bargaining, where they take extreme initial positions, make demands, and then make concessions until an agreement is reached (Lewicki et al., 2015).

2.1.2 Collaborative Negotiation Strategy

The collaborative negotiation strategy is sometimes called cooperative, accommodative, integrative, or problem solving (Abigail et.al. 2018)). It emphasises on identifying the parties' underlying interests or needs to develop broad range of potential solutions from which an agreement that will satisfy the parties can be fashioned (McGovern & Rubenstein, 2020). Collaborative or principled negotiation is an integrative approach to resolving conflicts that focuses on understanding and addressing the underlying interests and needs of all parties involved (Lewicki et.al., 2015). Rather than adopting a competitive or adversarial stance, collaborative negotiation seeks to find mutually beneficial solutions that satisfy the concerns of all stakeholders. It is known as interest-based negotiation (IBN) because it is a conflict resolution strategy that focuses on identifying and addressing the underlying interests and needs of each party involved in the dispute (Stoeckli & Tanner, 2014). Negotiators try to understand the motivations and concerns of each party to find mutually beneficial solutions that satisfy everyone's interests. This approach contrasts with positional bargaining, in which negotiators take fixed and often opposing positions and make concessions to reach a compromise.

2.2 Dispute Resolution

Dispute resolution is the process of identifying, addressing, and resolving disagreements or conflicts among two or more people or groups. (Akinwumi et.al, 2019; Onyene, 2019). This paper examines the dispute between Labour (represented by (ASUU) and Management

(represented by Management members of the universities). Dispute resolution can be thought of as the methods and processes involved in facilitating peaceful ending of disagreements. Jeong (2019) and Osamoh (2023) are of the opinion that dispute can be handled in a non-adversarial manner that is devoid of threats, coercion, taking into consideration the interests of all the parties involved. This according to the researchers will lead to an enduring, mutually satisfactory negotiated agreement.

Jeong (2019) however distinguishes between resolution strategies and settlement process. He opined that in a settlement process, compromises can be achieved without satisfactorily removing deeply contentious issues or without meticulously examining the real sources of grievances. In these instances, he opined, dispute can reoccur in future over the same issue. Jeong warned against the imposition of settlement terms by coercion as this can only result in temporary solution and the agreement will surely be repudiated in future.

Agashe (2021) similarly made a contribution to two competing paradigm namely dispute 'management and resolution.' Agashe submitted that although the two concepts are mutually exclusive, both concepts are Siamese twins that go hand in hand and one cannot be adopted without making use of the other. The resolution is however said to be more broad-based and much more idealistic because it centers on the belief that the dispute issue can be eliminated and there is a possibility of reaching a mutually satisfactory agreement over the fundamental issue that divides the parties. The resolutionists, therefore, tackle the source of the dispute. They deal with the issues rather than the actors in the belief that mutually satisfactory agreement is possible. Therefore, the resolution approach has a greater chance of succeeding and sustaining itself.

2.3 Collective Agreement

A collective bargaining agreement is a documented contract negotiated by a union on behalf of employees with the management of a company, governing the terms and conditions of employment (Kowo & Vareckova, 2023). This encompasses aspects like wages, benefits, duties of employees, responsibilities of the employer, and typically includes provisions for resolving disputes. A collective agreement is a written pact between an employer and a union, detailing aspects of employment terms for workers within a specific group (Asamu et.al., 2023).

These terms are sorted out through collective bargaining between the employer and the union (Kowo & Verackova, 2023). The agreement typically covers wage rates, benefits, terms of employment such as job postings, obligations of the employer, employee, and the union, and a process for resolving disputes through grievance procedures and arbitration.

2.4 Industrial Strike

Strike is the stoppage of work caused by the mass refusal of employees to work in response to their grievances against the employer. Amadi, (2015). It is sometimes used to mount pressure on management/ Government to change anti-labour policies at Federal Universities. The right to strike as a form of dispute settlement mechanism is a necessary corollary to collective bargaining and is resorted to when parties have reached a deadlock in their negotiations. The right to strike is an indispensable component of a democratic society and has been 'justified as a countervailing force to the power of capital'. It is an ultimate weapon in persuading the other party to bargain (Ogbole, 2019). Strikes occur due to a failure in the process of fixing working conditions through collective bargaining.

The right to strike as a form of dispute resolution mechanism is a necessary corollary to collective bargaining (Morenikeji, 2023) and is resorted to when parties have reached a deadlock in their negotiations. The rights to strike are an indispensable component of a democratic society and have been 'justified as a countervailing force to the power of capital'. It is an ultimate weapon in persuading the other party to bargain (Ogbole, 2019). Strikes occur due to a failure in the process of fixing working conditions through voluntary collective bargaining.

Morenikeji (2023) is of the opinion that management of strike in Nigeria requires the attention of the government, educational managers, academic and non-academic staff, as well as other relevant stakeholders. This, according to them will ease the planning of academic and non-academic activities. Prolonged strike poses the challenge of re-planning educational activities, re-preparing the school calendar, re-assigning old task to new staff and not achieving certain long term goals due to the non-accomplishment as a result of the strike. Strike according to the researchers is an event that consumes and waste a lot of time which implies that urgent attention is needed to solve this problem.

2.5 Theoretical Review: Integrative Theory

Integrative theory frames negotiations as interactions with the potential for win-win outcomes. This theory suggests methods to create value by expanding the available resources so that there is more to distribute between the parties involved in the negotiation process. Integrative theory relies on objective criteria, strives to establish conditions of mutual gain, and underscores the importance of information exchange and group problem-solving (Lewicki et al., 2015). As integrative approaches focus on problem-solving, cooperation, joint decision-making, and mutual benefits, participants are encouraged to collaborate to develop solutions that benefit all parties. This involves uncovering interests, generating options, and seeking common ground between the negotiating parties. The success of integrative negotiation hinges on the sincerity and willingness of the parties to trust each other.

The integrative negotiation strategy is hereby recommended as a more appropriate theory for negotiating parties because of its prescription of value creation, joint decision making, information exchange among the parties, problem solving among others.

2.6 Empirical Review

Kowo and Lubica (2023) postulated that the increasing demand for better working conditions of workers in Nigeria has resulted in conflicts between unions and management. The study analysed the influence of collective bargaining strategies on conflict management in Nigerian organisations. The objectives of the study were to determine the effect that negotiations on third party interventions in an organisation and also to examine the effect of joint consultations on relationships between Labour and management. For the purpose of this study primary data was used. Ex-post facto method was employed. While Yaro formula was adopted to determine the sample size. A sample size of one hundred and sixty-five (165) employees out of the two hundred and eighty (280) employees was employed. Data was analysed using manual and electronic based methods through the data preparation grid and statistical package for the social sciences, (SPSS). Linear regression analysis method which also makes use of ANOVA was employed to test the two hypotheses. The findings of hypothesis one shows a significance level below 0.01 which indicate a statistical confidence of above 99%. This implies that negotiations and collective bargaining have effect on emerging third party intervention. The findings and result in hypothesis two show that reconciliation significantly affects joint consultation in collective bargaining.

Thus, the study recommends that employers association should continue to play their role in ensuring they improve the working conditions of employees and also play their participatory and supporting role as regards issues relating to collective bargaining and conflict management in their various organizations. It also recommends that employees must carefully understand the implication of every action they take in the organization and be careful when negotiating the terms and conditions of their work and issues relating to their working condition.

Longe (2019) investigated the impact of workplace dispute management on organizational performance in a Nigerian manufacturing firm, using data from 250 employees selected through stratified random sampling. The questionnaires were validated through structured instruments and analysed using descriptive and inferential statistics. Spearman correlation analysis indicated a positive correlation between organizational performance and dispute management strategies such as collective bargaining, compromise, and accommodation. The study recommends that manufacturing firms adopt comprehensive dispute management strategies and establish dedicated conflict resolution teams to enhance organizational performance.

Achot and Kithimii (2021) investigated the impact of disputes, focusing on Jonglei State in South Sudan. The study aimed to examine the relationship between disputes and dispute resolution, assess the indicators of disputes' effects, and explore the link between dispute resolution and organizational performance. Using a descriptive case study design with both qualitative and quantitative methods, the researchers sampled 55 respondents from a population of 182 using purposive and simple random sampling. Data were analyzed using SPSS (version 20.0). The study found a significant positive correlation between the effects of disputes and organizational performance ($r = 0.632$, $P < 0.01$), as well as between dispute resolution and organizational performance ($r = 0.512$, $P < 0.01$). These variables explained 59% of the variance in organizational performance. The study recommends that organizations prioritize effective dispute resolution mechanisms and provide training in conflict management to improve organizational performance.

Tumwebaze et al. (2020) conducted a study to investigate the impact of negotiation as a dispute resolution strategy on employee performance, using Kampala Capital City Authority (KCCA) as a case study. The researchers employed a cross-sectional research design, using a simple random sampling technique to select 222 technical staff as the sample size. The findings indicated that both the level of negotiations (average mean = 4.15, Std = 0.618) and employee performance (overall average mean = 4.04, Std = 0.602) were satisfactory, suggesting a positive work environment. A regression analysis revealed that negotiation could explain 7.9% of the variance in employee performance (Adjusted $R^2 = 0.079$, $p = 0.00$). Consequently, the null hypothesis, which stated that negotiation does not have a significant effect on employee performance at KCCA, was rejected. The study recommends integrating negotiation strategies into organizational culture and providing regular negotiation training to improve employee performance.

Mbogo, Wario, and Trawo (2019) identified the impact of negotiation strategies on the performance of commercial banks in Kenya. Given the existing global environmental dynamics affecting the financial sector, the study highlighted that the industry is transitioning to meet the needs of its customers. The results showed that negotiation

strategies had a significant positive impact on the performance of Kenya's commercial banks. The study recommends that commercial banks refine and adopt effective negotiation strategies to improve customer relations and operational performance.

3.0 Methodology

3.1 Research Design

The study adopted the descriptive cross sectional research design. The population of this study is three hundred and nine (309) consisting of present and past ASUU executives and Management members of the six selected Federal Universities namely University of Lagos (UNILAG), Federal University of Agriculture, Abeokuta, (FUNAAB), Federal University, Oye-Ekiti (FUOYE), Federal University of Technology, Akure (FUTA), University of Ibadan (UI), and Obafemi Awolowo University, (OAU), Ile-Ife in Southwest Nigeria. The selected universities are those that are owned by federal governments in southwest, Nigeria. The assumption behind these selections is that some degree of age of the Universities and hence the entrenchment of ASUU in the various universities for such length of time. The study used Slovin's (1963) formula to determine the sample size with a 5% significance level. A total sample of 209 participants from the six federal universities were selected, including 149 ASUU executives and 60 Ex Officio members. The sampling technique deployed for the study is the simple random sampling. This is because all samples have homogeneous characteristics and emanate from federal universities.

3.2 Data Collection

The data collection instruments for the study comprised of Conflict Resolution outcomes Questionnaire (CROQ) by Magdalene (2016), Collaborative Negotiation Strategy Questionnaire (CLNSQ) by Morrison and Vaandering (2018) and Competitive Negotiation by Lewicki, Barry, and Saunders (2016). A pilot survey was conducted to pre-test the questionnaire, allowing for correction of errors and improvement of clarity, comprehension, and relevance. Ten respondents participated, helping assess the instrument's reliability. Research hypotheses were tested using inferential statistics of Pearson's Product Moment Correlation (PPMC) statistic and multiple regression analysis at 0.05 significant levels.

3.3 Model Specification

The model can be represented as:

$$DRE = \beta_0 + \beta_1 CNS + \beta_2 CoNS + \varepsilon$$

Where:

DRE = Dispute Resolution Effectiveness; CNS = Competitive Negotiation Strategy

CoNS = Collaborative Negotiation Strategy; β_0 = Intercept term; ε = Error term

4.0 Results and Discussions

4.1 Test of Hypothesis One

Statement of Hypothesis One: Competitive negotiation strategy has no significant effect on industrial strikes in Federal Universities in South West Nigeria.

In order to test the hypothesis, Pearson's Product-Moment Correlation Analysis was conducted between Competitive negotiation and industrial strikes.

Table 1: Relationship between competitive Negotiation strategy and industrial strikes in Federal Universities in South West Nigeria

Variables	N	Mean	SD	r	Sig	Remark
Competitive strategy						
198	2.6364	- 0.427	-0.410	0.00	significant	
Industrial strikes						
198	4.0657	0.758				

Source: Authors' Field Survey (2025)

The result, as presented in Table 1, indicates that there exists a weak, negative and significant relationship between competitive negotiation strategy and conflict resolution ($r = -0.410$, $p = 0.00 < 0.05$). The implication of this is that there is negative relationship of competitive negotiation strategy and industrial strikes in South West, Nigeria. This means that the competitive negotiation strategy can influence industrial strikes in Nigerian Federal Universities in a negative way.

Hence, the null hypothesis which states that competitive negotiation strategy has no significant influence on industrial strikes in Nigerian Federal Universities is rejected. The findings align with Kowo & Lubica (2023) and Achot & Kithimii (2021). Kowo & Lubica highlights the challenges of enforcing agreements in conflict resolution, reflected in the negative impact of competitive negotiation on industrial strikes. Achot and Kithimii emphasize the positive effects of dispute resolution on performance, supporting the recommendation for collaborative strategies to improve conflict resolution and organizational outcomes.

4.2 Test of Hypothesis Two

Statement of Hypothesis Two: there is no relationship between collaborative negotiation strategy and collective agreement in Federal Universities in South West Nigeria.

The results are presented in Table 2.

Table 2: Relationship between collaborative negotiation strategy and collective agreement

Variables	N	Mean	SD	r	Sig	Remark
Collaborative negotiation						
198	3.8384	1.331	0.786	0.000	Significant	
Collective agreement						
198	4.0657	1.310				

Sources: Authors' Field Survey (2025)

Table 2 shows that there is a strong, positive and significant relationship between collaborative negotiation strategy and dispute resolution in Federal Universities in South West, Nigeria ($r = 0.786$, $p = 0.00 < 0.05$). This implies that collaborative negotiation strategy has significant relationship with collective agreement. Therefore, the hypothesis which states that there is no relationship between collaborative negotiation strategy and collective agreement in Nigeria Public University is rejected. The study aligns with Kowo & Lubica, 2023 emphasized enforcing dispute resolution is a challenge in Nigerian universities. Achot and Kithimii (2021) support the positive impact of dispute resolution on performance, as seen in the current study. Longe (2019) highlight the importance of integrating negotiation strategies, reinforcing the recommendation for collaborative approaches.

The first hypothesis investigated whether or not competitive negotiation strategy has significant effect on industrial action at Federal Universities in South West Nigeria. The result of the test

performed indicates that there exists a negative and significant relationship between competitive negotiation strategy and dispute resolution. ($r = -0.410$, $p = 0.00 < 0.05$).

The implication of this is that there is negative relationship between competitive negotiation strategy and Dispute resolution. This means that the competitive negotiation strategy can influence industrial action at Federal Universities in South West Nigeria in a negative way. The study aligns with Lewicki et al. (2016) in finding that competitive negotiation strategy is significantly associated with Dispute resolution. Similarly, Sondern et al. (2023) demonstrate a direct connection between competitive negotiation strategy and dispute resolution. Supporting this, Huang and Cai (2022) identify competitive negotiation strategy as a key factor in resolving disputes. Hunsaker et al. (2022) also confirm that competitive negotiation strategy exerts significant impact on dispute resolution. Consistent with earlier research, Sondern et al. (2023) assert that competitive negotiation strategy is a strong predictor of dispute resolution. Additionally, Bendersky and Brockner (2020) reaffirm the direct link between competitive negotiation strategy and Dispute resolution.

The implication of these findings is that competitive negotiation strategies play a crucial role in effectively resolving disputes. The consistent association between competitive negotiation and dispute resolution across multiple studies suggests that in situations where assertiveness and a focus on maximizing one's own outcomes are necessary, competitive strategies can lead to successful resolution. This insight may inform how organisations, negotiators, and individuals approach conflict situations, particularly in contexts where interests are strongly opposed or where a decisive outcome is required. However, the potential for strained relationships should be considered, and the use of competitive strategies should be balanced with other approaches depending on the context and desired long-term outcomes.

Research hypothesis two examined the effect of collaborative negotiation strategy on collective agreements at Federal Universities in South West Nigeria. The result of the test performed indicates that there is a strong, positive and significant relationship between collaborative negotiation strategy and Disputes resolution at Federal Universities in South West Nigeria ($r = 0.786$, $p = 0.00 < 0.05$). This implies that collaborative negotiation strategy affect collective agreements resolution. This study aligns with Ogbole (2019), who found that collaborative negotiation strategy has a positive and significant effect on collective agreement. Similarly, Häusser et al. (2022) demonstrate that collaborative negotiation strategy significantly influences collective agreement. Lewicki, Saunders, and Barry (2015) also validate the positive and significant impact of collaborative negotiation strategy on negotiation outcomes. In addition, Ionescu (2020) confirms that collaborative negotiation strategy is a strong predictor of successful resolution outcomes. Osunsan (2020) likewise attests to the positive and significant association between collaborative negotiation strategy and Dispute resolution outcomes.

The implication of this finding is that adopting a collaborative negotiation strategy is crucial for achieving successful Dispute resolution outcomes. The consistent evidence across multiple studies suggests that organisations, mediators, and individuals involved in Dispute resolution should prioritise collaborative approaches to negotiation. By focusing on mutual interests, fostering open communication, and working towards win-win solutions, parties are more likely to resolve Disputes effectively and build long-term, positive relationships. This insight could guide training programs, negotiation tactics, and policy development aimed at improving Dispute management practices.

5.0 Conclusion and Recommendations

5.1 Conclusion

The study investigated the effects of negotiation strategies on dispute resolution in Federal Universities in Southwest, Nigeria. Negotiation strategies were evaluated through competitive negotiation strategy, collaborative negotiation strategy, while dispute resolution were assessed through the effects of the strategies on strikes and collective agreements. The results demonstrated that negotiation strategies have effects on dispute resolutions. The study found that collaborative strategy has positive effect while competitive strategy is negative but both of the strategies significantly influence dispute resolution. This indicates that employing either of these strategies will affect dispute resolution.

5.2 Recommendations

Based on the findings of the study, the following recommendations are made for union leaders and Management members in the Federal Universities in South West, Nigeria.

Leaders of ASUU, Management members and the Government strategists should apply competitive approaches in situations where clear outcomes are critical with caution and must ensure they are balanced with other strategies to prevent potential negative impacts on relationships.

Union leaders, Management members and the Government strategists should encourage a culture of collaboration within negotiations. Promoting mutual understanding and joint problem-solving can enhance conflict resolution and help maintain long-term positive relationships.

Implementing these recommendations can enhance the effectiveness of dispute resolution efforts and improve relationships within the universities

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Impact of Inflation and Exchange Rate Volatility on MSME Growth and Survival in Nigeria

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Abstract

Micro, small, and medium-sized enterprises (MSMEs) are central to Nigeria's employment creation and economic diversification, yet their growth and survival remain constrained by macroeconomic instability. This paper investigates the effects of inflation, interest rates, exchange rate volatility and other associated variables on MSME growth between 1991 and 2024 using the Autoregressive Distributed Lagged (ARDL) approach. The results show that inflation has significant lagged effects: the previous year's inflation reduces MSME growth (-0.463 ; $p = 0.003$), while later lags turning positive, suggesting delayed adjustments. Interest rate dynamics are mixed, with a positive first lag (0.783 ; $p = 0.046$) but a negative second lag (-0.630 ; $p = 0.027$). Exchange rate volatility exerts the strongest impact, with contemporaneous depreciation initially boosting competitiveness (0.515 ; $p = 0.005$), but prolonged depreciation reducing growth (-0.661 ; $p = 0.003$). Credit to MSMEs yields delayed benefits, with the second lag positive (0.238 ; $p = 0.008$). Government support is negative in the short run (-0.503 ; $p = 0.012$) but becomes positive in later lags, indicating that consistent application matters. The model demonstrates strong explanatory power ($R^2 = 0.981$; adjusted $R^2 = 0.889$), while the error correction term (-1.49 ; $p < 0.01$) confirms rapid adjustment to equilibrium. Overall, the findings confirm that macroeconomic instability undermines MSME resilience, while credit and sustained government interventions have positive long-run effects. The paper recommends, amongst others, stabilizing inflation and exchange rates, and incentivizing local input substitution to ensure MSMEs thrive as engines of inclusive growth in Nigeria.

Keywords: MSMEs, Inflation, Exchange Rate, ARDL Model, Credit Access
Jell Code: L26, E31, F31, C32, O16

1.0 Introduction

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in Nigeria's economic growth by generating employment, fostering innovation, and alleviating poverty. However, these enterprises face significant challenges that threaten their growth and survival, particularly in the face of macroeconomic instability. Over recent decades, Nigeria has experienced persistent inflation and exchange rate volatility, both of which have created a difficult environment for MSMEs (Sikiru & Salisu, 2025). Inflation raises the cost of goods and services and erodes consumers' purchasing power, while exchange rate fluctuations increase the cost of imported raw materials and equipment that many MSMEs depend on (Sanyal & Ehlen, 2025; Olusola et al., 2022). These economic conditions disrupt business planning, reduce profitability, and increase uncertainty for MSME operators.

Despite their importance, many MSMEs struggle to remain viable due to insufficient access to credit, high input costs, and the inability to hedge against exchange rate risks. Data from the Central Bank of Nigeria (CBN) between 1991 and 2024 further reveals a complex pattern: while credit to MSMEs fluctuated widely, peaking at ₦123.93 billion in 2019, MSME growth did not consistently respond to credit expansion. For instance, even during years of high credit availability such as 2019, MSME growth dropped to a historic low of -23.3% , underscoring that credit alone is insufficient without a stable macroeconomic environment. Conversely, periods of improved growth, such as in 2023 (48.7%), were also marked by more favorable

credit conditions (₦94.46 billion), suggesting that credit may support MSME expansion when paired with sound macroeconomic and institutional policies.

This dynamic is visually illustrated in Figure 1, which plots MSME growth alongside credit allocation over time. The graph highlights the lack of a direct or linear relationship between credit and growth and emphasizes the role of inflation, exchange rate volatility, and institutional support in mediating this relationship.

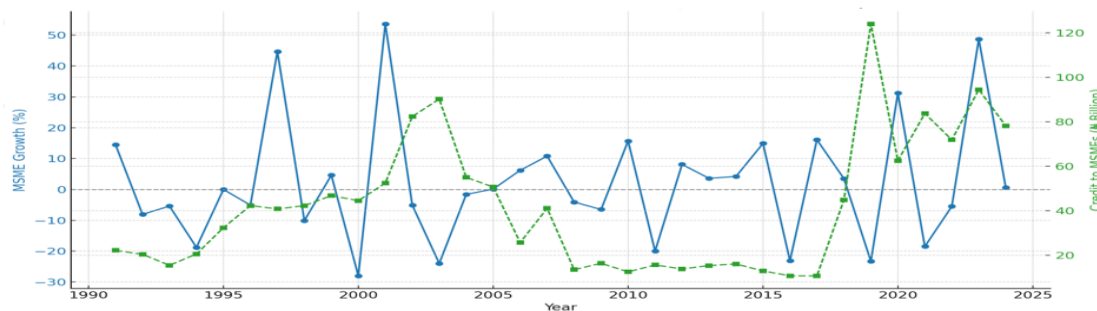


Figure 1: MSME Growth and Credit to MSMEs in Nigeria (1991–2024)

Source: CBN Statistical Bulletin and Annual Reports, 1991-2024

This trend emphasizes the need to examine how macroeconomic factors, particularly inflation and exchange rate volatility, interact with credit access to influence MSME outcomes. While existing studies have examined the effects of inflation or exchange rate fluctuations on small business growth, they often do so in isolation, without considering the combined or interactive effects of these variables. Additionally, most prior research tends to emphasize growth metrics such as output or contribution to GDP, with relatively little focus on the survival and long-term sustainability of MSMEs in volatile economic environments.

Furthermore, much of the available literature emphasizes the manufacturing sector or uses broad SME classifications, overlooking the sectoral diversity and specific vulnerabilities of MSMEs operating in Nigeria's trade, services, and agricultural sectors. Another critical gap is the limited reflection of recent macroeconomic shifts, including fuel subsidy removal, exchange rate unification, and post-2023 inflationary surges, that have reshaped the operational landscape for MSMEs in Nigeria. These gaps highlight the need for a more comprehensive and context-sensitive analysis.

This study seeks to fill these gaps by investigating how inflation and exchange rate volatility influence the growth and survival of MSMEs in Nigeria. It aims to analyze their effects on operational costs and profitability, understand the coping strategies adopted by businesses, and provide recommendations that could enhance MSME resilience. Understanding these dynamics is essential for the formulation of sound economic policies that support MSME development. The insights gained will not only contribute to academic research but also assist policymakers, entrepreneurs, and business support organizations in navigating the macroeconomic challenges faced by MSMEs. This study focuses on MSMEs across various sectors in Nigeria and considers recent economic trends to reflect the current realities faced by these businesses.

The remainder of this paper is organized as follows: Section 2 reviews the theoretical framework and relevant empirical literature underpinning the study. Section 3 describes the data sources, variables, and econometric methodology employed. Section 4 presents and interprets the empirical results, while Section 5 discusses the findings, draws conclusions, offers policy recommendations, and suggests directions for future research.

2.0 Literature Review

2.1 Conceptual Review

In Nigeria, MSMEs are defined by SMEDAN as firms employing fewer than 200 workers with asset values not exceeding ₦500 million (Ebitu, Basil, & Ufot, 2016). They are widely recognized as engines of employment generation and innovation, yet their growth and survival rates are undermined by persistent macroeconomic instability. Conceptually, MSME growth may be reflected in expanded sales, output, and employment, while survival denotes the ability to remain operational over time despite economic shocks.

2.2 Theoretical Review

Micro, Small, and Medium Enterprises (MSMEs) often exhibit heightened susceptibility to macroeconomic instability owing to their limited financial capacity, dependence on external inputs, and restricted access to institutional support. To understand how inflation and exchange rate volatility affect the growth and survival of MSMEs in Nigeria, this study draws on several pertinent economic theories. These theories provide the conceptual foundation for analyzing the direction and magnitude of the relationship between macroeconomic variables and MSME growth.

2.2.1 Monetary Theory of Inflation

Proposed by Milton Friedman (Monetarist School), this theory posits that inflation is fundamentally a monetary phenomenon, resulting from excessive growth in the money supply relative to output. High inflation erodes the real value of money, increases input prices, and reduces consumer purchasing power (Friedman, 1970). For MSMEs, these effects lead to rising production costs, shrinking profit margins, and reduced demand, all of which threaten their ability to survive and grow. This theory underpins the assumption that inflation negatively impacts MSME growth by increasing operational costs and reducing disposable income among consumers.

2.2.2 Purchasing Power Parity (PPP) Theory

Proposed by Gustav Cassel (1918), the PPP theory suggests that exchange rates adjust to equalize the purchasing power of different currencies. When inflation is higher in one country than in another, its currency tends to depreciate, causing exchange rate volatility (Officer, 1976; Wane, Resende, and Xie, 2025). In Nigeria, such volatility significantly affects MSMEs that rely on imported raw materials, equipment, or services, leading to increased costs and pricing instability. PPP supports the argument that exchange rate volatility, driven by inflation differentials, negatively influences MSME sustainability by raising the cost of foreign inputs and increasing uncertainty in pricing and planning.

2.2.3 Uncertainty and Investment Theory

Proposed by Bernanke (1983) and Dixit and Pindyck (1994), this theory argues that economic uncertainty, particularly from inflation and exchange rate fluctuations, discourages investment by increasing risk and reducing expected returns. For MSMEs with limited capital and risk buffers, this uncertainty can delay investment decisions, hinder expansion, or force operational downsizing. This theory explains how inflation and exchange rate volatility create a climate of uncertainty, which reduces MSMEs' willingness and ability to invest or expand operations (Udoh & Egwaikhide, 2010).

2.2.4 Institutional Theory

This theory focuses on the role of institutions, government policies, and support systems in shaping business environments. This theory emphasizes how institutional frameworks, including credit availability and government support programs, influence business outcomes (Barbar, 2025). In the Nigerian context, institutions like the Central Bank, SMEDAN, and the Bank of Industry play a crucial role in cushioning MSMEs against macroeconomic shocks. Institutional theory supports the inclusion of credit to MSMEs and government support as moderating variables that can reduce the adverse effects of inflation and exchange rate volatility on MSME growth.

These theories jointly establish a framework for examining how macroeconomic instability; specifically, inflation and exchange rate volatility, impacts the growth and survival of MSMEs. While the Monetary Theory of Inflation and PPP help explain the direct impact of macroeconomic conditions, the Uncertainty and Investment Theory accounts for behavioral responses by firms, and Institutional Theory underscores the significance of structural support structures in alleviating these effects.

2.3 Empirical Literature

Numerous empirical studies have explored the influence of macroeconomic instability, particularly inflation and exchange rate volatility, on the growth and sustainability of Micro, Small, and Medium Enterprises (MSMEs).

Chiani (2022) investigated the impact of inflation on SME growth in Tehran, Iran, using responses from 384 participants and regression analysis via SPSS. The findings revealed that rising inflation undermines MSME development by eroding purchasing power and increasing labor costs, thereby reducing profitability. Although based in Iran, this study is relevant for Nigeria as both countries grapple with inflation-driven constraints on small businesses. In the Nigerian context, Obiukwu and Adurogoye (2024) examined how inflation, interest rates, and exchange rate fluctuations affected SME growth between 2013 and 2024. Using linear regression and Pearson correlation, their study found that exchange rate volatility had a strong impact on SME output ($R^2 = 0.689$), primarily through its effect on input costs and purchasing power. Inflation was also negatively correlated with SME growth ($r = -0.142$), indicating that rising consumer prices weaken operational sustainability. The authors called for a balanced macroeconomic policy that prioritizes MSME resilience. Similarly, Olabisi and Akeju (2024) employed the ARDL model and GARCH(1,1) to evaluate the effects of inflation and exchange rate volatility on Nigeria's economic growth from 1985 to 2022. Their results showed that both inflation and exchange rate volatility adversely affected economic growth. Although the study's focus was on aggregate growth, the findings hold implications for MSMEs, which are more vulnerable to these macroeconomic shocks due to limited capital buffers.

Begum and Goyal (2023) assessed the relationship between inflation and MSME growth in India using trend analysis, correlation, and multiple regression. The correlation between inflation and MSME growth was weakly negative (-0.08), yet regression results showed that inflation significantly reduces economic output. While contextually different, this study provides a comparative benchmark and reinforces the need for inflation control to support MSME survival. Onakoya, Oladejo, and Adedapo (2024) focused on Nigeria and analyzed secondary data from 2001 to 2022. Using OLS and Error Correction Models, they found that inflation had a negative effect on SME funding, while interest rates had a positive impact. Exchange rate fluctuations showed no statistically significant effect on funding. The authors advocated for targeted monetary policies that prioritize low-interest funding channels for MSMEs. In contrast, Ebinum and Ehiedu (2025) examined the relationship between inflation

and SME growth in Nigeria using multiple inflation indicators; CPI, PPI, CIR, and WPI—within an ARDL framework. Surprisingly, the study found no significant impact of inflation on SME growth in both the short and long run. This suggests that inflation alone may not be a sufficient explanatory variable for MSME growth unless assessed alongside other structural and institutional factors.

Obiekwe and Edokobi (2025) provided a micro-level perspective by analyzing data from 450 MSME operators in Southeast Nigeria. Their OLS regression results indicated that GDP growth had a strong positive effect on MSME growth, while inflation, exchange rate depreciation, and high-interest rates had significant negative effects. Notably, government debt and inconsistent monetary policy further worsened business survival rates, highlighting the importance of macroeconomic stability for long-term sustainability.

Finally, Oyedepo, Rasaki, and Addo (2023) applied an ARDL approach to assess exchange rate fluctuations and their impact on Nigeria's manufacturing sector, which includes many MSMEs. Their findings confirmed that exchange rate volatility and import dependence negatively affected output, while capacity utilization improved growth. The authors recommended policies that stabilize exchange rates and promote domestic sourcing of raw materials.

While reviewed literature have explored the effects of inflation and exchange rate volatility on SME growth in Nigeria, most assess these variables independently. This limits understanding of their combined influence, especially under concurrent economic shocks. Further, prior research largely focuses on MSME growth, with limited attention to survival, particularly how prolonged inflation and exchange rate instability affect business continuity. Studies also tend to generalize across sectors, often prioritizing manufacturing, thereby overlooking the varied impacts on trade, services, and agriculture.

Notably, recent macroeconomic reforms in Nigeria; such as exchange rate unification and fuel subsidy removal, have intensified inflationary pressures and currency volatility. However, their implications for MSMEs remain underexplored. This study addresses these gaps by examining the joint impact of inflation and exchange rate volatility on MSME growth and survival in Nigeria, with emphasis on recent policy shifts and sectoral variation.

3.0 Methodology

3.1 Research Design

This study employs a quantitative research design utilizing time series econometric techniques to examine the impact of macroeconomic instability; specifically, inflation, interest rates, and exchange rate volatility, on the growth and survival of MSMEs in Nigeria. It also analyses how credit to MSMEs and government support influence or moderate these effects.

The empirical focus encompasses the years 1991 to 2024, facilitating an assessment of long-term structural trends, policy impacts, and recent economic shocks (e.g., exchange rate unification and subsidy removal). The study highlights the responses of MSMEs to macroeconomic fluctuations and institutional support within a volatile economic environment.

3.2 Data Sources and Variables

The study utilizes annual time series data sourced from reputable national and international sources such as the Central Bank of Nigeria (CBN) and the World Bank.

Table 1: Description of Variables, Proxies, Data Sources, and Expected Effects

Variable	Proxy / Source	Expected Effect	Type
MSME Growth	MSME Percentage contribution to GDP (CBN)	—	Dependent Variable
Inflation	Consumer price index annual % (CBN/World Bank)	Negative (–)	Independent Variable
Interest Rate	Monetary policy rate (World Bank)	Negative (–)	Independent Variable
Exchange Rate	NGN/USD annual average (World Bank)	Negative (–)	Independent Variable
Credit to MSMEs	Reports on sectoral credit (CBN)	Positive (+)	Independent Variable
Government Support	Credit to private sector (CBN)	Positive (+)	Independent Variable

The dependent variable (MSME growth) is proxied by MSME contribution to GDP, as reported by the NBS. The independent variables represent both macroeconomic instability (inflation, interest rate, exchange rate) and support mechanisms (credit access and government support).

3.3 Model Specification

The functional relationship is specified as follows:

$$MSMEG_t = f(INF_t, IR_t, EXCR_t, CREDIT_t, GOVSUP_t) \quad (1)$$

The econometrics form of the Equation is:

$$MSMEG_t = \beta_0 + \beta_1 INF_t + \beta_2 IR_t + \beta_3 EXCR_t + \beta_4 CREDIT_t + \beta_5 GOVSUP_t + \varepsilon_t \quad (2)$$

Where:

- $MSMEG_t$: MSME contribution to GDP at time t
- INF_t : Inflation rate at time t
- IR_t : Interest rate (CBN policy rate) at time t
- $EXCR_t$: Exchange rate (NGN/USD) at time t
- $CREDIT_t$: Credit to MSMEs at time t
- $GOVSUP_t$: Government support (credit to private sector as % of GDP) at time t
- ε_t : Error term

To ensure linearity, normalize scale differences, and stabilize variance across observations, all continuous variables; MSME growth, inflation, interest rate, exchange rate, credit, and government support, were transformed using their natural logarithms. This also allows for coefficient interpretation in terms of elasticities, providing a more intuitive understanding of the percentage change impact of each independent variable on MSME growth.

The equation will now turn to:

$$LMSMEG_t = \beta_0 + \beta_1 LINF_t + \beta_2 LIR_t + \beta_3 LEXCR_t + \beta_4 LCREDIT_t + \beta_5 LGOVSUP_t + \varepsilon_t \quad (3)$$

3.4 Estimation Strategy

The study uses the Autoregressive Distributed Lag (ARDL) bounds testing approach due to its suitability for small sample sizes and datasets with variables integrated at levels I(0) and I(1), but not I(2).

The steps include:

- Stationarity Tests: The Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979) and the Phillips-Perron (PP) test (Phillips & Perron, 1988) were used to determine the order of integration for all variables.
- Lag Selection: The optimal lag length was determined using the Akaike Information Criterion (Akaike, 1974).
- Bounds Testing for Cointegration: The ARDL bounds testing approach (Pesaran, Shin, & Smith, 2001) was applied to assess the existence of a long-run equilibrium relationship among the variables.
- Short-run and Long-run Dynamics: The ARDL model was estimated, incorporating an Error Correction Term (ECT) to capture short-run adjustments toward long-run equilibrium.
- Diagnostic and Stability Tests: A series of diagnostic tests were conducted to validate the model. These included the Breusch-Godfrey LM test for serial correlation (Breusch, 1978; Godfrey, 1978), the ARCH test for heteroskedasticity (Engle, 1982), the Jarque-Bera test for normality (Jarque & Bera, 1987), the Ramsey RESET test for functional form misspecification (Ramsey, 1969), and the CUSUM and CUSUM of Squares tests for stability (Brown, Durbin, & Evans, 1975).

3.5 ARDL Model Specification

This study adopts the Autoregressive Distributed Lag (ARDL) model to estimate both the short-run and long-run relationships between macroeconomic indicators, institutional support variables, and MSME growth in Nigeria. The ARDL framework is well-suited for this analysis due to its flexibility with mixed-order integration (I(0) and I(1)) and its reliability in small samples.

General ARDL Model:

$$\Delta LMSMEG_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta LMSMEG_{t-i} + \sum_{j=1}^q \gamma_j \Delta X_{t-j} + \lambda_1 LMSMEG_{t-1} + \lambda_2 X_{t-1} + \varepsilon_t \quad (4)$$

Where:

- Δ : denotes the first difference
- $LMSMEG_t$: Natural logarithm of MSMEG growth
- X_t : Vector of independent variables (e.g., Inflation, interest rate, exchange rate)
- ε_t : White-noise error term

Long-run coefficients are derived from the level variables $LMSME_t$ and X_{t-1} , while short-run dynamics are captured through the differenced terms $\Delta LMSME_t$ and ΔX_{t-j} .

Long-Run Model:

$$LMSMEG_t = \beta_0 + \beta_1 LINF_t + \beta_2 LIR_t + \beta_3 LEXCR_t + \beta_4 LCREDIT_t + \beta_5 LGOVSUP_t + \mu_t \quad (5)$$

Where:

- β_0 = Constant term
- β_1 to β_5 = Long-run coefficients
- μ_t = Error term

The long-run model assumes a steady relationship between dependent and independent variables.

Short-Run Model:

$$\Delta LMSMEG_t = \gamma_0 + \sum_{i=1}^p \gamma_i \Delta LMSMEG_{t-i} + \sum_{j=0}^q \delta_j \Delta X_{t-j} + \lambda ECM_{t-1} + \mu_t \quad (6)$$

Where:

Δ = First-difference operator (captures short-run changes)

ECM_{t-1} = Error correction term lagged one period

λ = Speed of adjustment coefficient (expected to be negative and significant)

ε_t = White-noise error term

3.6 Justification for ARDL Method

ARDL is chosen for this analysis due to its ability to handle different integration I (0) and I(1)), robustness in small samples (34 years), estimation of short-run effects and long-run relationships, and flexibility in interpreting individual variable contributions through interaction terms (e.g., credit $\times$ exchange rate).

4.0 Results and Interpretation

4.1 Descriptive Statistics

This section presents the descriptive statistics of the variables used in the analysis, including log-transformed values of MSME growth (LMSMEG), inflation (LINF), interest rate (LIR), exchange rate (LEXCR), credit to MSMEs (LCREDIT), and government support (LGOVSUP). These statistics help in understanding the distributional properties and underlying data behavior over the study period (1991–2024).

Table 2: Descriptive Statistics

	LMSMEG	LINF	LIR	LEXCR	LCREDIT	LGOVSUP
Mean	3.778184	2.716445	2.881981	4.744822	3.483956	7.891911
Median	3.781444	2.574858	2.867615	4.883398	3.712835	8.721238
Maximum	3.996364	4.288265	3.454738	7.299098	4.819717	10.10473
Minimum	3.566994	1.684545	2.442347	2.293493	2.374906	4.323554
Std. Dev.	0.137523	0.635071	0.206348	1.16214	0.734158	1.924298
Skewness	0.119952	0.892501	0.288257	-0.34766	0.026958	-0.46406
Kurtosis	1.707433	3.25336	3.72921	2.66899	1.684879	1.718864
Jarque-Bera	2.448403	4.604771	1.224162	0.84015	2.454305	3.545524
Probability	0.293992	0.10002	0.542221	0.656998	0.293126	0.169863
Sum	128.4582	92.35914	97.98734	161.324	118.4545	268.325
Sum Sq. Dev.	0.624115	13.30942	1.405117	44.56876	17.78659	122.1964
Observations	34	34	34	34	34	34

Source: Authors' calculations using Eviews 12, 2025

The log of MSME growth (LMSMEG) has a mean of 3.78 with a relatively low standard deviation (0.14), indicating stable MSME output growth over time. Its skewness (0.12) and kurtosis (1.71) suggest a symmetric and flat distribution, confirmed by a Jarque-Bera p-value of 0.29, indicating normality. Inflation (LINF) has a mean of 2.72 (approximately 15.2% in level terms), with moderate variation (std. dev. = 0.64). It is right-skewed and slightly leptokurtic, with a marginal deviation from normality (JB p = 0.10). Interest rates (LIR) are also relatively stable and normally distributed. The exchange rate (LEXCR) has the highest standard deviation (1.16), reflecting significant volatility in Nigeria's currency regime. It is slightly negatively skewed but remains normally distributed (JB p = 0.66). Credit to MSMEs

(LCREDIT) and government support (LGOVSUP) exhibit moderate to high variation. LGOVSUP shows the highest dispersion (std. dev. = 1.92), possibly due to shifting policy priorities or macroeconomic shocks. Both variables are platykurtic and reasonably symmetric, with no evidence of non-normality. Overall, the descriptive results show that all variables are reasonably normally distributed, justifying their inclusion in the ARDL estimation. The variance across the independent variables supports the examination of both short-run and long-run effects on MSME growth.

4.2 Unit Root Test

The unit root test is crucial for assessing the stationarity of a time series, as non-stationary data can lead to spurious regression outcomes (Granger & Newbold, 1974). This study employed the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979) and the Phillips-Perron (PP) test (Phillips & Perron, 1988) to examine whether the variables in the model are stationary or require differencing to avoid misleading inferences. The ADF test extends the Dickey-Fuller test by including lagged difference terms to address serial correlation, assuming the time series follows an autoregressive process. On the other hand, the PP test accounts for autocorrelation and heteroscedasticity in the error terms by using a non-parametric correction, making it robust against certain violations of classical assumptions.

Table 3 summarizes the ADF and PP test results for each variable in the model. The test statistics and p-values for both tests are presented, along with the conclusion regarding the stationarity of the series.

Table 3: Unit Root Test Results with Order of Integration

Variable	ADF Test Statistic	PP Test Statistic	Order of Integration	Stationarity
LMSMEG	-4.71	-6.65	I(0)	Stationary at level
LINF	-4.44	-5.60	I(1)	Stationary after first difference
LIR	-6.09	-6.28	I(1)	Stationary after first difference
LEXCR	-4.71	-4.69	I(1)	Stationary after first difference
LCREDIT	-5.85	-5.86	I(1)	Stationary after first difference
LGOVSUP	-4.94	-5.91	I(1)	Stationary after first difference

Source: Author's calculations using Eviews 12, 2025

The results of the stationarity tests in Table 3 highlight key time series characteristics of the variables analyzed. Inflation, interest rate, exchange rate, credit to MSMEs, and government support become stationary after first differencing, indicating they are integrated of order one (I(1)). In contrast, the size of the MSME sector (LMSMEG) is stationary at level, meaning it is integrated of order zero (I(0)).

Given the presence of both I(0) and I(1) variables, the Autoregressive Distributed Lag (ARDL) approach is appropriate for further analysis. ARDL is well-suited for models that include variables with different integration orders, as long as none are integrated of order two (I(2)). It also allows for the simultaneous estimation of short-run and long-run relationships among the variables.

4.4 Cointegration Testing

The ARDL bounds testing technique, as presented by Pesaran, Shin, and Smith (2001), was utilized to ascertain the presence of a long-run relationship among the variables in the model. This test is appropriate when variables are integrated at mixed orders of I(0) and I(1), as is the case in this study. The null hypothesis of the bounds test asserts that no long-term relationship exists among the variables.

The result of the F-bounds test is presented in Table 4:

Table 4: Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	26.31054	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Author's calculations using Eviews 12, 2025

The result of the bounds test, as presented in Table 4, shows that the computed F-statistic is 26.31. This value is substantially higher than the upper bound critical value of 4.15 at the 1% significance level. According to the decision rule, when the F-statistic exceeds the upper bound, the null hypothesis of no cointegration is rejected. Given that the F-statistic surpasses the critical values at all conventional significance levels (1%, 5%, and 10%), the test provides strong statistical evidence of a long-run relationship between MSME contribution to GDP and the explanatory variables: inflation rate, interest rate, exchange rate, credit to MSMEs, and government support to the private sector.

4.5 Model Estimation

After establishing stationarity with unit root tests and establishing a long-run relationship via the ARDL bounds test, the next step is to estimate the ARDL model. The Autoregressive Distributed Lag (ARDL) approach, developed by Pesaran, Shin, and Smith (2001), is particularly suitable for this study as it accommodates variables that are integrated of different orders; either I(0) or I(1), but excludes I(2). This flexibility makes the ARDL method ideal for analyzing the impact of inflation and exchange rate volatility on MSME growth and survival in Nigeria over the period 1991–2024.

4.5.1 Long run Estimation

Following the confirmation of a long-run equilibrium relationship through the ARDL bounds testing procedure, this section presents the estimated long-run coefficients from the ARDL model. The objective is to assess how key macroeconomic and institutional variables; inflation, interest rate, exchange rate, credit to MSMEs, and government support, influence the long-term growth and contribution of MSMEs to Nigeria's economy.

The long-run model captures the persistent and equilibrium effects of these explanatory variables on MSME output growth, reflecting structural relationships that hold over time, beyond short-term fluctuations. The coefficients derived from this model provide important insights into the direction, magnitude, and statistical significance of each variable's impact on MSME growth.

The results are presented in Table 5 and discussed accordingly.

Table 5: Estimated Long-Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LMSMEG(-1)	-0.490840	0.207620	-2.364126	0.0644
LINF	-0.037698	0.051479	-0.732302	0.4969
LINF(-1)	-0.462606	0.087961	-5.259206	0.0033
LINF(-2)	0.456595	0.116779	3.909921	0.0113
LINF(-3)	0.240529	0.068313	3.521001	0.0169

LINF(-4)	-0.186232	0.084157	-2.212926	0.0778
LIR	0.607720	0.404012	1.504215	0.1929
LIR(-1)	0.782677	0.296176	2.642605	0.0458
LIR(-2)	-0.629866	0.202858	-3.104963	0.0267
LIR(-3)	0.100251	0.266381	0.376346	0.7221
LIR(-4)	0.497662	0.285773	1.741456	0.1421
LEXCR	0.515215	0.109151	4.720193	0.0052
LEXCR(-1)	-0.419519	0.114990	-3.648316	0.0148
LEXCR(-2)	0.122100	0.087900	1.389072	0.2235
LEXCR(-3)	0.265905	0.128771	2.064939	0.0938
LEXCR(-4)	-0.661128	0.119988	-5.509947	0.0027
LCREDIT	-0.107995	0.052544	-2.055344	0.0950
LCREDIT(-1)	-0.016483	0.057702	-0.285653	0.7866
LCREDIT(-2)	0.237657	0.055973	4.245938	0.0081
LGOVSUP	-0.502801	0.130098	-3.864791	0.0118
LGOVSUP(-1)	1.074752	0.294036	3.655169	0.0147
LGOVSUP(-2)	0.289325	0.379616	0.762152	0.4804
LGOVSUP(-3)	-0.878852	0.300589	-2.923762	0.0329
LGOVSUP(-4)	0.304434	0.091344	3.332839	0.0207
C	-0.435291	3.051955	-0.142627	0.8922
R-squared	0.980931			
Adjusted R-squared	0.889398			

Source: Author's calculations using Eviews 12, 2025

The model demonstrates a strong overall fit, with an R-squared of 0.981 and an adjusted R-squared of 0.889, indicating that nearly 89 percent of the variation in MSME growth over the period is explained by the independent variables. The lagged value of MSME growth (LMSMEG(-1)) is negative and moderately significant (-0.491 ; $p = 0.064$). This suggests a degree of mean reversion in MSME growth, indicating that exceptionally high growth in one period may be followed by moderation in the next.

The impact of inflation is complex and occurs predominantly with lags. While the current inflation rate (LINF) has an insignificant effect ($p = 0.497$), several lagged terms are statistically significant. LINF(-1) is strongly negative (-0.463 ; $p = 0.003$), implying that inflation from the previous year reduces MSME growth. LINF(-2) and LINF(-3) show significant positive effects, suggesting that inflationary effects may initially suppress MSME activity but later result in price and profit adjustments. LINF(-4) is again negative and marginally significant ($p = 0.078$), highlighting the volatility and delayed transmission effects of inflation on business growth. Interest rate dynamics also display delayed effects. The current interest rate is not statistically significant ($p = 0.193$), but the first lag (LIR(-1)) is positive and significant ($p = 0.046$), while the second lag (LIR(-2)) turns negative and significant ($p = 0.027$). These results suggest that short-term adjustments in interest rates may initially support MSME borrowing and activity, but sustained high rates eventually reduce growth, likely due to rising debt servicing costs and tighter credit conditions. The exchange rate variable shows strong statistical significance, with both positive and negative effects across lags. The current exchange rate (LEXCR) is positive and significant ($p = 0.005$), indicating that a higher exchange rate (suggesting naira depreciation) may initially boost domestic MSME competitiveness. However, LEXCR(-1) and LEXCR(-4) are negative and significant, implying that prolonged or extreme exchange rate depreciation undermines MSME growth, possibly due to higher import costs for raw materials and equipment.

The results reveal a delayed positive impact of credit on MSME growth. While the contemporaneous effect is negative and marginally significant (-0.108 ; $p = 0.095$), the second lag (LCREDIT(-2)) is positive and strongly significant ($p = 0.008$). This suggests that the

benefits of MSME credit support may take time to materialize, potentially due to lagged investment effects or implementation delays. The influence of government support (LGOVSUP) is also dynamic and somewhat inconsistent. The contemporaneous effect is negative and significant (-0.503 ; $p = 0.012$), possibly reflecting short-term inefficiencies or misallocation of resources. In contrast, LGOVSUP(-1) and LGOVSUP(-4) show positive and significant impacts, supporting the view that government interventions can enhance MSME growth when well implemented and sustained over time. The third lag (LGOVSUP(-3)) is negative and significant, further highlighting the uneven and time-sensitive nature of policy impact on the MSME sector. The constant term is statistically insignificant ($p = 0.892$), suggesting that the explanatory variables adequately capture the variation in MSME growth without a strong baseline offset.

4.5.2 Short-run Estimation

Following the estimation of long-run relationships, the short-run dynamics are analyzed using the error correction representation of the ARDL model. This approach captures the immediate effects of changes in macroeconomic and institutional variables on MSME growth, while also accounting for the speed at which deviations from the long-run equilibrium are corrected. The short-run model includes the first differences of the independent variables and the lagged error correction term (ECM), which indicates how quickly the system returns to equilibrium after a short-term shock. The results provide insights into the responsiveness of MSMEs to short-term macroeconomic fluctuations and policy shifts.

The results are presented in Table 5 and discussed accordingly.

Table 6: Estimated Short-Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LINF)	-0.037698	0.018323	-2.057392	0.0947
D(LINF(-1))	-0.510892	0.027710	-18.43710	0.0000
D(LINF(-2))	-0.054297	0.023615	-2.299230	0.0698
D(LINF(-3))	0.186232	0.021028	8.856452	0.0003
D(LIR)	0.607720	0.088799	6.843747	0.0010
D(LIR(-1))	0.031953	0.074963	0.426246	0.6877
D(LIR(-2))	-0.597913	0.061009	-9.800450	0.0002
D(LIR(-3))	-0.497662	0.064442	-7.722646	0.0006
D(LEXCR)	0.515215	0.029084	17.71467	0.0000
D(LEXCR(-1))	0.273124	0.039964	6.834160	0.0010
D(LEXCR(-2))	0.395223	0.030225	13.07620	0.0000
D(LEXCR(-3))	0.661128	0.043484	15.20402	0.0000
D(LCREDIT)	-0.107995	0.020085	-5.376968	0.0030
D(LCREDIT(-1))	-0.237657	0.019606	-12.12155	0.0001
D(LGOVSUP)	-0.502801	0.055294	-9.093184	0.0003
D(LGOVSUP(-1))	0.285093	0.074413	3.831232	0.0122
D(LGOVSUP(-2))	0.574418	0.093206	6.162854	0.0016
D(LGOVSUP(-3))	-0.304434	0.047267	-6.440708	0.0013
CointEq(-1)*	-1.490840	0.074064	-20.12914	0.0000
R-squared	0.990499			
Adjusted R-squared	0.974952			

Source: Author's calculations using Eviews 12, 2025

The short-run dynamics of MSME growth were analyzed using the error correction representation of the ARDL model. The results show a strong model fit, with an R-squared of 0.9905 and an adjusted R-squared of 0.975, indicating that over 97 percent of the short-term variation in MSME growth is explained by changes in the independent variables. The Durbin-Watson statistic of 2.26 suggests the absence of autocorrelation. The error correction term (CointEq(-1)) is negative and highly significant (-1.49 ; $p < 0.01$), confirming the presence of

a long-run relationship and indicating a fast adjustment speed. Approximately 149 percent of the previous period's disequilibrium is corrected within one year, suggesting a very rapid return to long-run equilibrium after short-term shocks.

Inflation has a significant negative effect across lags. The current and lagged values of inflation ($D(LINF)$ and $D(LINF(-1))$) are both negative and statistically significant, indicating that inflationary pressures reduce MSME growth in the short run. However, $D(LINF(-3))$ is positive and significant ($p < 0.01$), suggesting that earlier inflation may eventually be absorbed or offset by adaptive responses or pricing adjustments. Interest rates show mixed effects. The current value ($D(LIR)$) is positive and significant ($p = 0.001$), implying a short-term stimulative effect, possibly due to improved liquidity or credit access. However, lags $D(LIR(-2))$ and $D(LIR(-3))$ are strongly negative, suggesting that prolonged high interest rates suppress MSME activity.

The exchange rate exhibits a consistent positive and highly significant effect across all lags. This may reflect short-term benefits from exchange rate changes, such as increased competitiveness or revenue from foreign trade, particularly for MSMEs involved in non-oil exports or dollar-linked transactions. Credit to MSMEs has a consistently negative and statistically significant short-run effect. This may indicate that credit inflows are either insufficient in volume, misallocated, or subject to delays, resulting in short-run inefficiencies before potential long-term benefits are realized. Government support displays both positive and negative effects across different lags. The current effect ($D(LGOVSUP)$) is significantly negative, while $D(LGOVSUP(-1))$ and $D(LGOVSUP(-2))$ are positive and significant, suggesting that the benefits of public sector credit may take time to materialize. The third lag is again negative, reflecting some inconsistency in the short-term effectiveness of government interventions.

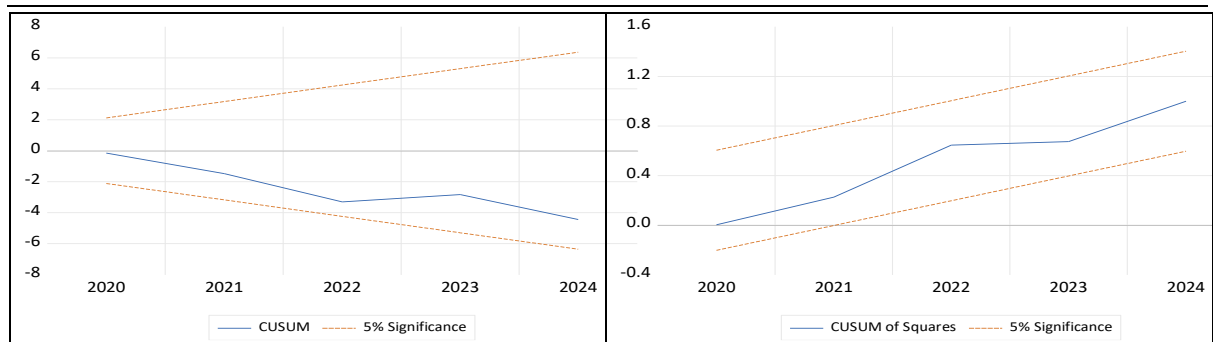
4.6 Diagnostic and Stability Tests

To verify the appropriateness and robustness of the ARDL model, several post-estimation diagnostic and stability tests were conducted. The tests encompass the Serial Correlation LM test, Heteroskedasticity test (ARCH), Normality test (Jarque-Bera), Functional form test (Ramsey RESET), and Stability tests utilizing CUSUM and CUSUM of Squares. Table 7 presents a comprehensive summary of the diagnostic test results, providing critical insights into the robustness, reliability, and validity of the model estimates employed in the study.

Table 7: Summary of Diagnostic Test Results

Test	Test Statistic	p-value	Conclusion
Breusch-Godfrey Serial Correlation LM Test	0.1865	0.8388	No Serial correlation
ARCH Heteroskedasticity Test (ARCH)	1.3592	0.2539	No heteroskedasticity
Jarque-Bera Normality Test	3.9853	0.1363	Residuals are normally distributed
Ramsey RESET Test (F-statistic)	0.182958	0.6909	Model is correctly specified
CUSUM Test	Stable	—	Parameters are stable
CUSUM of Squares Test	Stable	—	Parameters are stable

Source: Author's computation using EViews (2025)



To ensure the reliability of the estimated ARDL model, a series of post-estimation diagnostic tests were conducted. The Breusch-Godfrey LM test confirms the absence of serial correlation ($p = 0.8388$), while the ARCH test indicates no evidence of heteroskedasticity ($p = 0.2539$). The Jarque-Bera test shows that the residuals are normally distributed ($p = 0.1363$). Additionally, the Ramsey RESET test supports that the model is correctly specified ($p = 0.6909$), implying no functional form misspecification. Stability diagnostics, including the CUSUM and CUSUM of Squares tests, reveal that the model parameters remain stable over the sample period.

These diagnostic results collectively affirm the robustness, reliability, and validity of the ARDL model used in analyzing the short- and long-run dynamics of MSME growth in response to macroeconomic variables.

4.7 Discussion of Findings

The results from the ARDL model strongly align with the theoretical propositions outlined in the literature. Consistent with Friedman's Monetary Theory of Inflation, the findings confirm that inflation adversely affects MSME growth, particularly through lagged effects. The short-run results show immediate and significant negative impacts of inflation on MSME growth, affirming that rising input costs and reduced consumer purchasing power undermine business viability. The long-run dynamics suggest a delayed recovery, possibly reflecting MSMEs' adjustment through pricing or cost management strategies. The evidence also supports the Purchasing Power Parity (PPP) theory, as exchange rate volatility exhibited both immediate and persistent effects on MSME outcomes. In the short term, depreciation appears to enhance competitiveness, but over time, the rising cost of imported inputs exerts downward pressure on MSME growth. This dual effect corroborates prior studies (e.g., Obiukwu & Adurogoye, 2024; Oyedepo et al., 2023), which highlight the inflation-exchange rate nexus as a critical vulnerability for import-dependent MSMEs.

From the lens of Uncertainty and Investment Theory (Bernanke, 1983; Dixit & Pindyck, 1994), the erratic behavior of macroeconomic indicators—particularly inflation and exchange rates—amplifies risk and deters long-term planning. The significant short-run coefficients of these variables validate the view that MSMEs are highly reactive to instability, often delaying investment or scaling down operations in volatile environments. Furthermore, the results underscore the relevance of Institutional Theory. Credit to MSMEs and government support were both statistically significant in the long run, although their short-run effects were weak or negative. This suggests that institutional interventions take time to materialize and may be constrained by implementation inefficiencies. Nevertheless, the long-run positive impact confirms the importance of coordinated support from financial institutions and policy frameworks—consistent with arguments by Obiekwe & Edokobi (2025) and Onakoya et al. (2024).

These findings also extend the empirical literature. While prior studies often examined inflation and exchange rate effects in isolation, this paper provides joint evidence of their compounded impact on MSME growth in Nigeria. The integration of recent post-reform data, including periods of fuel subsidy removal and exchange rate unification, adds a novel dimension to the discourse and addresses existing gaps identified in studies like Ebinum & Ehiedu (2025) and Olabisi & Akeju (2024).

5.0 Conclusion and Recommendations

5.1 Conclusion

This study explored the effects of inflation and exchange rate volatility on MSME growth and survival in Nigeria using an ARDL approach. Findings confirm that macroeconomic instability, particularly inflation and exchange rate fluctuations, significantly undermines MSME growth, while credit and government support show positive long-run effects when consistently applied.

These results support economic theories highlighting MSMEs' vulnerability to inflationary shocks and currency volatility. The study emphasizes the need for stable macroeconomic conditions, effective credit mechanisms, and sustained institutional support to enhance MSME resilience. Future research should consider firm-level or sector-specific data to better capture differences in MSME responses across industries.

5.2 Policy Recommendations

- i. The significant negative effect of inflation (-0.463 ; $p=0.003$) and prolonged exchange rate depreciation (-0.661 ; $p=0.003$) on MSMEs highlights the need for the Central Bank of Nigeria to prioritize price stability and reduce exchange rate volatility.
- ii. Since credit to MSMEs shows delayed but positive effects (0.238 ; $p=0.008$), government should expand affordable financing by streamlining procedures and leveraging digital platforms and microfinance institutions.
- iii. Given that government support is negative in the short run (-0.503 ; $p=0.012$) but positive at later lags, agencies such as BOI and SMEDAN must ensure consistent, transparent, and sustained support programs.
- iv. As exchange rate volatility raises import costs, policies should encourage MSMEs to substitute imported inputs with local alternatives through tax incentives and capacity-building initiatives.

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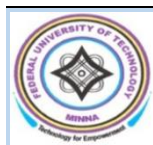
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Table 6: Summary of Variables Used

Year	MSMEG	CREDIT	EXCR	INF	IR	CPS
1991	54.01	22.20	9.909492	13.01	20.04	127.97
1992	49.64	20.40	17.29843	44.59	24.76	75.46
1993	46.97	15.46	22.0654	57.17	31.65	88.82
1994	38.12	20.55	21.996	57.03	20.48	143.52
1995	38.12	32.37	21.89526	72.84	20.23	204.09
1996	36.16	42.30	21.88443	29.27	19.84	254.85
1997	52.32	40.84	21.88605	8.53	17.8	311.36
1998	47.02	42.26	21.886	10.00	18.18	366.54
1999	49.16	46.82	92.3381	6.62	20.29	449.05
2000	35.41	44.54	101.6973	6.93	21.27	588.00
2001	54.4	52.43	111.2313	18.87	23.44	844.49
2002	51.65	82.37	120.5782	12.88	24.77	948.46
2003	39.25	90.18	129.2224	14.03	20.71	1,203.20
2004	38.64	54.98	132.888	15.00	19.18	1,519.24
2005	38.67	50.67	131.2743	17.86	17.95	1,991.15
2006	41.08	25.71	128.6517	8.23	16.9	2,609.29
2007	45.5	41.10	125.8081	5.39	16.94	4,820.70
2008	43.64	13.51	118.5667	11.58	15.48	7,799.40
2009	40.82	16.37	148.88	12.54	18.36	9,667.88

2010	47.24	12.55	150.2975	13.74	17.59	9,198.17
2011	37.79	15.61	153.8625	10.83	16.02	9,614.45
2012	40.84	13.86	157.5	12.22	16.79	10,440.96
2013	42.33	15.35	157.3117	8.50	16.72	11,543.65
2014	44.12	16.07	158.5526	8.05	16.55	13,179.60
2015	50.7	12.95	192.4403	9.01	16.8	13,568.54
2016	38.99	10.75	253.492	15.70	16.9	16,500.15
2017	45.28	10.75	305.7901	16.50	17.6	16,193.86
2018	46.85	44.82	306.0837	12.10	16.9	15,438.60
2019	35.93	123.93	306.921	11.40	15.4	17,436.99
2020	47.15	62.51	358.8108	13.25	13.6	19,818.38
2021	38.41	83.74	401.152	16.95	11.5	22,026.37
2022	36.3	71.89	425.9792	18.85	12.3	20,166.98
2023	53.98	94.46	645.1941	24.7	14	24,458.35
2024	54.31	78.15	1478.965	33.20	12.9	21617.52



Capital Adequacy and Performance of Commercial Banks in Nigeria

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Abstract

Commercial banks are central to financial intermediation, yet their stability and profitability are closely tied to capital adequacy risk. This study investigated the effect of capital adequacy risk on the performance of commercial banks in Nigeria over the period 2013–2022. A quantitative research design was adopted, using secondary data extracted from the audited financial statements of twelve commercial banks with international operating licenses. Return on Asset (ROA) was employed as the proxy for performance, while Risk-Weighted Asset Ratio (RAR), Deposit to Assets Ratio (DAR), and Asset Quality Ratio (AQR) were the explanatory variables. Panel regression analysis was conducted, and the Random Effects Model (REM) was selected as the preferred estimator. The findings reveal that both RAR and DAR have positive and significant effects on ROA, highlighting the importance of risk-based lending and stable deposit funding. In contrast, AQR showed a negative and significant effect, indicating that deteriorating loan quality undermines capital strength and profitability. The study recommends stronger regulatory oversight, improved credit risk management, stable deposit mobilisation, and efficiency-driven profitability to enhance the capital resilience and performance of commercial banks in Nigeria.

1.0 Introduction

Commercial banks occupy a strategic position in the Nigerian economy as financial intermediaries where they channel to facilitate investment, production, and consumption (Abata, 2020). Their ability to mobilize deposits, extend credit, and offer payment and settlement services makes them critical to economic growth and macroeconomic stability. In developing economies like Nigeria, where access to finance remains uneven and capital markets are still maturing, commercial banks play a particularly prominent role in financing private sector activity and enabling public sector liquidity (Umar and Dikko, 2020).

The performance of commercial banks, therefore, has direct and indirect implications for economic outcomes. A sound and efficient banking sector promotes confidence, attracts investment, and supports sustainable development (Santos, 2022). In contrast, weak bank performance can result in credit constraints, heightened systemic risk, and loss of public trust, factors that can deepen macroeconomic vulnerabilities. It is in this context that evaluating the performance of banks becomes a matter of not only institutional concern but broader economic significance.

The business of banking in Nigeria is inherently exposed to significant risks which include credit, market, operational, and liquidity risks, which directly challenge bank performance. Within this context, capital adequacy risk is paramount, especially following domestic financial turbulence and evolving regulatory reforms (Yakubu and Affoi, 2023). While capital serves as a crucial financial cushion to absorb losses and maintain solvency (Adeleye *et al.*, 2020), Nigerian banks face distinct challenges in maintaining adequate levels. These include financing economic growth in a volatile environment with high non-performing loans, meeting stringent Central Bank of Nigeria capital requirements without stifling profitability, and managing the

impact of macroeconomic instability on their capital buffers. Consequently, a bank's ability to navigate these challenges is a critical determinant of its stability and performance within the Nigerian economy.

The Basel Committee on Banking Supervision has provided an international regulatory framework through successive Basel Accords such as Basel I, II, and III, which aimed at enhancing the stability and resilience of the global banking system. Under Basel III, which reflects the most recent and comprehensive reform package, banks are required to maintain a minimum Capital Adequacy Ratio (CAR) of 8 percent, consisting of a 4.5 percent minimum Common Equity Tier 1 (CET1) capital, an additional 1.5 percent Tier 1 capital, and a capital conservation buffer of 2.5 percent, bringing the effective minimum capital requirement to 10.5 percent of risk-weighted assets (Kombo and Njuguna, 2019).

In line with these global benchmarks, the Central Bank of Nigeria (CBN) mandates differentiated CAR requirements depending on the category of banking licence. For commercial banks with international authorisation are required to maintain a minimum CAR of 15 percent, while those with national licenses are required to hold at least 10 percent. These thresholds are intended to reflect the risk exposures associated with each bank's operational scale and geographic reach.

Capital adequacy is commonly assessed through several ratios, among them the Capital Adequacy Ratio (CAR), the Risk-weighted Asset Ratio (RAR), and the Deposit to Assets Ratio (DAR). The Capital Adequacy Ratio (CAR) measures the proportion of a bank's regulatory capital to its risk-weighted assets which serve as a benchmark for the bank's ability to absorb losses and maintain solvency under stress conditions (Blundell-Wignall and Atkinson, 2019). The Risk-weighted Asset Ratio (RAR) reflects the share of a bank's assets that are weighted according to their level of credit and market risk, providing insight into the overall risk composition of the bank's balance sheet (Li *et al.*, 2021). A high RAR may indicate an aggressive risk-taking posture, which could strain capital buffers in adverse conditions. The Deposit to Assets Ratio (DAR), on the other hand, shows the extent to which a bank's assets are funded by customer deposits as indication of funding stability and liquidity (Li *et al.*, 2021).

Previous studies have examined various dimensions of capital adequacy indicators to provide insights into their relationship with the performance metrics of commercial banks. For instance, Nwankwo (2019) investigated capital adequacy using the risk-weighted asset ratio, customer deposits, and owners' equity in relation to the profitability of Zenith Bank between 2010 and 2016, and found that CAR exerted a positive and statistically significant effect on Return on Assets (ROA) within the study period. Similar findings were reported by Umoru and Osemwegie (2020) and Ikpefan (2021), who confirmed the relevance of capital strength in enhancing bank profitability.

However, most of these studies have focused either on a single bank or on narrow indicators of capital adequacy, often without accounting for the joint behaviour of risk exposure and funding structure. For example, Akpan *et al.* (2020) conducted a case study of a single tier-1 Nigerian bank, finding a positive association between its capital adequacy ratio and profitability, but the analysis did not control for the bank's simultaneous shift towards a more conservative loan portfolio, conflating the effects of capital and risk appetite. Similarly, Adeyemi and Okoro (2021), in a cross-sectional study of Nigerian banks, used aggregate capital ratios to predict asset growth, yet their model omitted critical variations in funding liquidity, failing to distinguish between banks funded by stable customer deposits and those reliant on more volatile interbank markets.

In addition, many analyses fail to incorporate panel data that captures variations across banks and over time, which limits the generalisability of their conclusions. There is also limited empirical research that simultaneously examines the combined effect of Asset Quality Ratio (AQR), Risk-weighted Asset Ratio (RAR), and Deposit to Assets Ratio (DAR) on wider performance indicators such as return on asset (ROA). This study seeks to fill this gap by adopting a multi-bank panel approach to explore how these three dimensions of capital adequacy risk collectively influence the performance of commercial banks in Nigeria with the specific objective of examining the effects of capital adequacy ratio on the performance of banks using return on equity as proxy.

2.0 Literature Review

This section reviews existing scholarly works and theoretical perspectives relevant to the study

2.1 Conceptual Review

This section reviewed recent and relevant literature on the major concepts of the study.

2.1.1 Capital adequacy ratio

The Risk-Weighted Asset Ratio (RAR) remains one of the most widely used indicators of a bank's financial resilience and regulatory compliance. It assesses the proportion of a bank's assets that are exposed to varying degrees of risk, in line with the Basel framework for risk-based capital requirements (Kombo and Njuguna, 2019). The interaction between CAR and RAR is theoretically grounded in the capital buffer hypothesis, which posits that banks with a higher share of risky assets are required to maintain correspondingly higher levels of capital (Jokipii and Milne, 2016). Empirical studies such as Abba *et al.* (2020) examined the relationship between CAR and banking risks in the Nigerian deposit money banks and observed that the risk weighted asset ratio was higher than the CAR in the Nigerian banking industry. They further observed a negative relationship between Capital Adequacy Ratio and the risk portfolio of banks represented by the risk-weighted assets ratio. The findings of Abba *et al.* (2020) were consistent with Mohammed and Obeidat (2021) whose study on the determinants of CAR in Jordanian banks produced similar result. Odunma *et al.* (2021) also carried out a study on the determinants of CAR of commercial banks in Jordan and found out a negative but not significant relationship between credit risks and CAR.

Olalekan and Adeyinka (2022) examined a portfolio reaction to capital requirements by investigating the effect of capital ratio regulation on portfolio behaviour of commercial banks. They found that an increase in variance of returns increases the probability of failure, while an increase in returns or capital ratio decreases failure risk. Their findings are consistent with Umoru and Osemwegie (2020).

2.1.2 Deposit to Assets Ratio (DAR)

The Deposit to Assets Ratio (DAR) reflects the proportion of a bank's total assets funded by customer deposits, and it is a critical measure of the stability of a bank's funding structure. In theory, banks that maintain a higher DAR are less dependent on external or volatile sources of financing, such as interbank borrowings or capital markets, and are thus more resilient to liquidity shocks. The relationship between DAR and capital adequacy is informed by the financial intermediation theory, which suggests that funding structure plays a role in shaping banks' risk behaviour and capital buffer decisions (Freimanis and Šenfelde, 2019).

Empirical literature offers mixed evidence on the relationship between CAR and DAR. For instance, Osakwe *et al.* (2021) examined the determinants of capital adequacy in Nigerian deposit money banks and reported a significant positive relationship between deposit mobilisation and capital strength. Their findings indicate that banks with a strong deposit base are more capable of sustaining higher capital ratios. In contrast, Osuka and Ezedike (2019) found that although deposits provide a stable funding source, their relationship with CAR is not always linear, particularly when banks aggressively expand credit without adequate capital reinforcement.

Williams (2022) also assessed the interaction between deposit base and capital adequacy in selected Tier-2 banks in Nigeria, showing that while a high DAR enhances liquidity and cushions operational shocks, it does not automatically lead to improved capital buffers unless accompanied by strong risk management and retained earnings. These findings indicate the relevance of deposit structure in assessing capital adequacy but also highlight the mediating role of bank-specific strategies and regulatory context. This study extends the analysis by incorporating DAR alongside other capital adequacy risk indicators to explore their joint impact on performance.

2.1.3 Capital adequacy ratio

Asset quality, typically measured by the Non-Performing Loan Ratio (NPLR), is a central determinant of a bank's financial soundness and its capacity to maintain adequate capital. Poor asset quality increases loan-loss provisions, reduces earnings, and places downward pressure on capital buffers. The capital buffer theory suggests that banks may raise capital levels proactively in anticipation of deteriorating loan quality or, conversely, that declining asset quality may lead to the erosion of existing capital (Zheng *et al.*, 2012).

Empirical studies have reinforced this theoretical relationship. Olawale (2024) conducted a study on capital adequacy and credit risk in Nigerian commercial banks and found a strong negative and significant relationship between NPLR and CAR, suggesting that rising non-performing loans directly threaten capital sustainability. Similarly, Abiodun *et al.* (2020) analysed the effect of asset quality on capital strength and concluded that persistent deterioration in loan performance weakens capital adequacy, especially for mid-sized banks with limited capacity to absorb losses.

Choi (2021) examined the link between credit risk indicators and regulatory capital in Sub-Saharan Africa and confirmed that banks with higher credit impairment ratios tend to underperform in capital benchmarks. However, contrasting evidence from Innocent *et al.*, (2019) suggests that some Nigerian banks have managed to report relatively strong capital positions despite elevated levels of non-performing loans, owing in part to regulatory forbearance or delay in recognizing loan losses. This study contributes to this strand of literature by analysing whether the interplay between CAR and asset quality, measured through NPLR, holds significant implications for bank performance in Nigeria over time.

Bank performance is often assessed through a range of financial metrics that capture profitability, efficiency, and stability. Common indicators include Return on Assets (ROA), which measures how efficiently a bank uses its total assets to generate earnings; Net Interest Margin (NIM), which reflects the effectiveness of a bank's intermediation function; and Return on Equity (ROE), which evaluates profitability from the shareholders' perspective (Oyetade *et al.*, 2021). Among these, ROA is widely regarded as a fundamental measure of overall bank performance, as it indicates the capacity of management to convert assets into profit while

maintaining prudent risk exposure (Ajayi *et al.*, 2019). In the Nigerian banking sector, ROA has been extensively used as a proxy for operational efficiency and the ability of banks to sustain profitability amid regulatory reforms and macroeconomic volatility (Oyetade *et al.*, 2021). The relationship between capital adequacy and ROA ensures the delicate balance between financial stability and profitability. A strong Capital Adequacy Ratio (CAR) enhances solvency and depositor confidence, often leading to sustainable long-term performance, while excessive capitalisation may constrain leverage and reduce shareholder returns (Ajayi *et al.*, 2019).

2.2 Theoretical Framework

This study is anchored on the economic efficiency theory as proposed by Odunga (2016). The theory posits that firms should strive to produce their outputs at the lowest possible cost per unit, thereby achieving maximum efficiency in the use of available resources. In essence, economic efficiency is attained when firms exploit all available economies of scale, enabling them to operate at the most cost-effective level of output in the short run (Ndiangui *et al.*, 2024). Over the long term, efficiency can be further enhanced by expanding the productive capacity of existing systems, which allows firms to raise their optimal output levels without incurring proportionate increases in cost. The relevance of this theory to the present study lies in its emphasis on optimal resource allocation and cost-efficiency as a pathway to improved performance. In the context of commercial banking, capital adequacy and its associated ratios such as the risk-weighted asset ratio, deposit-to-assets ratio, and asset quality can be seen as elements influencing how efficiently a bank operates within a regulated financial environment.

3.0 Methodology

This study adopts an ex-post facto research design which uses historical financial data that are already documented and cannot be manipulated by the researcher. The design is appropriate for analysing the relationship between capital adequacy risk indicators and bank performance over time, using secondary data extracted from the published annual financial statements of selected commercial banks in Nigeria. A purposive sampling technique was employed to select twelve commercial banks with international operating licenses. The study covers a ten-year period from 2013 - 2022. The dependent variable in this study is Return on Asset (ROA), used as a proxy for bank performance, while Risk-Weighted Asset Ratio (RAR), Deposit to Assets Ratio (DAR) and Asset Quality Ratio (AQR) are used to measure the independent variable.

To analyse the relationship between the variables, the study employs panel data analysis techniques. Specifically, both fixed effects and random effects models are considered to account for unobserved heterogeneity across banks. The Hausman specification test is used to determine the more appropriate model between the two. Prior to regression estimation, diagnostic tests are conducted to check for multicollinearity, serial correlation, and heteroscedasticity. Where violations of regression assumptions are detected, robust standard errors are applied to ensure the validity of the statistical inference.

3.1 Model specification

The model below is proposed for the study based on the dependent and independent variables as adopted from .

$$ROA_{it} = \beta_0 + \beta_1 DAR_{it} + \beta_2 RAR_{it} + \beta_3 AQR_{it} + \varepsilon_{it}$$

Where

ROA_{it} = Return on asset of bank i at time t

DAR_{it} = Deposit asset ratio of bank i at time t

RAR_{it} = Risk – weighted Asset Ratio of bank i at time t

AQR_{it} = Asset Quality Ration of bant i at time t

β_0 = intercept

$\beta_1 - \beta_4$ = Coefficient of the independent variables

ε_{it} = error term

Asset Quality Ratio (AQR)

4.0 Results and discussions

This section presents the results and discussions in line with the objective of the study.

4.1 Descriptive and correlation statistics

Table 4.1: Descriptive Statistics

VARIABLES	OBSERVATI ONS	MEAN	STD. DEV.	MIN	MAX
ROA	120	0.02	0.012	0.00	0.03
RAR	120	0.74	0.146	0.32	0.63
DAR	120	0.72	0.134	0.26	0.80
AQR	120	0.15	0.070	0.02	0.37

Source: Author computations, Stata, 2025

Table 4.1 presents the descriptive statistics for the five variables used in the study. The table is based on 120 observations covering a ten-year period across selected commercial banks. Table 1.1 provides a summary of the descriptive statistics for the key variables in the study. The Risk-Weighted Asset Ratio (RAR) and Deposit to Assets Ratio (DAR) have relatively high mean values of 0.74 and 0.72 respectively, reflecting the banks' significant exposure to risk-weighted assets and reliance on deposit funding. The Return on Assets (ROA), a proxy for performance, is modest at 0.02 which suggest a low but positive profitability across the sector. The Asset Quality Ratio (AQR) averages 0.15, pointing to moderate levels of non-performing loans, though the range (0.02 to 0.37) shows that some banks experienced considerable credit risk.

4.2 Inferential Statistics Report

The decision to adopt the most appropriate estimation technique between the OLS, FEM and REM relied on the outcome of the Hausman specification test, which examines whether the unique errors (μ_i) are correlated with the regressors (Khan *et al.*, 2021). From Table 1.4, the Random Effects Model (REM) yields the highest explanatory power with an R^2 overall of 0.7756, which is significantly better than both the Fixed Effects Model (R^2 overall = 0.3955) and the Ordinary Least Squares (OLS) model (Adjusted R^2 = 0.0211). Additionally, all explanatory variables in the REM; Risk-Weighted Asset Ratio (RAR), Deposit to Asset Ratio (DAR), Return on Assets (ROA), and Asset Quality Ratio (AQR), are statistically significant at the 5% level, with consistent signs and robust t-values.

Table 4. 2: Stata Ordinary Least Square (OLS) model.

STATISTICS VARIABLES	BETA COEFFICIENTS	T-VALUES	SIGNIFICANCE
RAR	0.1227	2.33	0.034
DAR	0.1005	1.92	0.032
AQR	-0.2011	-2.01	0.006
R ²	0.6256		
ADJUSTED R ²	0.0211		
F-STATISTIC	22.11		
SIGNIFICANCE	0.0000		

Source: Author computations, 2025

Table 4. 3: Stata Random Effects Model (REM)

STATISTICS VARIABLES	BETA COEFFICIENTS	T-VALUES	SIGNIFICANCE
RAR	0.1329	2.44	0.023
DAR	0.1055	1.37	0.044
AQR	-0.2084	-2.47	0.005
R ² WITHIN	0.6114		
R ² BETWEEN	0.0141		
R ² OVERALL	0.7756		
WALD CH2	121.39		
SIGNIFICANCE	0.0000		

Source: Author computations, 2025

4.3 Discussion of findings

As shown in the result of the test of the first variable for the study, a positive and significant relationship was observed between ROA, which served as proxy for performance of commercial banks and Risk-Weighted Asset Ratio (RAR), Deposit to Asset Ratio (DAR) and Asset Quality Ratio (AQR) are the predictors. This implies that as the share of risk-weighted assets increases, banks tend to maintain higher capital buffers, supporting the capital buffer theory. It is widely recognized that capital can serve as a cushion to absorb unexpected losses, reduce the probability of insolvency, and therefore lower expected bankruptcy costs. The finding suggests that Nigerian commercial banks with relatively riskier asset portfolios have responded by building up their capital positions, possibly to meet regulatory thresholds and avoid supervisory sanctions. This aligns with empirical findings from Odunma *et al.* (2021) and Mohammed and Obeidat (2021), who observed a similar relationship in both local and international banking contexts.

The study also finds a positive and statistically significant relationship between ROA and the Deposit to Assets Ratio (DAR). This result implies that banks which fund a higher proportion of their assets through customer deposits tend to maintain stronger capital positions. Deposits, being a relatively stable and low-cost source of funding, can support the bank's capacity to lend and invest without depending heavily on volatile external finance. The positive linkage may also reflect regulatory emphasis on liquidity and funding stability, with well-deposit-funded banks in a better position to generate earnings, retain profits, and meet capital adequacy

requirements. This result is in line with the findings of Udeh and Ezeabasili (2019), who noted that stable funding structures are positively associated with capital strength in Nigerian banks.

A negative and statistically significant relationship was found between ROA and the Asset Quality Ratio (AQR), indicating that poor asset quality erodes capital adequacy. This result is consistent with theory and previous empirical evidence suggesting that higher levels of non-performing loans reduce earnings, increase provisioning requirements, and place downward pressure on capital buffers. In the Nigerian banking context, this highlights the continued relevance of effective credit risk management in sustaining capital strength. The result aligns with the findings of Olayinka and Eze (2019), who showed that asset quality deterioration undermines the solvency position of banks and may expose them to regulatory breaches if not proactively managed.

5.0 Conclusion and Recommendation

This study examined the effect of capital adequacy risk on the performance of commercial banks in Nigeria. Specifically, it examined how Risk-Weighted Asset Ratio (RAR), Deposit to Asset Ratio (DAR), and Asset Quality Ratio (AQR), influence the ROA. The analysis covered a ten-year period from 2013 to 2022, using panel data sourced from the audited financial statements of purposively selected commercial banks with international operating licenses. The data were analysed using panel regression techniques, and the Random Effects Model (REM) was selected as the preferred estimation method based on its superior explanatory power and consistency.

The findings of the study show that RAR and DAR are positively and significantly associated with ROA, indicating that banks with higher risk-weighted exposures and stable deposit-based funding tend to maintain stronger capital buffers. On the other hand, AQR showed a negative and significant relationship with ROA, suggesting that asset quality deterioration continues to undermine capital strength across Nigerian banks.

Based on these findings, the study recommends that the Central Bank of Nigeria (CBN) continue to enforce capital adequacy requirements with a sharper focus on the composition of banks' risk-weighted assets. Banks should be incentivised to strengthen internal credit risk management systems to mitigate deterioration in asset quality, particularly in high-risk lending segments. Furthermore, commercial banks should optimise their deposit mobilisation strategies, as a high DAR not only enhances liquidity but also supports capital formation through more stable funding structures. Lastly, sustaining profitability through improved operational efficiency remains critical, as retained earnings form a significant component of regulatory capital. Strengthening these interconnected dimensions will be essential to improving the capital resilience and overall performance of commercial banks in Nigeria.

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Corruption and Economic Growth: An Empirical Study of Three West African Countries

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Abstract

The Corruption Perception Index (CPI), since its inception in 1995, has consistently ranked Sub-Saharan African countries like Nigeria, Ghana, and the Benin Republic high in terms of bribery and misuse of public funds. Many studies have utilized the CPI to measure corruption without considering variations in its scale. It is essential to note that reliable comparisons of the CPI can only be made after 2012, when it was restructured to a 0–100 scale. This study examines both the long-term and short-term impacts of corruption on economic growth in these three West African countries from 2012 to 2022. Findings indicate support for the "Grease the Wheel" hypothesis, suggesting that a 1% reduction in corruption is linked to an average 0.25% decrease in GDP growth. While corruption impedes economic growth in the long run, this effect is not statistically significant. High levels of corruption undermine investor trust, which helps explain the minimal impact of foreign direct investment on economic growth in these countries. It is imperative to strengthen the institutions responsible for combating corruption, with the implementation of stringent laws and the establishment of special courts to prosecute corruption-related cases.

Keywords: Corruption, Economic Growth, Foreign Direct Investment, Random Effect, Panel.

ARDL JEL Classification

1.0 Introduction

Nigeria, Ghana, and the Benin Republic are sub-Saharan African countries that share borders and possess abundant mineral and human resources. Despite this wealth, these nations have experienced underdevelopment for over four decades since gaining independence. Their resources have the potential to significantly enhance the economic prosperity of their citizens.

Corruption is widely regarded as a major obstacle to the development of sub-Saharan African countries. According to Makar *et al.* (2023), corruption is seen as "the abuse of public authority" or "a bribery act involving a public servant and the transfer of material resources between two or more parties." This encompasses actions such as public servants demanding or accepting money in exchange for services, politicians misusing public funds, and corporations bribing officials for favorable deals (Transparency International, 2024).

Some studies indicate that foreign direct investment (FDI) plays a significant role in driving economic growth and promoting financial integration, which are crucial sources of funding for developing countries such as Nigeria, Ghana, and the Benin Republic. However, corruption can significantly hinder investment, which is essential for economic advancement (Transparency International, 2024). Corruption can deter investors from committing their capital, leading to reduced levels of both domestic and foreign direct investment. As a result, economic growth may decline due to this lack of investment. Research conducted by Gründler

and Potrafke (2019), Spyromitros and Panagiotidis (2021), and Daniel (2018) demonstrates that investment has a positive impact on economic growth.

In West African Countries, corruption is mostly seen in the judicial system and security agencies (Awadzie & Garr, 2021; World Justice Project, 2023). The Corruption Perception Index, 2023, shows 90% of Sub-Saharan African Countries scored below 50, meaning there is a high level of corruption in the region. However, some other African countries are doing well in the fight against corruption, such as; Seychelles, Cape Verde, and Botswana with a Corruption Perception Index score of 71, 64, and 59, respectively. In 2023, Nigeria, Ghana, and the Benin Republic were ranked 145, 70, and 70, out of 180 countries based on the Corruption Perception Index with total scores of 25, 43, and 43, respectively. This implies a low response to the corruption fight in the region.

The report of the Economic and Financial Crime Commission (EFCC) shows that despite having recovered \$750 million in 2021, corruption has cost Nigeria over \$550 billion since independence in 1960 (World Justice Project, 2023). According to Saeed (2023), in Ghana, the Auditor General's reports show that the sum of Ghs13.9 billion was lost to financial malpractices in Metropolitans, Municipal, and District Assemblies (MMDAs) and Ministries, Departments, and Agencies (MDAs) from the period of 2015 to 2020. According to Transparency International (2024) corruption remains a significant concern in Benin, particularly in the customs service, judicial system, and government procurement.

Some literature reviewed identified corruption as an obstacle impeding growth in Sub-Saharan Africa (Makar *et al.*, 2023; Saeed *et al.* 2023; Awadzie & Garr, 2021; Ngutsav, 2018; Asom & Ijirshar, 2017). Despite the economic growth rate of 2.9%, 2.9%, and 6.4% in 2023 for Nigeria, Ghana, and Benin, respectively, the region continues to face extreme poverty, affecting an average of 22.9% of the population based on a headcount ratio of \$2.15 a day (World Bank Group, 2024). According to Transparency International (2014), corruption causes the diversion of resources and talents towards juicy "rent-seeking sectors" such as defense and refined petroleum importation, rather than productive sectors.

Highly regulated countries that have weak effective government institutions and governance systems can benefit from corruption through an increase in productivity and entrepreneurship activities (Marie, 2014). Some opinions suggest that corruption "greases the wheels" predicts a positive effect of corruption on growth, while "sands the wheels" predicts corruption to decrease growth. Corruption in other ways can benefit institutions and economic growth, and as a minor annoyance, it can help bypass red tape, bureaucratic bottlenecks, and inefficient regulation. However, an effective justice system and the rule of law are essential for stopping and preventing corruption at all levels (Transparency International, 2023).

The study measured corruption using CPI, which we believed is more suitable, like most studies reviewed. However, we cannot conclude from a previous study that corruption hurts economic growth in West African countries, because the earlier data of CPI from 1995 is not

comparable to the period after 2012. The specific objective of this study is to investigate the impact of corruption on economic growth in Nigeria, Ghana, and the Benin Republic.

2. 0 Literature Review

2.1 Conceptual Literature

Bribery involving a public worker and the transfer of material resources is considered corruption (Andvig *et al.*, 2000). The World Bank (2012) defines corruption as the misuse of authority or public position for private or individual benefit. According to Lucarelli *et al.*

(2024), corruption is defined as the use of public office holders to benefit themselves at the expense of others. Corruption relates to the abuse of power, taking advantage of benefits that are not due politically, socially, or economically.

An economy's gross domestic product (GDP) is the total monetary value of all final goods and services produced within a country's borders over a specific period of time (usually quarterly or annually) According to the World Bank (2024), GDP growth, also known as GDP per capita growth, is calculated by dividing the total gross value realized by all resident producers in a nation by the mid-year population, plus any product taxes (minus subsidies) that are not included in the valuation of output. Poverty can be reduced if we have sustainable economic growth that increases the average income of the people.

Investment involves creating new capital goods or purchasing assets with the expectation that they will generate future income or appreciate in value. Foreign direct investment (FDI) refers to acquiring an ownership stake in a foreign company or project by an investor, corporation, or government from another country. Investment is vital for economic growth, enhancing a nation's productive capacity and resulting in greater output.

2.2 Theoretical review

Economic growth theory: Modern economists like Solow and Swan (1956) identified labour, capital, and technology as the driver of economic growth in any economy (Lawal, 2019). This study, therefore, examines the argument that corruption influences capital accumulation, technological progress, and the entire government process which determines the economic growth theory.

Theory of rent-seeking: First developed by David Ricardo in the 18th century, economic rent is a surplus that is not restricted to land only. It is the extra paid in excess of the value for the best alternative uses (Mauro, 1997). The case of multiple exchange rate practices in Nigeria, and foreign exchange allocation systems constitute economic rents. These happened where there are different exchange rates for importers, tourists, and people going on pilgrimage, investors, and exporters. Hence, creates room for round-tripping and artificial scarcity leading to economic rent.

Rent-seeking is arguably the root cause of the resource curse associated with oil-rich countries like Nigeria, because it drives ineffective government expenditure, low taxation, and investment, among other factors. Thus, the practice of government subsidies in the oil and gas sector creates a source of rents. The following diagram illustrates the transmission mechanism

of rent-seeking theory:

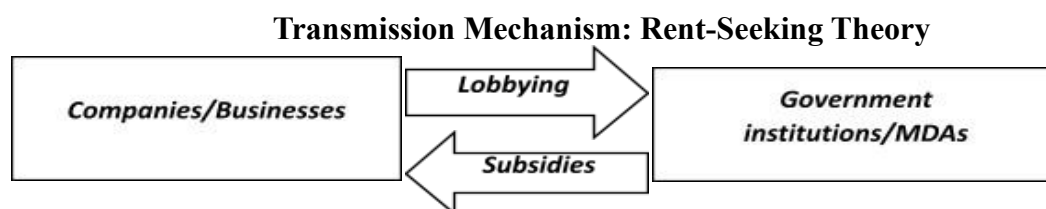


Figure. 1: Circle of Corruption in Private and Public Institutions
Source: Author's illustration

2.3 Empirical Review

Research indicates that corruption is a significant barrier to growth in West African Countries, Maker *et al.* (2023), investigated the effect of corruption on economic growth in Nigeria between 1986 and 2019. While the short-term results indicate a negligible correlation between corruption and growth in Nigeria, the long-term findings indicate that a rise in corrupt practices greatly hinders economic growth. Saeed *et al.* (2023), study shows that the high rate of corruption indicates that Ghanaian society is incredibly dishonest. The study found that corruption hinders moral decay, poor project and contract execution, economic growth and development, and public trust in government institutions.

Awadzie and Garr (2021), results indicate that the economy of Ghana will not grow significantly if corruption is not reduced to the minimum. The study suggested a political will in fighting corruption, as well as, removing corrupt government appointees from office. Ngutsav (2018) examined the impact of government spending and corruption on Nigeria's economic development using a vector error correcting mechanism. According to the study, corruption hinders Nigeria's economic development.

Asom and Ijirshar (2017) study noted how corruption in Nigeria has a detrimental effect on both cultural values and economic prosperity. The report suggests that the educational system be reoriented and that anti-corruption organizations be used effectively. On the other hand, Daniel (2018), used a multiple regression to investigate the impact of corruption on economic growth, in cross-sectional data for 101 developing countries from 2009 to 2015. The study found a negative impact of corruption on economic growth, but not statistically significant. While, investment has a significant influence on growth.

Other studies that support the hypothesis of “Sand the Wheels”, includes; Miah *et al.* (2020), Susilowati *et al.* (2024), which indicates corruption hurts economic growth in Asian countries, except in the Central Asian region. The study used Two-Stage Least Square approach on panel data consisting of 43 Asian countries from the period 2012 to 2022.

Gründler and Potrafke (2019) examined the relationship between corruption and economic growth using data from 175 countries between 2012 and 2018. The findings indicate real per capita GDP will drop by 17% for every 1% increase in the CPI. Spyromitros and Panagiotidis (2021) measured the effects of corruption on the economic performance of 83 developing nations between 2012 and 2018 using AR (1) FM-OLS data processing techniques. According to the study, corruption prevents those developing nations' economies from growing.

Moderate corruption is considered a beneficial factor that can enhance economic growth. Research supporting the "Grease the Wheels" hypothesis includes studies by Lucarelli *et al.* (2024), which examine the evidence from Balkan nations (Romania, Bulgaria, North Macedonia, Serbia, Croatia, Slovenia, Turkey, and Greece). In the short-run, corruption improves economic growth and this could help in the fast-tracking bureaucratic processes, while in the long-run, corruption hurts economic growth, leading to economic, social, and political burdens.

Trabelsi and Trabelsi (2020); Mohamed (2021), demonstrates that both modest and high degrees of corruption might impede economic growth when they surpass an ideal threshold. Ighodaro and Igbinedion (2020) used panel fully modified ordinary least squares data from 2000 to 2018 to study corruption and economic growth in fifteen West African countries. The study found a positive impact of corruption on economic growth, supporting the "Grease the Wheels" hypothesis. Lawal (2019), study holds that corruption boosts economic expansion in the chosen African nations. In Fayad (2023), while some assessments suggest that corruption

has a significant effect on growth, others do not find any discernible effect. The study identified the legal system, economic development, and political system as factors that influence corruption's impact on economic growth.

3.0 Methodology and Theoretical Framework

The study uses econometric tools with secondary data based on a panel data set from 2012 to 2022 for three West African Countries (Nigeria, Ghana, and the Benin Republic). The study uses annual data and conducts a unit root test (ADF and PP) to ascertain that all variables have zero mean and constant variance. The choice of the period (2012-2022) is due to the rebasing of the corruption Perception Index (CPI) by Transparency International in 2012 on a scale of 0 to 100, with a lower value indicating higher corruption (0-highly corrupt), while countries that are corruption free are rated 100.

The International Country Risk Guide published by the Political Risk Services Group and the Quality of Government Institute also measured corruption. However, this study draws its corruption data from Transparency International because it embodies aggregated data from several sources to provide perceptions by business people and country experts about the level of corruption in the public sector (Transparency International 2023).

The study follows the corruption theories (rent-seeking theory and principal-agent theory) which explain the hypothesis of corruption as a "Grease the Wheels" of economic growth or "Sand the Wheels" of economic growth.

3.1 Model Specification:

The study adopted the model of Lucarelli *et al.* (2024)

$$Y = F(CPI) \dots\dots\dots 1$$

Where Y represents economic growth, while CPI is the corruption perception index.

Also, the study is anchored on the Keynesian Model of economic growth which explains the indicators that drive growth in a closed economy. The model is specified as follows:

$$Y = F(C, I) \dots\dots\dots 2$$

Where Y is the national income, C represents household consumption spending, and I is the investment. Relating the corruption theories to the economic growth theory we arrived at model (3) which represents the model of this study. It is specified as follows:

$$GDP = F(CPI, FDI) \dots\dots\dots 3$$

Where GDP is measured by GDP per capita growth (annual %), CPI is the corruption perception index measured by Transparency International and FDI is the foreign direct investment, net inflows (% of GDP). All the variables (Y, CPI, and FDI) were sourced from World Development Bank Indicators.

The functional form represented in equation (3) is transformed into a mathematical equation (4) below:

$$GDP = \alpha_0 CPI^{\alpha_1} FDI^{\alpha_2} \dots\dots\dots 4$$

This mathematical equation is translated to an econometric model in equation 5. The panel model of this study is shown below:

$$LGDP_{it} = \alpha_0 + \alpha_1 CPI_{it} + \alpha_2 FDI_{it} + \mu_{it} \dots \dots \dots 5$$

Where $t = (1, 2, \dots, 11)$ signifies time and $i = (1, 2, 3)$ countries. $\alpha_0, \alpha_1, \alpha_2$, are the parameters, and GDP is gross domestic product per capita growth (annual %). CPI is the corruption perception index, and FDI is the foreign direct investment.

3.2 Estimation Techniques

The first step is to determine the order of integration of all the variables using the Augmented Dickey-Fuller (ADF) and Phillips-Perron unit root test. The study adopted Panel-ARDL on the account that data are integrated at the level and first differenced. Hence, this allows the testing of the short-run and the long-run relationship.

3.2.1 Fixed Effect Model

The fixed effects model assumed that the individual-specific effect is correlated with the regressors. It recognizes the influence of variables that change over time (Miah, 2020). The coefficients of the fixed effects model or within-estimator include one-time-invariant intercepts for each cross-section country. That is the value of constants in the model changes for each of the three countries estimated in this study. The equation for the fixed effect (FE) model is given in equation (6).

$$Y_{it} = \beta_{it} \lambda_{it} + \alpha_{it} + \varepsilon_{it} \dots \dots \dots 6$$

Where Y_{it} is the dependent variable observed for each country at time t , λ_{it} is the two independent variables that are time-variant, α_{it} represent unobserved time-invariant individual effect, and ε_{it} is the error term.

3.2.2 Random Effect Model

The random effects model assumed that the unobserved individual effect or heterogeneity is uncorrelated with the regressors. In this case, the units from the population are taken randomly as representatives (Miah, 2020). The random effect is shown in equation (7).

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \varepsilon_{it} + \mu_{it} \dots \dots \dots 7$$

Where ε_{it} is the between and μ_{it} is the within-entity error term

3.2.3 Panel-ARDL Model

Pesaran, Shin, and Smith (2001) expanded the Panel-ARDL model introduced by Pesaran and Shin (1999). The model is used to determine and analyze the long-run and short-run relationship. This approach is unique because the integration of data at level or first order or mixture allows an error correction mechanism to be derived from ARDL. The Panel-ARDL model for this study is given as follows:

$$\Delta Y_{it} = \alpha_{0it} + \alpha_{1it} CPI_{i(t-1)} + \alpha_{2it} FDI_{i(t-1)} + \sum_{j=0}^n \alpha_{3it} CPI_{i(t-1)} + \sum_{j=0}^n \alpha_{4it} FDI_{i(t-1)} + \sigma ECT_{i(t-1)} + \mu_{1it} \dots \dots \dots 8$$

Where σ represents the coefficient of ECT in the model, μ_{1it} is the error term, Δ signifies first difference or order, α_{1it} and α_{2it} are the long-run coefficients, While, α_{3it} and α_{4it} is the short-run

coefficient. The constant coefficient is represented by α_{0it} .

3.2.4 Hypothesis of the Study

H_0 = Corruption index score does not have a negative impact on economic growth

H_1 = Corruption index score has a negative impact on economic growth

Some of the studies reviewed (Maker *et al.*, 2023; Fayad, 2023; Saeed *et al.*, 2023; Asom & Ijirshar, 2017) show that corruption has a negative impact on economic growth.

H_0 = Foreign direct investment does not have a positive impact on economic growth.

H_1 = Foreign direct investment has a positive impact on economic growth.

According to Gründler & Potrafke (2019); Spyromitros & Panagiotidis (2021); and Daniel (2018), Investment has a positive impact on economic growth.

4.0 Results and Discussion

4.1 Trend Analysis

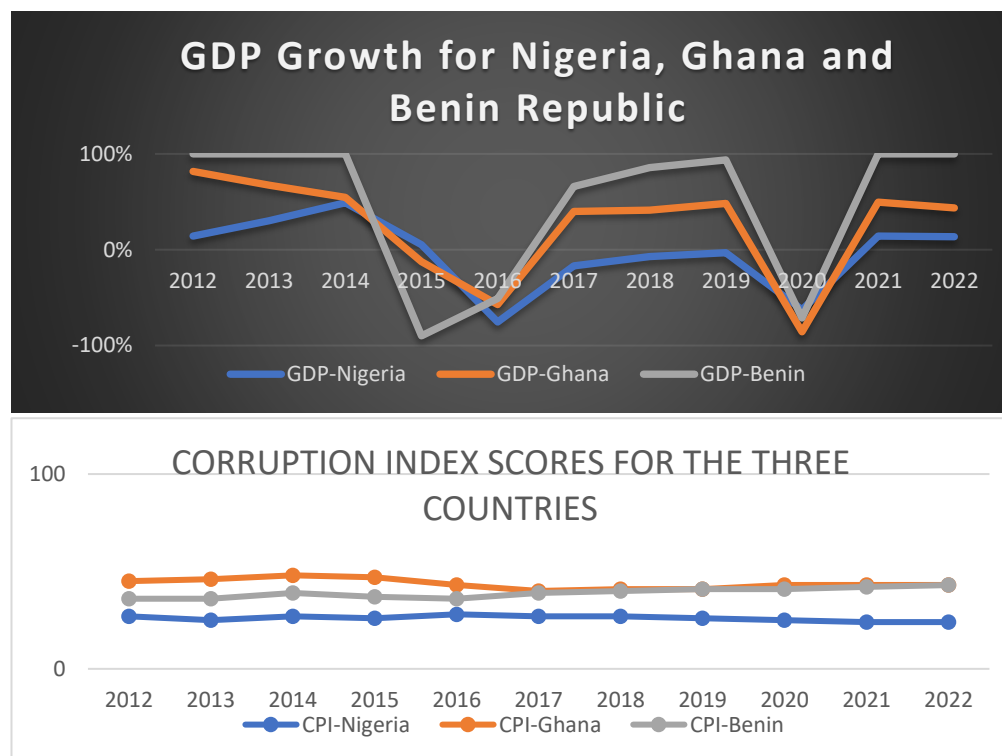


Figure 1: GDP per capita growth (annual %)

Figure 2: Corruption Perception Index Score.

Figure 1 indicates that Nigeria experienced negative GDP growth from 2015 to 2019. Additionally, due to the COVID-19 pandemic, Nigeria, Ghana, and the Republic of Benin all faced further negative GDP growth from 2019 to 2021. In Figure 2, it is evident that, despite

fluctuations in the struggle against corruption, Nigeria recorded more corruption cases from 2018 to 2022. Figure 2, equally highlights a significant decline in Ghana's efforts to combat corruption from 2014 to 2022. While the Republic of Benin made remarkable progress in its fight against corruption between 2016 and 2022.

Table 1: Descriptive Statistics

	GDP	CPI	FDI
Mean	1.723932	36.24242	2.510188
Std. Dev.	2.606621	7.893947	2.172610
Skewness	-0.402257	-0.360932	0.980139
Kurtosis	2.694184	1.611957	2.754577
Jarque-Bera	1.018555	3.365661	5.366520
Probability	0.600930	0.185847	0.068340
Observations	33	33	33

Source: Author's computation, using E-Views, 2025

The descriptive statistics presented in Table 1, show a total observation of 33 with CPI having the highest average value of 36.24, while GDP growth turned out with the lowest average of 1.72. The level of fluctuation is high in CPI as indicated by the standard deviation of 7.89, followed by GDP growth and FDI with a standard deviation of 2.61 and 2.17, respectively. The Jarque-Bera statistics and their probability values are greater than 5% significant level, meaning the null hypothesis of the normal distribution cannot be rejected.

Table 2: Panel Unit Root Test

Variables	Augmented Dickey-Fuller Test				Philips-Perron Test				Level of integration
	Level		First Difference		Level		First Difference		
	t-stat	P-value	T stat	P-value	T stat	P-value	T stat	P-value	
GDP Growth	16.0475	0.0135	34.4418	0.0000	15.1970	0.0188	41.8622	0.0000	I(0)
CPI	3.55068	0.7372	18.1816	0.0058	3.70757	0.7162	31.7751	0.0000	I(1)
FDI	12.9101	0.0445	20.4696	0.0023	18.5521	0.0050	36.2505	0.0000	I(0)

Note: Individual equations were estimated at a 5% significance level, without intercept and trend, and the Schwarz Info Criterion was the automatic lag selected.

Source: Author's computation, using E-Views, 2025.

Table 2 shows the panel unit root test which encompasses the Augmented Dickey-Fuller (ADF) test and Philips-Perron (PP) test. The test was conducted at a 5% significant level showing

GDP growth and foreign direct investment (FDI) to be stationary at level I(0), while corruption (CPI) is found to be stationary after the first difference I(1).

Having achieved the mixed order of integration we moved further to conduct the cointegration (bound test), fixed effect model and random effect model to establish whether a relationship exists among the variables in the three West African Countries. The cointegration, fixed effect and random effect estimates are presented in Table 3 and Table 4, respectively:

Table 3: Test of null hypotheses (There no relationship)

Variables	F-Statistics	Cointegration
F(CPI & FDI)	6.572888	
Critical Value	Lower Bound	Upper Bound
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Source: Author's computation, using E-Views, 2025

The result of F-statistics (6.757) is higher than the 5% upper bound value (4.85) in Table 3. This result shows the existence of cointegration, a long-run relationship among the variables, as the null hypotheses cannot be accepted. Table 4: Estimate of Fixed Effects and Random Effects

Fixed effects model				Random effects model			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	5.209481	0.759911	0.4537	C	-1.759904	-0.754629	0.4564
CPI	-0.144738	-0.756091	0.4559	CPI	0.072145	0.948057	0.3507
FDI	0.701185	1.857529	0.0738	FDI	0.346240	1.252257	0.2202
R-squared		0.314384		R-square		0.223598	
Prob(F-statistic)		0.027393		Prob(F-statistic)		0.022454	

Source: Author's computation, using E-Views, 2025

The condition to choose between fixed effects and random effects in analyzing the relationship among the variables depends on the result of the Hausman test. According to Table 5, the probability value of 16% is higher than the 5% significant level, therefore, we cannot reject the null hypothesis which favoured the random effects model.

The estimate of the random effects model presented in Table 4, shows that neither CPI nor FDI have a significant relationship with GDP growth as indicated by their probability values of 46% and 35%, respectively. However, both CPI and FDI show a positive relationship with GDP growth.

Table 5: Result of Hausman Test

Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.707616	2	0.1566

Source: Author's computation, using E-Views, 2025

Lag Order Selection Criteria

Table 6, presents the lag order selection criteria and according to sequential modified LR test statistic, final prediction error, Schwarz information criterion, Akaike information criterion, and Hannan-Quinn information criterion, one lag is estimated to be suitable for the conduct of cointegration or long run relationship.

Table 6: Lag Selection Criteria

VAR Lag Order Selection Criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-200.6591	NA	715.0359	15.08586	15.22984	15.12868
1	-135.8539	110.4090*	11.53167*	10.95214*	11.52807*	11.12339*
2	-126.9116	13.24775	11.93071	10.95642	11.96429	11.25611

Source: Author's computation, using E-Views, 2025

Results of the Panel-Autoregressive Distributive Lag Model

The estimates of the panel ARDL model presented in Table 7 showcase the long-run and short-run relationships among the variables. In the long-run, we observed a negative relationship between CPI and GDP growth, but not statistically significant. That is, a 1% increase in corruption index scores will cause GDP growth rate to fall by 0.54%, but not significant as specified by the probability value of 16% which is higher than the 5% significance level. Foreign direct investment shows a positive relationship with GDP growth but is not statistically significant at the 5% level.

In the short-run, a 1% increase in corruption index scores will lead to a 0.25% decrease in GDP growth, and it is statistically significant at a 5% level as revealed by the probability value of 0.6%. On the other hand, foreign direct investment portrays a positive impact on GDP growth, but is not statistically significant as the probability value shows 85%. The coefficient of error correction mechanism (ECM) is negative and significant at a 5% level, meaning it takes 54% speed of adjustment for equilibrium to be restored within one year.

Table 7: Long-run and Short-run Estimates

Variable		Coefficients	T statistics	Probability
Long- Run	CPI	-0.536605	-1.457054	0.1614
	FDI	0.102989	0.112628	0.9115

Short-Run	ECM	-0.534921	-4.033976	0.0007
	D(CPI)	-0.252032	-3.063428	0.0064
	D(FDI)	0.308653	0.192684	0.8493
	C	10.58174	4.213069	0.0005

Source: Author's computation, using E-Views, 2025

Findings

From the pooled data regression, we found support for the random effects model, as indicated by the Hausman test. The analysis reveals that corruption index score has a negative impact on GDP growth; however, this effect is not statistically significant. This finding aligns with the long-run Panel ARDL results, which also show an insignificant negative impact of corruption index scores on GDP growth. Overall, the study supports the "Grease the Wheel" hypothesis, as the short-run results indicate that 1% reduction in corruption is linked to an average 0.25% decrease in GDP growth. While corruption impedes economic growth in the long run, this effect is not statistically significant.

The corruption perception index (CPI) is measured on a scale of 0 to 100, where a higher score indicates lower levels of corruption. In three Sub-Saharan African countries, an increase in the corruption index score correlates with a decrease in GDP growth, showing that corruption has a positive impact on economic growth in the short term. This finding aligns with the research conducted by Lucarelli *et al.* (2024), Ighodaro and Igbinedion (2020), Lawal (2019), and Igweke *et al.* (2012), which analyzed 8 countries, 15 West African countries, 18 African countries, and 100 countries, respectively. All studies support the "Grease the Wheel" hypothesis, which posits that a certain level of corruption can facilitate economic activity. Furthermore, Trabelsi and Trabelsi (2020) indicate that a moderate degree of corruption may also benefit economic growth.

On the other hand, foreign direct investment shows a positive impact on GDP growth, both in the short-run and long-run, but not statistically significant.

5.0 Conclusion and Policy Recommendations

This study was set to test Sand the Wheels and Grease the Wheels" hypothesis. The findings from study supports the "Grease the Wheel" hypothesis, as the short-run results show that 1% reduction in corruption is linked to an average 0.25% decrease in GDP growth. While corruption impedes economic growth in the long run, this effect is not statistically significant. Based on these findings, the study puts forth the following policy recommendations:

It is crucial to strengthen the justice system to ensure that offenders are appropriately punished. Establishing a special court for corruption cases and setting timelines for prosecuting corruption-related matters is essential.

Government institutions, along with agencies and commissions responsible for prosecuting corruption-related offenses, should be reinforced through constitutional amendments. The military, police, and other paramilitary forces, should implement internal mechanisms to combat corruption.

Government should demonstrate transparency and accountability through digital governance. Encouraging civic engagement, policy consistency, public participation in monitoring corruption and reducing bureaucratic red tape.

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Entrepreneurial Innovation Strategies and Performance of Small and Medium Enterprises in Lagos and Abuja Metropolises

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Abstract

This study investigates the effect of entrepreneurial innovation strategies—disaggregated into product, process, and marketing dimensions—on the performance of Small and Medium Enterprises (SMEs) in Nigeria's primary economic hubs of Lagos and Abuja, with technology adoption as a moderator. The study is based on the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) with a descriptive survey research design, involving structured questionnaire to 410 SME owner-managers and executives, with an 82 percent usable response rate. The hypotheses were tested using Hierarchical Regression Modeling and reliability was established using KMO and Cronbachs alpha ($=0.837-0.901$). Results indicate that product ($0.841, p<.001$) and marketing innovation ($0.852, p<.001$) have a significant positive effect on SME performance, whereas process innovation does not have a significant impact. The positive effects of product (PDITCA: $0.185, p<.01$) and marketing innovation (MKITCA: $0.172, p<.01$) are greatly enhanced by technology adoption (TCA). The models describe 90.4% of the variance in the performance of SMEs ($R^2=0.904$). The study concludes that for SMEs in Nigeria's competitive urban centres like Lagos and Abuja metropolis, externally-focused innovations are paramount for success, and their impact is magnified by technology. It is therefore recommended that SME managers prioritize investments in product development and digital marketing, while policymakers should foster targeted support for these high-impact areas and invest in national infrastructure to create a more enabling business environment.

Keywords: Entrepreneurial Innovation, SME Performance, Product Innovation, Technology Adoption,

1. Introduction

Small and Medium Enterprises (SMEs) play a pivotal role in the economic development of nations, particularly in emerging markets where they act as engines of job creation, innovation, and inclusive growth. In Nigeria, SMEs represent over 96% of the enterprises, contribute about 48% to the national Gross Domestic Product (GDP), and are responsible for more than 80% of employment (PwC, 2020; NBS & SMEDAN, 2021). Lagos and Abuja, as major economic and political capitals, host a significant concentration of SMEs that serve as critical drivers of commerce and innovation. However, despite their economic prominence, Nigerian SMEs face persistent performance challenges including low productivity, limited profitability, reduced market share, and weak competitiveness (Aderemi et al, 2021; Ekon & Isayas, 2022). These shortcomings are largely attributed to the poor adoption and execution of entrepreneurial innovation—defined as the capacity to generate, apply, and commercialize novel ideas across product, process, marketing, and management dimensions (Chege et al, 2020).

Entrepreneurial innovation is increasingly recognized as a strategic imperative in today's volatile, uncertain, complex, and ambiguous business environment. It enables firms to respond to rapidly shifting market demands, technological disruptions, and global competitive pressures by fostering adaptability, operational efficiency, and customer-centric solutions (Lanza, &

Tripsas, 2023). Innovation-centric SMEs are often more agile and capable of leveraging internal resources to gain competitive advantage and long-term sustainability (Canh, et al, 2019). Nevertheless, the extant literature is skewed toward developed countries, with relatively little empirical attention paid to SMEs in sub-Saharan Africa, particularly in Nigeria. This geographic and contextual gap underscores the need for localized studies that examine how innovation manifests in resource-constrained environments with institutional and infrastructural limitations.

In Nigeria, numerous structural impediments inhibit innovation among SMEs. These include inadequate access to finance, poor technological infrastructure, limited absorptive capacity, and the absence of robust research and development ecosystems (Nnorom et al, 2023; Odusote & Akpa, 2022). For instance, studies show that a significant number of Nigerian SMEs lack the technological sophistication and market intelligence required to implement meaningful innovations, especially in product development and marketing strategies (Aluko & Ibrahim, 2023). Furthermore, many SMEs operate in informal sectors with weak corporate governance structures, making it difficult to institutionalize innovation as a routine strategic function (Gbadamosi, & Nwankwo, 2024).

Given these challenges, it is critical to examine the role of entrepreneurial innovation in enhancing SME performance within Nigeria's urban economic zones. This study is anchored on two theoretical lenses: Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT). RBV posits that firms achieve sustainable competitive advantage through the effective deployment of valuable, rare, inimitable, and non-substitutable internal resources—including knowledge, innovation capacity, and human capital (Barney, 1991). DCT complements RBV by emphasizing a firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece et al 1997). Together, these theories provide a robust foundation for analyzing how entrepreneurial innovation influences various dimensions of SME performance.

The primary objective of this study is to investigate the effect of entrepreneurial innovation—measured across three dimensions: product, process, and marketing innovation—on the performance of selected SMEs in Lagos and Abuja metropolises. The study also explores the moderating effect of technology adoption on the innovation-performance relationship. The study will offer evidence-based information to improve managerial practices, influence evidence-based policies, and develop academic knowledge on SME competitiveness using a quantitative research design that will be backed by hierarchical regression modelling. By deploying a descriptive survey research design with hierarchical regression modelling, the study will offer evidence-based information to improve managerial practices, influence evidence-based policies, and develop academic knowledge on SME competitiveness. In doing so, it addresses critical gaps in the literature and contributes to a deeper understanding of innovation-driven competitiveness among SMEs in emerging economies.

Ultimately, this research seeks to answer pressing questions on the entrepreneurial innovation strategies in form of product, process and marketing on the performance of SMEs in Lagos and Abuja metropolises. The findings are expected to offer actionable recommendations for SME owners, government agencies, innovation policymakers, and development partners aiming to create an enabling environment for sustainable entrepreneurship in Nigeria's dynamic urban centres.

2. Theoretical background and hypotheses

Entrepreneurial innovation is increasingly seen as a central mechanism through which small and medium enterprises (SMEs) enhance their performance, adapt to market shifts, and build sustainable competitive advantages. Rooted in both the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT), the strategic deployment of innovation allows firms to exploit internal resources and reconfigure capabilities in response to dynamic external environments (Barney, 1991; Teece et al, 1997). In Nigeria's SME landscape, where structural challenges and market volatility persist, innovation becomes not merely a competitive edge but a necessity for survival and growth (Eze & Okpala, 2024). This study therefore, considers entrepreneurial innovation through three interrelated dimensions—product, process, and marketing innovations—and explores their respective impacts on SME performance indicators such as competitive advantage, productivity, and profitability.

Product innovation entails the development or significant enhancement of goods or services to meet evolving customer needs and preferences. This form of innovation often serves as the first touchpoint between SMEs and their markets, directly influencing customer satisfaction, brand loyalty, and strategic differentiation. According to Woltier et al. (2021), firms that consistently innovate their products are more likely to retain market relevance and sustain competitive advantage. In highly competitive urban economies such as Lagos and Abuja, SMEs that invest in product innovation can distinguish themselves in saturated markets.

Hypothesis 1. Product innovation has a significant positive effect on performance of selected SMEs in Lagos and Abuja metropolis.

Process innovation, by contrast, focuses on internal efficiency and operational enhancement. It includes improvements in production methods, workflow systems, and service delivery that aim to reduce costs and increase output. In the context of Nigerian SMEs—many of which operate with constrained financial and infrastructural resources—process innovation is vital for maximizing productivity (Exposito & Sanchis-Llopis, 2019). Prior research highlights that SMEs that embrace process innovation can deliver better quality at lower costs, thereby improving operational performance and responsiveness to market demands (Akinwale et al., 2018).

Hypothesis 2. Process innovation has a significant positive effect on performance of selected SMEs in Lagos and Abuja metropolis.

Marketing innovation encompasses new methods for product promotion, pricing strategies, packaging, and customer engagement. It allows SMEs to access new customer segments, adapt to digital marketing trends, and create more personalized offerings. Gharghina et al. (2020) emphasized that effective marketing innovation correlates strongly with improved financial performance, especially profitability. In the digitally transforming Nigerian marketplace, SMEs that adopt innovative marketing practices are better positioned to convert consumer insights into revenue streams and competitive positioning.

Hypothesis 3. Marketing innovation has a significant positive effect on performance of selected SMEs in Lagos and Abuja metropolis.

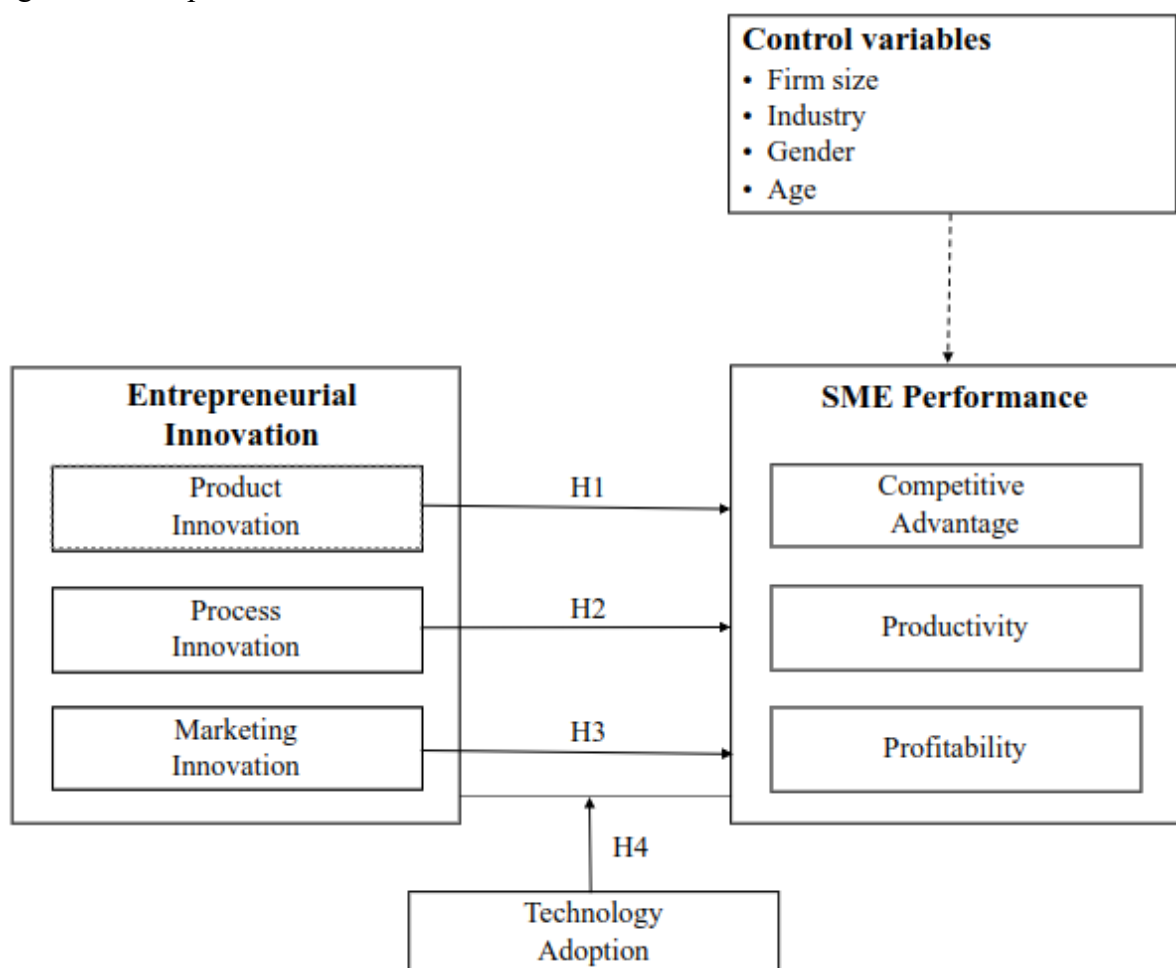
While these three innovation dimensions provide foundational strategies for performance enhancement, the extent to which they influence outcomes is often moderated by a firm's technological capabilities. Technology adoption acts as a catalyst for innovation

implementation, particularly in digitally driven economies. It enables SMEs to scale their innovations, improve efficiency, and access new markets through digital platforms. According to the World Economic Forum (2023), over 85% of firms view digital transformation as a key driver of future competitiveness. In Nigeria, however, technology adoption remains uneven due to infrastructural gaps and cost barriers (Odusote & Akpa, 2022). Understanding its moderating effect is critical for identifying the boundary conditions under which innovation translates into performance.

Hypothesis 4. Technology adoption moderates the relationship between entrepreneurial innovation and SME performance in Lagos and Abuja Metropolis.

Together, these hypotheses frame a conceptual model that empirically investigates how entrepreneurial innovation, reinforced by technology adoption, contributes to the performance of SMEs operating within Nigeria's complex urban economic environments.

Figure 1 Conceptual Framework



3. Methodology

3.1. Data collection and sample

To examine the relationships proposed in our conceptual model, this study employed a quantitative research methodology, utilizing structured surveys to gather empirical data from small and medium-sized enterprises (SMEs) operating in Lagos and Abuja, Nigeria.

The research design of the study was a descriptive survey design to test the effect of entrepreneurial innovation strategies on the performance of SMEs in Lagos and Abuja metropolis, using technology adoption as a moderating factor. Primary data were collected using a structured questionnaire to a sample of 500 SMEs owner-managers and top executives of SMEs in the register of Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2023), equally distributed across the two cities of Lagos and Abuja in manufacturing, retail, ICT, hospitality, and professional services sectors for a period of 60 days, which resulted in 410 valid responses (82% usability rate).

Entrepreneurial innovation strategies were evaluated in product, process and marketing dimensions, whereas SME performance was evaluated in terms of competitive advantage, productivity and profitability. The moderating variable was technology adoption and the control variables were firm age, size, industry type and owner demographics. The constructs were all rated using a five-point Likert scale and tested using Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy and Cronbach alpha tests ($\alpha = 0.837-0.901$).

The SPSS version 28, was used to analyze the data, and descriptive statistics, correlation, and Hierarchical Regression Modeling were utilized to test both the direct and moderating relationships between innovation and technology adoption and the performance of SMEs.

4. Data Analysis

This section presents the data analysis, results, and discussion of findings on entrepreneurial innovation and SME performance in Lagos and Abuja. Using descriptive statistics, correlation, and hierarchical regression, the study examines how product, process, and marketing innovation influence SME performance, while considering the moderating role of technology adoption. Besides, to establish the reliability and validity of the survey instrument Kaiser–Meyer–Olkin, Cronbach's alpha and Bartlett's tests were conducted prior to proper estimation.

Table 1: Reliability and Validity Results

Indicators	No of Items	KMO	Cronbach's alpha	Bartlett's Test (P-value)
Competitive Advantage (CPA)	5	0.789	0.883	0.000
Productivity (PDT)	5	0.795	0.891	0.000
Profitability (PFT)	5	0.745	0.901	0.000
SME performance (SME)	15	0.774	0.893	0.000
Product Innovation (PDI)	5	0.768	0.887	0.000
Process innovation (PCI)	5	0.772	0.837	0.000
Marketing Innovation (MKI)	5	0.782	0.898	0.000
Entrepreneurial Innovation (ENI)	15	0.773	0.875	0.000
Technology Adoption (TCA)	5	0.789	0.883	0.000

Source: Author's Computation

The results in Table 1 indicate a strong level of reliability and validity for all the indicators tested. The Kaiser-Meyer-Olkin (KMO) values for each variable, which range from 0.745 to 0.795, suggest that the sample size is adequate for conducting factor analysis, as values above 0.7 are generally considered acceptable. The Cronbach's alpha values, ranging from 0.837 to 0.901, indicate excellent internal consistency for each construct, as values above 0.7 are

considered reliable. Additionally, the Bartlett's Test of Sphericity has a p-value of 0.000 for all indicators, indicating that the correlation matrix is significantly different from an identity matrix, further supporting the appropriateness of factor analysis. These results suggest that the measures for Competitive Advantage (CPA), Productivity (PDT), Profitability (PFT), SME Performance (SME), Product Innovation (PDI), Process Innovation (PCI), Marketing Innovation (MKI), Entrepreneurial Innovation (ENI) and Technology Adoption (TCA) are both reliable and valid for further analysis.

Table 2: Descriptive Results

Indicators	N	Mean	Std. Deviation
CPA	410	4.58	0.53
PDT	410	4.52	0.37
PFT	410	4.55	0.36
SME	410	4.55	0.34
PDI	410	4.57	0.39
PCI	410	4.34	0.63
MKI	410	4.46	0.44
TCA	410	4.43	0.44
Gender	410	0.47	0.50
Number of employees	410	9.26	11.61
Years in Business	410	19.75	14.18
Industry	410	0.49	0.50

Source: Author's Computation, **Note:** Competitive Advantage (CPA), Productivity (PDT), Profitability (PFT), SME performance (SME), Product Innovation (PDI), Process Innovation (PCI), Marketing Innovation (MKI), Technology Adoption (TCA), Gender (1 = male; 0 = female), Industry (1 = manufacturing; 0 = service) and Standard Error values are reported in parentheses.

The descriptive statistics in Table 2 show that the mean scores for all key indicators are relatively high on a 5-point scale, suggesting strong agreement among respondents. Specifically, the highest mean is observed for Competitive Advantage (CPA) at 4.58, followed closely by Product Innovation (PDI) at 4.57, indicating that SMEs in Lagos and Abuja perceive innovation and competitive positioning as core strengths. Profitability (PFT), Productivity (PDT), and Marketing Innovation (MKI) also record high means above 4.4, while Process Innovation (PCI) and Technology Adoption (TCA) have slightly lower means, though still strong at 4.34 and 4.43, respectively. Gender distribution is nearly balanced (Mean = 0.47), and most businesses have a relatively small workforce (Mean = 9.26 employees) with notable variation (Std. Dev. = 11.61). Importantly, the SME indicator (Mean = 4.55, Std. Dev. = 0.34) reflects a consistently strong performance perception across small and medium-sized enterprises, reinforcing their role as resilient contributors to economic activities in the study area. The relatively low standard deviation suggests a high level of agreement among respondents about the strength of SME performance. Furthermore, on average, the SMEs have been in operation for nearly 20 years (Mean = 19.75), suggesting experienced business operations. Lastly, the Industry variable, with a mean of 0.49 and a standard deviation of 0.50, shows a balanced distribution between manufacturing and service industries.

Table 3: Correlation Results

Indicator s	CPA	PDT	PFT	SM E	PDI	PCI	MK I	TC A	Gende r	Size	Age	Industr y
CPA	1											
PDT	0.43 9	1										
PFT	0.43 2	0.71 2	1									
SME	0.81 8	0.82 9	0.82 3	1								
PDI	0.42 3	0.68 7	0.66 9	0.69 4	1							
PCI	0.36 3	0.39 9	0.33 8	0.44 6	0.25 9	1						
MKI	0.46 5	0.69 7	0.56 9	0.68 4	0.50 5	0.35 8	1					
TCA	0.31 5	0.32 9	0.28 5	0.37 8	0.22 0	0.30 7	0.27 1	1				
Gender	0.62 7	0.34 5	0.34 0	0.07	0.33 6	0.26 3	0.34 4	0.19 3	1			
Size	0.48 4	0.26 7	0.22 9	- 0.01 3	0.25 1	0.24 2	0.24 8	0.14 6	0.262	1		
Age	0.63 3	0.30 5	0.32 7	0.04 3	0.31 1	0.28 4	0.29 2	0.18 2	0.297	0.25 3	1	
Industry	0.48 1	0.23 8	0.17 9	- 0.06 4	0.22 5	0.19 4	0.21 6	0.14 2	0.356	0.15 9	0.21 1	1

Source: Author's Computation, **Note:** Competitive Advantage (CPA), Productivity (PDT), Profitability (PFT), SME performance (SME), Product Innovation (PDI), Process Innovation (PCI), Marketing Innovation (MKI), Technology Adoption (TCA), Gender (1 = male; 0 = female), Age (Year in business), Industry (1 = manufacturing; 0 = service), Size (Number of employees) and Standard Error values are reported in parentheses.

Table 3 presents the correlation results for the independent variables, with the aim of examining potential multicollinearity. The correlation matrix reveals the relationships among various independent variables in the study. The SME indicator exhibits very strong positive correlations with Competitive Advantage (CPA) (0.818), Productivity (PDT) (0.829), and Profitability (PFT) (0.823), suggesting that SME performance is strongly associated with these core organizational outcomes. Similarly, SME shows a strong correlation with Product Innovation (PDI) (0.694) and Marketing Innovation (MKI) (0.684), while its relationship with Process Innovation (PCI) (0.446) and Technology Adoption (TCA) (0.378) is moderate. These results highlight the centrality of SMEs in linking innovation, performance, and competitive advantage within the study context. Product Innovation (PDI) has moderate positive correlations with Marketing Innovation (MKI) (0.505) and Process Innovation (PCI) (0.259), indicating a tendency for firms focusing on product innovation to also pursue improvements in marketing and processes. The relationship with Technology Adoption (TCA) is weaker (0.220). Process Innovation (PCI) shows a moderate correlation with Marketing Innovation (MKI) (0.358) and a slightly stronger one with TCA (0.307). The control variables—Gender, Size, Age, and Industry—show weaker correlations with the innovation variables, with Gender exhibiting notable correlations with PDI (0.336), PCI (0.263), and MKI (0.344), while Age has a moderate correlation with PDI (0.311) and MKI (0.292). Overall, the correlations are not so high to suggest multicollinearity issues, indicating that the variables are relatively independent in this study.

The regression analysis was conducted to examine the effects of entrepreneurial innovation—specifically product, process, and marketing innovations—along with technology adoption and firm characteristics on the performance of small and medium enterprises (SMEs) in Lagos and Abuja. The models progressively introduced innovation dimensions, technology adoption, and their interactions to assess both direct and moderating effects on SME performance.

Table 4: Regression Results Predicting SME

Variable	SME performance (SME)			
	Model 1	Model 2	Model 3	Model 4
PDI	—	0.099 (0.030) ***	-0.002 (0.026) *	0.841 (0.234) ***
PCI	—	0.062 (0.018) ***	0.010 (0.016)	0.227 (0.162)
MKI	—	0.149 (0.029) ***	0.084 (0.024) ***	0.852 (0.228) ***
TCA	—	—	0.333 (0.025) ***	0.481 (0.100) ***
PDI*TCA	—	—	—	0.185 (0.052) ***
PCI*TCA	—	—	—	-0.049 (0.035)
MKI*TCA	—	—	—	0.172 (0.050) ***
Gender	0.429 (0.037) ***	0.330 (0.034) ***	0.213 (0.030) ***	0.211 (0.033) ***
Size	-0.168 (0.022)	-0.101 (0.021) ***	-0.016 (0.019)	-0.017 (0.018)
Age	0.538 (0.029) ***	0.431 (0.028) ***	0.466 (0.023) ***	0.468 (0.025) ***
Industry	0.019 (0.033)	0.031 (0.030)	0.017 (0.025)	0.019 (0.024)
(Constant)	3.600 (0.076) ***	2.339 (0.140) ***	1.533 (0.131) ***	0.941 (0.395) ***
R²	0.815	0.855	0.899	0.904
Adjusted R²	0.813	0.852	0.897	0.901
F-value	446.339***	337.356***	446.905***	339.722***

Source: Author's Computation, **Note:** SME performance (SME), Product Innovation (PDI), Process Innovation (PCI), Marketing Innovation (MKI), Technology Adoption (TCA), Interaction of Product Innovation and Technology Adoption (PDI*TCA), Interaction of Process Innovation and Technology Adoption (PCI*TCA), Interaction of Marketing Innovation and Technology Adoption (MKI*TCA), Gender (1 = male; 0 = female), Age (Year in business), Industry (1 = manufacturing; 0 = service), Size (Number of employees) and Standard Error values are reported in parentheses. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$

The regression results in **Table 1a** show that entrepreneurial innovation plays a critical role in shaping SME performance. Product innovation (PDI) has a significant positive effect ($\beta = 0.099$, $p < .001$ in Model 2; $\beta = 0.841$, $p < .001$ in Model 4), while marketing innovation (MKI) is also strongly influential ($\beta = 0.149$, $p < .001$ in Model 2; $\beta = 0.852$, $p < .001$ in Model 4). In contrast, process innovation (PCI) shows weaker effects, becoming insignificant when technology adoption is added ($\beta = 0.062$, $p < .001$ in Model 2; $\beta = 0.010$, ns in Model 3; $\beta = 0.227$, ns in Model 4). Technology adoption (TCA) itself is a powerful predictor ($\beta = 0.333$, $p < .001$ in Model 3; $\beta = 0.481$, $p < .01$ in Model 4). Importantly, interaction terms reveal that TCA amplifies the effects of product (PDI*TCA: $\beta = 0.185$, $p < .01$) and marketing innovation (MKI*TCA: $\beta = 0.172$, $p < .01$), but not process innovation (PCI*TCA: $\beta = -0.049$, ns). Among controls, gender ($\beta = 0.429$, $p < .001$ in Model 1; $\beta = 0.211$, $p < .001$ in Model 4) and firm age ($\beta = 0.538$, $p < .001$ in Model 1; $\beta = 0.468$, $p < .001$ in Model 4) consistently predict higher performance, while firm size has a small negative effect ($\beta = -0.168$, ns in Model 1; $\beta = -0.017$, ns in Model 4). The models explain a high proportion of variance in SME performance (R^2 rising from 0.815 in Model 1 to 0.904 in Model 4), confirming that innovation and technology adoption are critical determinants of SME success in the studied cities. The F-statistics are all

highly significant ($F = 446.339^{***}$ in Model 1 to $F = 339.722^{***}$ in Model 4), demonstrating the robustness of the regression estimates.

4.2 Research Findings

The coefficients suggest that SMEs benefit most from product and marketing innovations, particularly when these are integrated with technology adoption. For instance, the large jump in coefficients for PDI and MKI once TCA is considered underscores technology's amplifying role. However, the lack of consistent significance for process innovation suggests that while it may contribute in some contexts, it is not a decisive factor in performance in Lagos and Abuja. The moderating effects also confirm that technology is not just an independent driver but a crucial enabler of innovation's effectiveness. Gender and firm age effects indicate systemic differences in entrepreneurial performance, with male-led and older SMEs performing better, while firm size and industry type appear less decisive.

This study's findings provide a compelling and nuanced account of how different entrepreneurial innovation strategies affect SME performance in the dynamic urban landscapes of Lagos and Abuja. The results underscore that externally-focused innovations (product and marketing) are primary drivers of performance, a conclusion that gains significant weight when considering the critical enabling role of technology adoption.

The superior impact of product and marketing innovation strongly supports the idea that in highly competitive, consumer-driven markets, firm performance is closely tied to strategies that enhance market positioning and customer value. This aligns with recent scholarship by Foss & Saebi (2023), who argue that in environments marked by rapid change, business model innovations—often driven by new products and marketing approaches—are essential for creating and capturing value. The findings here suggest that for Nigerian SMEs, survival and growth are less about incremental internal tweaks and more about bold, market-facing maneuvers that secure a competitive advantage.

Perhaps the most revealing finding is the inconsistent and ultimately weak influence of process innovation on SME performance. This seemingly counterintuitive result can be understood through the lens of institutional theory in emerging markets. Research by Autio et al, (2024), posits that in economies with significant institutional voids and infrastructural deficits, the efficiency gains from process innovation are often absorbed or nullified by external environmental friction, such as unreliable supply chains or energy costs. Thus, an SME in Lagos or Abuja might perfect an internal workflow, but if external challenges remain unresolved, these improvements fail to translate into bottom-line performance, a conclusion strongly supported by this study's data.

Furthermore, the study confirms the transformative power of technology adoption, not merely as a direct performance driver but as a crucial amplifier for other innovations⁶. This finding resonates with the concept of digital capabilities as a meta-resource. A study by Nambisan et al, (2023), articulates that digital technologies reconfigure the very nature of innovation, enabling firms to scale customer engagement and product delivery in ways previously impossible. The significant interaction effect between technology and both product and marketing innovation in this research empirically demonstrates this synergy⁷. It suggests that for Nigerian SMEs, technology is the essential catalyst that transforms innovative ideas into tangible market performance, separating thriving enterprises from those that stagnate.

5.1 Conclusion

In conclusion, this study provides robust empirical evidence that the pathway to enhanced performance for SMEs in Nigeria's dynamic urban economies is not through innovation in general, but through a specific, externally-focused strategic orientation. The findings decisively show that product and marketing innovations are the primary engines of competitive advantage and profitability, while the impact of internal process innovation is largely neutralized by the challenging operating environment.

Crucially, this research establishes that technology adoption is not merely an independent driver of success but a foundational meta-capability that unlocks and amplifies the potential of market-facing innovations. For SMEs in Lagos and Abuja, the message is clear: survival and growth depend on the synergistic interplay between creating novel products and marketing strategies, and the digital platforms used to deploy them. This study contributes a nuanced, context-specific model to the literature, highlighting that for entrepreneurs in emerging economies, the most effective strategy is to innovate where it matters most—at the intersection of the firm and the market.

5.2 Recommendations

To foster a more competitive and resilient SME sector, the findings advocate for a multi-stakeholder approach centered on strategic innovation and technological integration. For SME owners and managers, this requires a deliberate pivot in resource allocation, prioritizing investments in high-impact, market-facing activities such as product development and digital marketing over internal process enhancements that yield marginal gains in the current infrastructural context. This strategic focus, however, must be underpinned by a non-negotiable commitment to technology adoption, which acts as a crucial amplifier for all innovative efforts. Supporting this, policymakers are urged to move beyond generic support and create targeted interventions, such as grants for R&D and digital literacy programs, while also addressing systemic barriers by investing in national infrastructure to create an environment where internal efficiencies can translate into tangible growth. Finally, the ecosystem of support must be strengthened by financial institutions and educators, who should develop tailored financial products for technology acquisition and new product launches, and update curricula to build SME capabilities in these proven, high-impact areas.

Policy Implications

The findings of this research offer several actionable insights for SME owner-managers, policymakers, and business support organizations in Nigeria and other emerging economies. These implications are crucial for fostering a more resilient and competitive SME sector.

The research provides practical recommendations to SME owners, policy makers and support institutions in Nigeria and other emerging economies. The most important thing to SME managers is to direct the scarce resources to product and marketing innovations that directly contribute to competitiveness and profitability as opposed to excessive investments on process improvement that is limited by ineffective infrastructure. The adoption of technology must be considered as a strategic need, which will allow firms to increase the effectiveness of innovation and reach more markets via digital platforms.

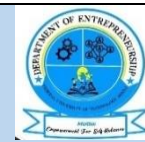
To policy makers, general innovation initiatives must be replaced by specific interventions to facilitate product development, research and development and digital marketing with grants and infrastructure investment. The reinforcement of electricity, logistics, and digital connectivity will enable process innovations to generate real productivity benefits.

Lastly, loan products to purchase technology and launch products should be designed by financial institutions and educators and consultants must incorporate customer-centric innovation and digital strategy into SME training. Specific mentorship and investments of women-led and younger companies are also necessary to facilitate inclusive entrepreneurship.

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ENTREPRENEURIAL MINDSET ON THE SUSTAINABILITY OF SMALL TOURISM BUSINESSES IN OSUN STATE, NIGERIA

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Abstract

The study explored the impact of entrepreneurial mindset on the sustainability of small tourism businesses in Osun state, Nigeria. The study adopted a survey research design. The sample size for this study is 297 small tourism businesses operating in Osun state, Nigeria. Data analysis was conducted using Smart-PLS. The findings revealed that innovativeness has a beta value of 0.029 and a p-value of 0.683, indicating a positive but insignificant effect on the entrepreneurial mindset influencing sustainability. In contrast, adaptability and resilience demonstrated a beta value of 0.603 and a p-value of 0.001, indicating a positive and significant effect. These results suggest that while innovativeness contributes to creativity, it does not significantly impact sustainability outcomes. Conversely, adaptability and resilience are critical for enhancing the sustainability of small tourism businesses. It is recommended that small tourism businesses in Osun State integrate structured innovation programs with mentorship and strategic collaborations to maximize innovative practices. Additionally, they should focus on strengthening adaptability and resilience through targeted training, scenario planning, and crisis management strategies. Encouraging a culture of flexibility and proactive problem-solving can further enhance sustainability outcomes.

Keywords: Tourism, Entrepreneurial mindset, Tourism businesses, innovative, adaptability,

1.0 Introduction

Tourism is now recognized as being an economic activity of many nations in the world including Nigeria. It is also one of the largest and fastest-growing sectors globally, contributing significantly to economic development, job creation, and cultural exchange. It accounts for approximately 10% of the world's GDP and supports millions of businesses worldwide, particularly small and medium-sized enterprises (SMEs) that serve as the backbone of the industry (John, 2023)

Morrison (2004) describe the tourism industry as comprising a large number of small firms which are fragmented and, as a result are widely dispersed. According to Harrison (2001), tourism can be referred to as a tool for economic development which is more heavily relied upon by less developed countries, than by developed countries, as a means to achieve economic growth.

According to Morrison (2004), small tourism business can be defined as those that have fewer than fifty (50) employees and are independently owned and operated. Meanwhile, Page *et al* (2017) define small tourism businesses as those that have fewer than twenty (20) employees and are often micro-enterprises that operate in the informal sector. Tourism businesses are business that operate in the tourism industry, providing goods and services to tourists. These enterprises can range from small, family-owned businesses to large, multinational corporations

(Page, 2014). According to Hall (2014), tourism businesses include: Accommodation providers like (hotels, resorts, guesthouses, clubhouses). Food and beverages providers (restaurants, cafes, bars), transportation providers (taxi services, tour operators, car rental companies) Attractions and activities (theme parks, museums, guided tours) and Travel Agencies and tour operators.

Entrepreneurial mindset is a business, investment, and thinking mindset on how to invest and make profit. It can further refer to the ability to identify opportunities, take risks, and innovate (Adewale and Jimo, 2022). This is important for small business owners to cultivate the entrepreneurial mindset and spirit in order to innovate, adapt to changing environments, and take calculated risks that will lead to achieving business goals. An entrepreneurial mindset characterized by creativity, risk-taking, adaptability, proactiveness, and opportunity recognition has thus emerged as a critical factor in ensuring business sustainability and long-term growth (Ireland *et al.*, 2003; McGrath and MacMillan, 2000). Also, an entrepreneurial mindset is a set of skills that enable people to identify and make the most of opportunities, overcome and learn from setbacks, and succeed in a variety of settings (Adewale and Jimo, 2022).

The sustainability of small tourism businesses in Osun State, Nigeria, is a significant concern. Many of these businesses are facing challenges such as economic fluctuations, fluctuating exchange rates of foreign currency, lack of a tourism calendar in the state, climate change, shifts in consumer behavior, limited finances to expand their businesses, inadequate tourism infrastructure (e.g., airports) to attract tourists, intense competition, and a lack of effective tourism policies that create a better enabling environment for tourism to thrive compared to other states in Nigeria like Akwa-Ibom and Lagos (Harrison, 2001). Despite the potential of the tourism industry to contribute to the state's economic development, create employment opportunities, and reduce poverty, many small tourism businesses in the state struggle to survive. The lack of an entrepreneurial mindset among small tourism business owners has been identified as a major factor contributing to this problem (Duggguh, 2008). Entrepreneurs in the tourism sector are expected to adopt innovative approaches and demonstrate resilience and adaptability to address these challenges for the betterment of their businesses (Ritchie, 2004).

Osun State, located in southwestern Nigeria, is renowned for its rich cultural heritage, historical significance, and vibrant tourism sector. Home to the famous Osun-Osogbo Sacred Grove, a UNESCO World Heritage Site, the state attracts visitors with its deep-rooted Yoruba traditions, festivals, and artistic expressions (Hall and Page, 2014). Osogbo, the capital, serves as a cultural hub, while other towns like Ile-Ife, regarded as the cradle of the Yoruba people, add to its historical importance. The state's economy thrives on agriculture, commerce, and a growing tourism industry, with natural attractions such as Olumirin Waterfalls in Erin-Ijesha complementing its diverse landscape (Morrison and Thomas, 2004). Osun State is a treasure trove of cultural and natural attractions, making it an ideal destination for tourism. By tapping into Osun State's rich cultural and natural heritage, small tourism businesses can thrive and contribute to the state's economic development.

While there is a growing body of research on the importance of entrepreneurial mindset for small business success, there is a dearth of research on the impact of entrepreneurial mindset on the sustainability of small tourism businesses in Nigeria. Specifically, there is a need for research that explores the relationship between entrepreneurial mindset and the sustainability of small tourism businesses in Osun State (Adewale & Jimo, 2022).

The main objective of the study is to examine the impact of entrepreneurial mindset on the sustainability of small tourism businesses in Osun state, Nigeria. The specific objectives to:

identify the key components of entrepreneurial mindset that influence the sustainability of small tourism businesses in Osun state and provide recommendations for small tourism businesses in Osun state to develop an entrepreneurial mindset and enhance their sustainability. The study hypothesized the following:

Ho1: Innovativeness has no significant effect on entrepreneurial mindset that influence the sustainability of small tourism businesses in Osun state.

Ho2: Adaptability and resilience has no significant effect on entrepreneurial mindset that influence the sustainability of small tourism businesses in Osun state.

2.0 Literature review

2.1 Conceptual framework

This section reviewed the major concepts of the study as follows:

2.1.1 Entrepreneurial mindset

According to (Aghazamani *et al.*, 2020) Mindset is a thought that is presented by a person to be able to change all views about things that have not been feasible so far to become worthy to be made and used. Mindset refers to the belief's individuals hold about their abilities and qualities, which influence how they approach challenges and learning opportunities. A fixed mindset assumes that abilities are static, whereas a growth mindset believes abilities can be developed through effort and learning. (Dweck, 2006). Entrepreneurial mindset refers to a set of cognitive and behavioral traits that enable individuals to identify opportunities, take initiative, adapt to challenges, and drive innovation in various contexts, contributing to business growth and sustainability. Entrepreneurial mindset is the ability to rapidly sense, act, and mobilize under uncertain conditions, characterized by a focus on innovation, risk-taking, and proactive behavior. (McGrath, 2000).

An entrepreneurial mindset is a way of thinking about business that emphasizes opportunity recognition and the ability to create value in dynamic and uncertain environments. (Ireland, 2003). According to (Primatari, 2019) to be able to rise up, entrepreneurs in the tourism industry must be able to think about what concepts are made, so business owners must have a good and focused mindset in order to be able to create and design what tourism concepts should be made and designed so that visitors can return. In addition, entrepreneurs in the tourism industry must have a high spirit and try hard so that their business can return to normal as before, so that with a good and focused mindset, as well as a high spirit can affect the increase in self-motivation of entrepreneurs in order to be able to improve the performance of the business that will be created and designed

An entrepreneurial mindset is crucial for the success and sustainability of small tourism businesses, as it fosters innovation, risk-taking, and adaptability in a competitive market. Entrepreneurs in the tourism sector must anticipate market trends, embrace new technologies, and continuously adapt to shifting customer preferences. Entrepreneurial mindset will help small tourism businesses (hotels, eateries/ restaurants, clubhouses or bar and others) especially in Osun state to thrive despite challenges like economic fluctuations, fluctuation in foreign currency rate of exchange, political instability, or external crises such as the COVID-19 pandemic, and others (McGrath and MacMillan, 2000; Dweck, 2006).

2.1.2 Innovativeness

Innovativeness is a crucial driver of competitiveness and sustainability in tourism businesses, encompassing the ability to develop and implement new ideas, services, and strategies that

resonate with evolving market demands. Dugguh (2008), defines innovation as the translation of a new idea into a new company, a new product, a new service, a new process or a new method of production. In the view of Robbins *et al.* (2001) innovation involves creativity. By embracing innovative marketing strategies such as social media campaigns, businesses can effectively reach and engage targeted audiences, creating a dynamic brand presence and fostering customer loyalty. The frequent introduction of new tour packages or services not only attracts diverse customer segments but also demonstrates adaptability to changing travel trends. Additionally, the adoption of modern technologies, such as online booking systems and virtual tours, enhances operational efficiency and customer convenience, solidifying the business's position as a forward-thinking and customer-centric enterprise. Together, these elements of innovativeness form a synergistic approach that drives growth and ensures long-term sustainability.

2.1.3 Resilience and adaptability

Resilience is the dynamic process of positive adaptation within the context of significant adversity or risk. ((Luthar, 2000). While Adaptability refers to the ability to effectively adjust to changes, including new environments, demands, or challenges, while maintaining high performance. (Pulakos *et al.*, 2000) Resilience and adaptability are essential traits that enable individuals and organizations to recover from setbacks, adjust to changing circumstances, and thrive in uncertain environments. (Luthar, 2000)

Resilience and adaptability are pivotal traits for businesses navigating the challenges of survival and recovery from crises such as the COVID-19 pandemic, political disruptions, and fluctuating foreign exchange rates. These traits enable businesses to swiftly respond to disruptions by reconfiguring operations, diversifying revenue streams, and embracing innovative strategies. For instance, during COVID-19, some businesses leveraged digital platforms to offer virtual experiences and maintain customer engagement. In the face of political instability and high exchange rates, businesses adapted by sourcing locally, renegotiating contracts, and exploring cost-effective alternatives. This ability to absorb shocks, pivot strategies, and sustain operations underscores the importance of resilience and adaptability as core drivers of business sustainability in turbulent environments.

2.1.4 Sustainability of small Tourism businesses

The sustainability of a tourism businesses in Osun state, Nigeria, is a pressing concern that requires attention of stakeholders like government, tourism practitioners and others. Despite the state's rich cultural heritage and natural attractions, many small tourism businesses struggle to survive due to various challenges, such as inability to innovate, adapt and resiliency to navigate the complexities of the tourism industry. Innovativeness is a crucial factor in sustaining small tourism businesses, as it enables them to differentiate themselves from competitors, respond to changing customer's needs, and capitalize on emerging trends. (Hjalager, 2010). For example, small tourism businesses in Osun state can innovate by offering unique cultural experiences, such as traditional Yoruba music, drum beating and dance performances, or by developing sustainable tourism products that showcase the state's natural attractions.

Resilience and Adaptability are another vital component of sustainability for small tourism businesses in Osun state. The tourism industry is inherently vulnerable to external shocks, such as COVID-19, Ebola, economic downturn or recession, natural disasters and global health crises (Ritchie, 2004). Tourism entrepreneurs should see the need to develop innovativeness, resilience and adaptive strategies that will assist in navigating these unexpected shocks or crisis

in tourism industry. Ability to invest in employee training and development, embracing new technologies, and continuously monitoring customer feedback will go a long way to sustain their businesses and it will further contribute to the economic development, create employment opportunities, and preserve local cultures and traditions.

2.2 Empirical review

Firdaus *et al* (2022) examined the role of the entrepreneurship mindset and spirit in building a tourism business in Indonesia post COVID-19. This study examines the variables related to the entrepreneurial mindset and spirit, while the dependent variable is increasing business performance through moderating variables, namely self-motivation of entrepreneurs in rebuilding tourism businesses after COVID-19. The research method used in this research is descriptive quantitative research method using path analysis. In this study the independent variable is related to mindset and entrepreneurial spirit while for the dependent variable, namely the variable business performance improvement and the moderator variable is the variable self-motivation from entrepreneurs in rebuilding tourism businesses post-covid-19, data analysis using AMOS 18 and the data taken is data on the number of entrepreneurs in the Indonesian tourism industry in 2016-2020. Partially, the variables of mindset and entrepreneurial spirit have a significant effect on the variables of increasing business performance and self-motivation. Simultaneously, the variables of mindset and entrepreneurial spirit have an effect on the variable of increasing business performance through self-motivation variables. Through the results of research that has been stated that with a good mindset in carrying out the business that will be built by thinking about what business concepts will be developed after being slumped by COVID-19, plus increasing the spirit of entrepreneurship will improve performance in business for entrepreneurs in the tourism industry, increasing Performance is due to an increase in self-motivation in carrying out and turning his business into a successful business.

Ndana (2023) examined the influence of an entrepreneurial mindset on a performance of small medium and micro enterprises (SMEs) in the informal sector in Bloemfontein. The study aims to measure the effect of entrepreneurial thinking on key performance metrics, such as profitability, innovation, and sustainability, in the setting of informal SMEs by utilizing both quantitative and qualitative analysis. It is expected that the research's conclusions will make significant contributions to both academic research and useful policies, providing suggestions for encouraging and maintaining an entrepreneurial attitude among informal sector SMEs. To lay the groundwork for future studies and policy interventions, this dissertation aims to close the current knowledge gap regarding the interplay between an entrepreneurial attitude and the performance of small and medium-sized enterprises (SMEs) in informal sector areas.

2.3 Theory Framework

Resources-Based View Theory

The Resource-Based View (RBV) posits that an organization's sustained competitive advantage stems from its ability to effectively utilize unique resources and capabilities that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Within the context of entrepreneurial mindset and tourism, this theory underscores the role of innovation, creativity, and resilience as strategic resources that enable businesses to adapt and thrive in dynamic environments. The entrepreneurial mindset plays a pivotal role in driving the sustainability of small tourism businesses in Osun state, Nigeria. Rooted in principles of innovation, resilience, and opportunity recognition, this mindset equips tourism entrepreneurs with the capability to navigate economic uncertainties, political disruptions, and post-pandemic recovery challenges.

By leveraging unique resources such as innovative marketing strategies, diverse service offerings, and advanced technologies, small tourism entrepreneurs enhance their competitive edge while promoting sustainable tourism practices. Grounded in the Resource-Based View, this approach highlights the importance of cultivating entrepreneurial traits as strategic assets to achieve long-term growth, environmental stewardship, and community engagement within the dynamic Osun state tourism ecosystem (Barney, 1991; McGrath and MacMillan, 2000).

3.0 Methodology

This study employs a survey research design, conducted in the Osun state, Nigeria. The population of the study consist of 1,160 (516 hotels, 254 event centers, 147 eateries, and 243 clubhouses and bars) tourism businesses in Osun state as provided by Osun State tourism board, 2024. The sample size for this study is 297 small tourism businesses. Taro Yamane (1976) formula was used to determine the sample size. The study adopted both purposive and convenience sampling techniques. The purposive method ensured that only staff directly involved in strategy formulation and operational decision-making were selected, while the convenience approach allowed the researcher to reach employees who were readily available and willing to participate during the data collection period.

Data were gathered primarily through a structured questionnaire designed on a 5-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). The instrument was validated by experts in management research, and reliability was established using Cronbach's Alpha, with all constructs exceeding the acceptable threshold of 0.70, confirming internal consistency. The collected data were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with the aid of SmartPLS 4.0 software.

4.0 Test of Hypotheses

The table below showed the path coefficients, t-values and p-values used to test the hypotheses of the study:

Table 5: Path Coefficient of the Model

Variables	Beta	T Statistics (O/STDEV)	P Values	Decision	F ² Value
Innovativeness -> Entrepreneurial Mindset	0.029	0.275	0.683	Accepted	0.000
Adaptability -> Entrepreneurial Mindset	0.603	11.129	0.001	Rejected	0.276

Notes: ***($P < 0.01$), **($P < 0.05$), *($P < 0.1$)

Source: SMART-PLS Output, 2025

Hypothesis One

H₀₁: Innovativeness has no significant effect on the entrepreneurial mindset that influences the sustainability of small tourism businesses in Osun State.

The result of the test, as shown in Table 5, revealed that innovativeness positively and insignificantly affected the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State, with $\beta = 0.029$ and $p = 0.683$. Thus, hypothesis one was supported and therefore accepted at a 5% level of insignificance. There is adequate evidence to accept the null hypothesis, and the study therefore concludes that innovativeness has a

positive and insignificant effect on the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State.

Hypothesis Two

Ho2: Adaptability and resilience have no significant effect on the entrepreneurial mindset that influences the sustainability of small tourism businesses in Osun State.

The result from Table 5 shows that adaptability and resilience have a positive and significant effect on the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State, with $\beta = 0.603$ and $p = 0.001$. Thus, hypothesis two was not supported and therefore rejected at a 5% level of significance. There is adequate evidence to reject the null hypothesis, and the study therefore concludes that adaptability and resilience have a positive and significant effect on the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State.

5.0 Discussion of Findings

Innovativeness positively and insignificantly affected the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State. This suggests that while innovative approaches may contribute to creativity and business ideas, they may not yet have a substantial impact on sustainability outcomes in the sector. This finding aligns with that of Adeleke and Ojewale (2024), who found that innovativeness has a positive but insignificant effect on SME performance in Oyo State. However, the result contradicts the finding of Uster et al. (2024), who established a statistically significant positive relationship between innovativeness and SME performance in NWSC-Rukungiri District.

Conversely, adaptability and resilience have a positive and significant effect on the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State. This implies that the ability of business owners to adapt to changes and withstand challenges is essential for maintaining a sustainable business. This finding is consistent with Eze et al. (2024), whose study revealed a strong positive and significant relationship between adaptability, resilience, and SME performance in Nigeria. However, the finding differs from that of Okechukwu et al. (2024), who found that adaptability and resilience have a negative but insignificant effect on business performance.

6. Conclusion and Recommendations

Based on the finding that innovativeness positively and insignificantly affected the entrepreneurial mindset influencing the sustainability of small tourism businesses in Osun State, it can be concluded that while innovativeness may provide some benefits for creativity and new ideas, it alone may not be sufficient to drive significant improvements in sustainability outcomes. Additional support mechanisms or complementary strategies may be necessary to enhance the impact of innovativeness on sustainability.

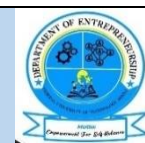
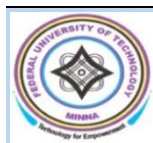
The conclusion from the finding that adaptability and resilience have a positive and significant effect on the entrepreneurial mindset influencing sustainability is that these traits are crucial for small tourism businesses in Osun State. The positive and significant impact suggests that adaptability and resilience contribute meaningfully to enhancing business performance, productivity, and sustainability.

- i. Based on the finding that innovativeness positively and insignificantly affected the entrepreneurial mindset influencing sustainability, it is recommended that small tourism businesses in Osun State should integrate structured innovation programs with mentorship and strategic collaborations to maximize the benefits of innovative practices.
- ii. Small tourism businesses should strengthen adaptability and resilience through targeted training, scenario planning, and the development of crisis management strategies. Encouraging a culture of flexibility and proactive problem-solving can help enhance sustainability outcomes.

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Entrepreneurial Proactiveness and SMEs' Competitive Advantage: Moderating Role of Market Information

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Abstract

Small and Medium Scale Enterprises (SMEs) struggle to maintain sustainable competitive advantage in developing economies despite their significant contribution to economic development, this may premise on the entrepreneurial orientation in use. This study examined the influence of entrepreneurial pro-activeness on competitive advantage of SMEs; moderating effect of market information. Survey research design was adopted for the study, data were collected from SMEs owners/managers using structured questionnaire. Multi-stage sampling technique was applied to select respondents across major cities in Osun State, a total of 304 valid responses were retrieved of 343 distributed questionnaires. The results revealed that entrepreneurial pro-activeness has significant positive influence on market information ($t=23.892$, $p=0.000<0.05$) and competitive advantage ($t=11.217$, $p=0.000<0.05$). The analysis further confirms that the influence of pro-activeness on competitive advantage becomes stronger when SMEs utilize higher levels of market information. The study contributes to body of knowledge establishing significance of pro-activeness in SMEs competitive advantage. The study implies that SME managers and owners must institutionalize data-driven decision-making to enable strategic outcomes. Despite the significance of entrepreneurial pro-activeness, its impact is significantly strengthened when guided by timely and reliable market intelligence. The study thereby recommends that managers invest in market research tools, data analytics capabilities, and knowledge-sharing systems to support informed and agile decision-making. Government agencies and support institutions should facilitate SMEs' access to digital platforms, capacity-building programs, and real-time market information systems to boost their competitiveness in dynamic business environments.

Keywords: Entrepreneurial Pro-activeness, SMEs, Competitive Advantage, Market Information, Structural Equation Model.

1.0 Introduction

Small and Medium Scale Enterprises (SMEs) have been widely acknowledged as the cornerstone of economic growth, poverty reduction, innovation, and employment generation, particularly in developing economies (OECD, 2021). In Nigeria, SMEs contribute significantly to the gross domestic product (GDP) and provide substantial employment opportunities (SMEDAN, 2022). Despite these contributions, many SMEs struggle to maintain a sustainable competitive advantage due to intense competition, limited resources, and dynamic market conditions (Nuhu et al., 2022). Consequently, there is a growing emphasis on entrepreneurial strategies that can help SMEs remain competitive and resilient in fluctuating market environments.

One critical dimension of entrepreneurial orientation that has received considerable scholarly attention in this regard is entrepreneurial pro-activeness, which refers to the forward-looking, opportunity-seeking behavior that enables firms to anticipate future demands, initiate change, and act ahead of competitors (Lumpkin & Dess, 1996; Rauch et al., 2009). Proactive firms tend to lead industry trends, introduce innovative products or services, and shape market dynamics to their advantage (Wiklund & Shepherd, 2005). This strategic posture not only positions firms to exploit emerging opportunities but also shields them from potential threats in the competitive landscape. However, the ability of proactive firms to translate into competitive advantage is contingent upon several external and internal factors.

Market information encompasses critical data about customer preferences, competitor strategies, market trends, technological advancements, and regulatory shifts (Shafique et al., 2023). Access to comprehensive and real-time market information enables SMEs to make informed strategic decisions, minimize uncertainties, and adapt their proactive initiatives to market realities (Sulaiman & Al Mamun, 2023). In environments characterized by rapid changes and information asymmetry such as those in many developing countries, market information serves as a vital resource that can enhance or impede the success of entrepreneurial strategies (Al-Hakimi & Borade, 2020). Wang, et al., (2020) emphasized that entrepreneurial learning, facilitated through market information, enables firms to build dynamic capabilities that support continuous innovation and strategic renewal. Despite the growing recognition of the importance of market information in entrepreneurial strategy, there is still a paucity of research that specifically investigates the interplay between market information, entrepreneurial pro-activeness, and competitive advantage within the context of SMEs in developing countries like Nigeria. Existing studies (Adebayo & Olamide, 2021; Nwosu & Eze, 2022; Oyewale et al., 2023) in Nigeria have predominantly focused on the direct effects of entrepreneurial orientation on performance, with insufficient empirical exploration of how market information can shape or strengthen these relationships.

This gap in the literature exposed fundamental deficiency, as the inability of SMEs to leverage market information alongside proactive strategies may continue to hinder their competitiveness, growth, and survival in increasingly volatile markets. Therefore, this study seeks to address this gap by investigating the moderating effect of market information on the relationship between entrepreneurial pro-activeness and competitive advantage among SMEs in Osun state, Nigeria using a quantitative cross-sectional survey design method. By doing so, the research seeks to offer practical insights for SME owners, policymakers, and support organizations on the importance of developing robust market intelligence mechanisms to enhance the competitiveness of SMEs through proactive strategies.

2.0. Literature Review

Entrepreneurial Pro-activeness

Pro-activeness refers to the ability to think ahead, anticipate, initiate change, or take the first step rather than adopting a reactive or defensive posture (Onyenma & Hamilton, 2020). It describes an ongoing perspective in which businesses actively seek to anticipate and capitalize on opportunities to develop and introduce new products while making adjustments to existing strategies and tactics. Pro-activeness also involves the ability to detect future market trends, secure first-mover advantages in the short term, and shape the direction of the market environment in the long term (Lyon et al., 2000; Lumpkin & Dess, 2005; Hughes & Morgan, 2007). Strong proactive behavior enables SMEs to anticipate market needs and foresee competitors' demands (Eggers et al., 2013). Entrepreneurial pro-activeness is a key dimension

of Entrepreneurial Orientation (EO), defined as the capacity of firms to anticipate and act on future demands and opportunities ahead of competitors (Lumpkin & Dess, 1996). Unlike mere responsiveness, pro-activeness reflects an organization's disposition to lead rather than follow market trends, often through initiating product development, market exploration, and strategic positioning in anticipation of customer needs (Wiklund & Shepherd, 2005).

Market Information

Market information refers to data, insights, and intelligence that organizations gather about their operating environment, particularly concerning customers, competitors, industry trends, and regulatory frameworks (Shafique et al., 2023). It provides firms with a deeper understanding of external variables that can impact strategic decisions and performance outcomes (Sulaiman & Al Mamun, 2023). For SMEs, market information is a valuable resource that compensates for their often limited financial and technological resources. Access to reliable market information enables SMEs to reduce environmental uncertainty, make informed decisions, and tailor their proactive initiatives to market realities (Al-Hakimi & Borade, 2020). When firms integrate such intelligence into their strategic frameworks, they enhance their capacity to adapt proactively to changes, innovate effectively, and maintain competitive relevance in dynamic markets (Wang et al., 2020).

Competitive Advantage

Competitive advantage is the process where a firm is able to achieve and sustain profit that exceeds what its competitors are achieving (Christian, 2020). An organisation is able to gain a competitive advantage over its competitors by understanding its market and customers (Shodunke et al. 2020). It is a situation whereby an organisation is able to deliver the same benefits as competitors but at a lower cost, delivers benefits that exceed those of its competitors' and creates superior value for its customers (Porter 2010). The Resource-Based View (RBV) suggests that competitive advantage arises from the effective utilization of valuable, rare, inimitable, and non-substitutable resources, which in this context includes entrepreneurial capabilities and market information (Barney, 1991). By creating value for consumers, as part of a business strategy, SMEs can achieve long-term viability. Put differently, a firm's competitive advantage serves as a platform for developing a long-term growth strategy and thus relates to creating value for consumers (Jones, Kato & Weinberg 2003). Positional superiority is achieved through providing higher customer value or attaining lower relative costs in the market (Gitau & Kosgei 2016). Also, a Competitive advantage is the ability gained through attributes and resources to perform at a higher level than others in the same industry or market (Al-Swidi & Mahmood 2011). Wang (2014) asserts that an organisation is able to obtain a competitive advantage by developing or acquiring a set of attributes that will help it to outperform its competitors.

Moderating Role of Market Information

While pro-activeness is crucial, its impact on competitive advantage is significantly influenced by how well a firm understands and interprets its market environment (Rashidirad et al., 2023). In this regard, market information serves as a moderator, enhancing or diminishing the strength of the relationship between entrepreneurial pro-activeness and competitive advantage. When SMEs have access to comprehensive and timely market information, their proactive strategies are more likely to be accurately targeted and effectively implemented. For example, a proactive SME equipped with customer insights and competitor intelligence can better predict market needs, innovate accordingly, and respond swiftly to competitive threats (Shafique et al., 2023). Conversely, without adequate market information, even proactive firms may pursue initiatives

that are misaligned with customer expectations or market conditions, leading to resource wastage and strategic missteps (Nuhu et al., 2022). Several empirical studies affirm this moderating role. Nuhu et al. (2022) demonstrated that market information significantly enhances the impact of entrepreneurial orientation on SMEs' performance in Nigeria. Similarly, Al-Hakimi and Borade (2020) found that firms with strong market orientation, an aspect deeply rooted in market information achieve better innovation outcomes, which in turn translate to competitive advantage.



Figure 1.

Conceptual Framework

The conceptual framework shows that entrepreneurial pro-activeness enhances SMEs' competitive advantage by enabling firms to anticipate and exploit emerging opportunities ahead of competitors. However, the strength of this relationship depends on the availability and use of market information. Market information encompasses data on customers, competitors, and market trends, it is therefore expected to moderate the relationship between the independent and dependent variables by guiding proactive actions toward more effective and sustainable outcomes. This is grounded in the Resource-Based View and Dynamic Capabilities Theory, the framework suggests that SMEs achieve superior competitiveness when proactive entrepreneurial behavior is complemented by timely and reliable market intelligence.

Resource-Based View (RBV)

This study is anchored on Resource-Based View (RBV), developed by Barney (1991), the theory asserts that firms achieve sustainable competitive advantage when they possess and effectively utilize resources that are valuable, rare, inimitable, and non-substitutable. RBV emphasizes that internal capabilities and resources are critical to superior firm performance and market competitiveness. In the context of SMEs, entrepreneurial pro-activeness is conceptualized as an intangible resource that enables firms to identify and exploit opportunities ahead of competitors (Wiklund & Shepherd, 2005). However, RBV also implies that pro-activeness alone may not yield competitive advantage if not combined with complementary resources such as market information. Access to market information enhances the value of pro-activeness by aligning proactive efforts with market demands, customer preferences, and competitive conditions (Rashidirad et al., 2023). Thus, market information can be seen as a dynamic resource that enhances the utility of proactive entrepreneurial behaviors, reinforcing the RBV's argument that the synergy between various strategic resources drives sustained competitive advantage.

Dynamic Capabilities Theory

The Dynamic Capabilities Theory, proposed by Teece et al., (1997), extends the RBV by emphasizing the need for firms to integrate, build, and reconfigure internal and external competencies to respond to rapidly changing environments. This theory is especially relevant for SMEs operating in dynamic markets where competitive conditions, customer needs, and technologies evolve quickly. Entrepreneurial pro-activeness reflects a dynamic capability that enables firms to anticipate changes, innovate, and reposition themselves strategically (Wang et al., 2020). However, the effectiveness of this capability is contingent on the firm's ability to sense and seize opportunities, which is largely facilitated by access to market information. Market information equips SMEs with the intelligence necessary to adapt their strategies, reconfigure resources, and align proactive efforts with market trends and regulatory shifts (Shafique et al., 2023). In this light, dynamic capabilities theory suggests that the interaction between proactive behavior and market information enhances a firm's agility and adaptability, leading to competitive advantage in uncertain environments.

Empirical Review

Empirical literature have consistently explored the entrepreneurial orientation and their impact on performance and competitive advantage of SMEs. Rauch et al., (2009) conducted a meta-analysis of studies on entrepreneurial orientation across various countries and industrial sectors, examining how its dimensions influence firm outcomes. Their findings revealed that entrepreneurial pro-activeness consistently and positively affects business performance, regardless of contextual differences, highlighting its universal importance in driving firm success. Similarly, Wiklund and Shepherd (2005), in their empirical study of Swedish SMEs, employed survey and regression analysis to establish that proactive firms are more likely to identify emerging opportunities, innovate, and secure early market advantages. Despite these contributions, most prior studies have been conducted in developed economies, leaving an empirical gap in understanding how market information moderates the relationship between entrepreneurial pro-activeness and competitive advantage among SMEs in developing contexts such as Nigeria.

In Nigeria, Nuhu et al., (2022), examined the relationship between entrepreneurial orientation and SME performance using survey data from selected small and medium enterprises across different sectors. Employing regression analysis, their findings revealed that entrepreneurial pro-activeness significantly influence competitive advantage, particularly in dynamic and resource-constrained markets. They further observed that SMEs that act ahead of competitors by launching new products or entering new markets achieve higher customer satisfaction and profitability. On the other hand, Wang et al., (2020), in their cross national quantitative study of manufacturing firms in China, revealed that pro-activeness alone may not ensure sustainable competitive advantage unless supported by market intelligence and dynamic capabilities that align proactive initiatives with market demands. These findings collectively suggest that while pro-activeness is crucial for SME success, limited attention has been given to the moderating role of market information especially within Nigeria's volatile and information-scarce business environment constituting a clear empirical gap for further investigation

Empirical research delves into significance of market information on SMEs' competitive positioning. Shafique, et al., (2023) conducted their study among SMEs in Pakistan to examine the influence of market intelligence on firms' dynamic capabilities and competitive advantage. Using a quantitative research design with data collected through structured questionnaires, the study employed structural equation modeling (SEM) to analyze relationships among variables.

Their findings revealed that market intelligence significantly enhances SMEs' dynamic capabilities, enabling them to achieve a competitive advantage through innovation and responsiveness to market trends. The study established that firms that systematically collect and utilize customer data, competitor insights, and market trends tend to be more adaptive and innovative. However, the study did not explore whether the moderating or mediating effects of entrepreneurial orientation could further strengthen the link between market intelligence and competitive advantage representing a key empirical gap. Rashidirad et al., (2023) examined the role of market information in Iranian SMEs, focusing on its influence on the relationship between entrepreneurial orientation and firm performance. The researchers adopted a quantitative approach and utilized survey data analyzed using partial least squares structural equation modeling (PLS-SEM). Their findings showed that market information positively influences the relationship between entrepreneurial orientation and firm performance, demonstrating that firms that incorporate real-time market data into their strategic decisions are better able to navigate competitive pressures and sustain performance advantages. Nonetheless, the study did not consider the contextual factors such as environmental turbulence or technological change that might moderate this relationship thus identifying a contextual and methodological gap for future research.

In India, Al-Hakimi and Borade (2020) carried out a study to investigate the moderating role of market-oriented strategies on the relationship between entrepreneurial orientation and firm innovation among SMEs. The study used a survey based quantitative method and applied multiple regression analysis to test the proposed relationships. The findings indicated that market-oriented strategies significantly moderate the relationship between entrepreneurial orientation and firm innovation, which in turn improves competitive advantage. They further argued that SMEs that integrate market intelligence into their proactive and innovative efforts are more likely to thrive in volatile markets. However, the study was limited by its focus on manufacturing SMEs, leaving an empirical gap regarding the applicability of these findings to service oriented SMEs or other developing economies. Additionally, Sulaiman and Al Mamun (2023), through a cross-sectional quantitative study conducted among SMEs in Malaysia, emphasized that market information enhances decision making quality and ensures that proactive strategies are aligned with current market realities, thereby reducing the risk of strategic misalignment. Their findings reinforce the role of market intelligence as a strategic enabler for performance and innovation. Nonetheless, the study did not investigate how market information interacts with specific dimensions of entrepreneurial orientation, leaving an empirical gap for further research into the mechanisms through which market information shapes competitive outcomes.

.3.0. Methodology

This study employed descriptive survey research design because it allows collection of large amount of data from a sizeable population among owners, managers and customers of small-sized restaurants in Osun state. The targeted population of this research comprise registered small and medium scale enterprises in osun state. Using Krejcie & Morgan (1970) sampling table the sample size of this research stood at 343 since it may be pretty difficult to reach entire 3,007 registered SMEs in Osun state. In view of this a multi-stage sampling method was adopted for this research. The state was divided into seven major cities which are: Osogbo, Ile-Ife, Ilesa, Ede, Iwo, Oyun and Ikire, all these seven major cities were covered for this research as 49 SMEs' owners/managers were selected purposively from each city to attend to the research instrument to make a total sample size of 343. These cities were selected because they constitute the major hub for commerce, industry and culture in Osun State. The adopted sampling technique is suitable for this research because not all the local governments of the

state has required registered SMEs located in them but it was discovered that SMEs in the state are concentrated in the major cities of the state.

In accordance with the design of this research, it adopted a primary source of data, a well-structured questionnaire was designed to get data from owners/managers of small and medium scale enterprises in Osun state. Part A contained respondents' demographic information. Part B contained questions on constructs of entrepreneurial pro-activeness, market information, and competitive advantage respectively. Questionnaire was designed using five points likert scale format where each respondent to indicate his/her level of agreement with the statement relating to the variables. Three hundred and four (304) questionnaires were retrieved of the three hundred and forty-three (343) distributed. Data collected for the study were analyzed using descriptive statistics and frequency distribution for the demographic information of respondent on SPSS version 20, while Partial Least Square Structural Equation Model (SEM) was used to examine the moderating effect of market information on entrepreneurial pro-activeness and competitive advantage of small and medium scale enterprises. This is due to its capacity to handle complex, theory driven models involving multiple latent constructs. SEM effectively accounts for measurement errors, validates the reliability of constructs through confirmatory factor analysis, and enables simultaneous testing of direct, indirect, and moderating effects within a single framework. This approach enhances the precision and explanatory power of the model, offering a robust assessment of how entrepreneurial pro-activeness translates into competitive advantage under varying levels of market information.

4.0. Results and Discussion

Demographic Information

The results generated from the analyses of this study were presented as follows:

Demographic Information

Table 1: Demographic information of respondents

Education status		
SSCE	87	28.6
OND/NCE	55	18.0
BSc/HND	134	44.0
Masters	28	9.2
Total	304	100.0
Business Type		
Trade	187	61.5
Manufacturing	37	12.1
Service	80	26.3
Total	304	100.0

Author's research survey, 2025

Table 1 shows the demographic characteristics of the respondents; the education status of respondents, 28.6% were SSCE holders, 18.0% were OND/NCE holders, 44.0% holds BSc/HND while 9.2% of the respondent were Masters holder, this gave a good distribution of

education status among respondents showing that larger percentage of the respondents were graduates. Type of business carried out by respondents revealed that 61.5% is trading, 12.1% for manufacturing while 26.3% for service oriented SME, by this we deduce that the larger percentage of the respondent engage in trading followed by service.

Measurement Model Evaluation

In this study, model measurement was assessed employing Smart Partial Least Squares (SmartPLS) version 4. Key reliability indicators such as factor loadings, Cronbach's Alpha, Composite Reliability (Rho_a), and Composite Reliability (Rho_c) were examined to determine whether each item adequately reflected the underlying construct. These metrics help establish whether the observed indicators in the model significantly share variance with their respective latent variables. As shown in Fig. 2 the minimum acceptable level of loading was 0.5 and the loadings from the analysis were more than 0.5. This is considered acceptable since the AVE values are acceptable. To assess convergent validity, Average Variance Extracted (AVE) values were computed for each construct. AVE quantifies the proportion of variance captured by a construct relative to the variance attributed to measurement error. For convergent validity to be deemed satisfactory, AVE values must be equal to or greater than 0.5.

Convergent Validity and Composite Reliability

Table 2 below represents the results of validity and reliability of the construct variables

Table 2. Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	Decision
Entrepreneurial Pro-activeness	0.881	0.890	0.903	0.541	Reliable and valid
Market Information	0.847	0.858	0.897	0.685	Reliable and valid
Competitive Advantage	0.814	0.819	0.878	0.643	Reliable and valid

Source: Researcher survey, 2025 (SMART PLS 4)

In Table 2, all measurement items recorded factor loadings exceeded the commonly accepted minimum threshold of 0.7. This indicates that the observed indicators in the structural model share substantial variance with their associated latent constructs. Additionally, the AVE values for all constructs surpassed the 0.5 benchmark, thereby confirming that the constructs demonstrate adequate convergent validity. These findings collectively suggest that the measurement items do not exhibit any concerns related to validity or reliability.

Discriminant Validity Assessment

Discriminant validity was evaluated in this study employing three methods: the Fornell–Larcker criterion, cross-loadings analysis, and the Heterotrait–Monotrait (HTMT) ratio. According to the Fornell–Larcker approach, the square root of each construct's AVE should exceed its correlations with other constructs, thereby confirming discriminant validity (Fornell & Larcker, 1981). Furthermore, the cross-loadings of each item should be greater on its respective construct than on others. HTMT values should remain below the threshold of 1.0, as recommended by Klin (2011), to further affirm discriminant validity.

The square roots of the Average Variance Extracted (AVE) for the constructs are represented in Table 3.

Table 3. Fornell-Larcker Criterion

Construct	1	2	3
Competitive Advantage	0.802		
Market Information	0.765	0.828	
Entrepreneurial Pro-activeness	0.797	0.743	0.664

Source: Researcher survey, 2025 (SMART PLS 4)

The off-diagonal values in Table 3 represent the correlations between different constructs. Discriminant validity is established when the square root of each construct's AVE, shown along the diagonal, exceeds the corresponding inter-construct correlations. The results indicate that all diagonal values are greater than the associated correlations, confirming that the constructs satisfy the requirements for discriminant validity.

Table 4. Heterotrait-monotrait ratio (HTMT)

Entrepreneurial Pro-activeness ↔ Competitive Advantage	0.936
Market Information ↔ Competitive Advantage	0.911
Market Information ↔ Entrepreneurial Pro-activeness	0.846

Source: Researcher survey, 2025 (SMART PLS 4)

The HTMT values were assessed to examine discriminant validity. Table 4 presents the HTMT values between 0.846 and 0.936. The values between EP and CA shows 0.936; MI and CA shows 0.911, also MI and EP shows 0.846. The results indicate that all values are below the threshold of 1.0, thereby confirming that the constructs meet the criteria for discriminant validity.

Table 5. Indicator Items Cross Loading

S/N	ITEMS	CA	MI	EP	VIF
1	Our business offers superior value compared to competitors.	0.872	0.676	0.680	2.307
2	We have a loyal customer base due to our innovative practices.	0.751	0.617	0.561	1.689
3	Our products/services are better than those of competitors.	0.800	0.596	0.706	2.027
4	We enjoy repeat business due to our distinct market advantage.	0.780	0.557	0.608	1.782
5	We are usually the first to introduce new products or services in our market.	0.616	0.502	0.731	2.356
6	Our firm leads market entry into new sectors.	0.412	0.386	0.472	1.504
7	We are known for pioneering new business models in our industry.	0.704	0.651	0.751	2.256
8	We take initiative ahead of competitors to capture new market opportunities.	0.671	0.434	0.610	1.832
9	We have access to real-time customer feedback and insights.	0.653	0.850	0.593	2.197
10	Our firm monitors competitors' strategies closely.	0.594	0.839	0.591	2.207
11	We analyze regulatory and environmental changes regularly.	0.727	0.856	0.715	2.019
12	We use market information to make proactive strategic decisions.	0.537	0.763	0.541	1.674
13	We forecast future market trends accurately.	0.518	0.434	0.780	2.599
14	We regularly conduct market trend analysis to stay ahead.	0.236	0.444	0.513	1.729
15	Long-term planning based on foresight guides our operations.	0.564	0.517	0.695	1.857
16	Our enterprise is prepared for expected changes in market conditions.	0.547	0.453	0.745	2.373
17	Our business identifies emerging opportunities ahead of competitors.	0.441	0.463	0.548	1.800

18	We regularly scan for potential market gaps before they become obvious.	0.419	0.405	0.655	2.218
19	We act quickly on opportunities others have not yet recognized.	0.492	0.622	0.728	1.942
20	Anticipating changes in customer needs is a key part of our strategy.	0.635	0.471	0.656	2.090

Source: Researcher survey, 2025 (SMART PLS 4)

The table shows the cross loading items of the analysis. To check for potential multicollinearity issues, Variance Inflation Factor (VIF) values were examined. The analysis showed that multicollinearity was not a concern, as the VIF values for all variables fell within the recommended threshold range of 2 to 5. Based on these results, the model demonstrated acceptable levels of reliability, validity, and structural soundness. With these conditions satisfied, the research hypotheses established within the proposed model framework were subsequently tested.

Path Analysis

In order to examine the relationship between entrepreneurial pro-activeness, market information and competitive advantage, a multivariate analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). This approach was employed to test the study's hypotheses. The outcomes of the structural model estimation, including items loading and R-squared values, are presented in Figure 2.

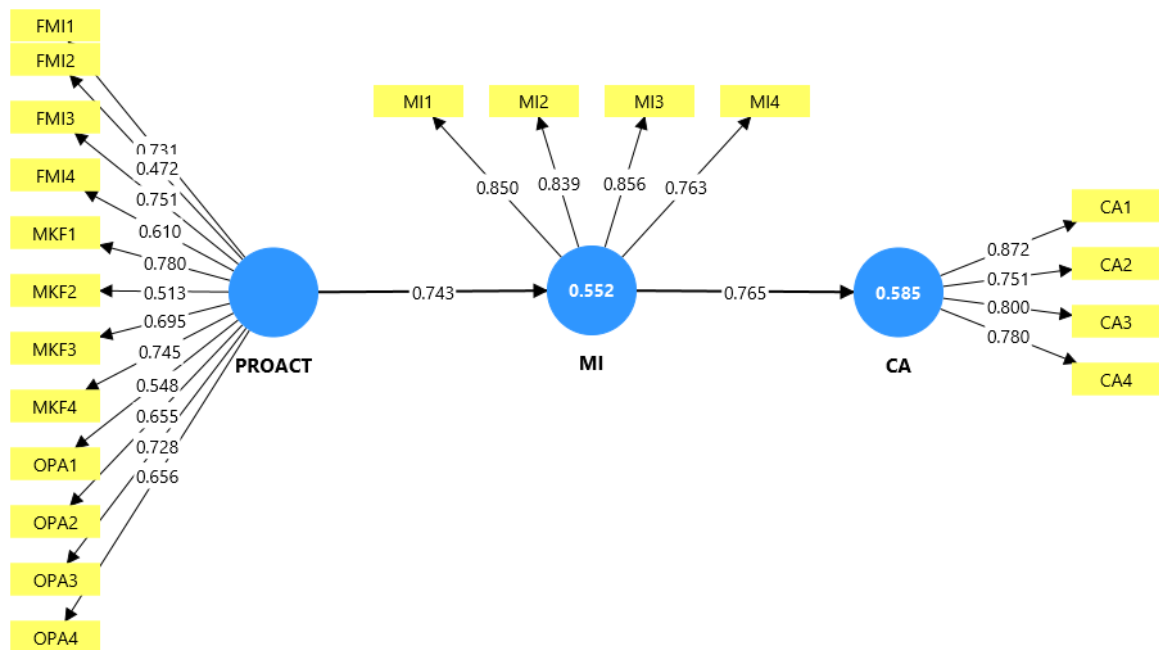


Figure 2.

The R-squared values represent the proportion of variance in the dependent (endogenous) variables that can be explained by the independent (exogenous) variables. This measure is useful for evaluating the overall model fit and assessing the predictive capability of variables within the formative model. As shown in Figure 2, the first-order construct variables explain a substantial amount of variance in their corresponding second-order construct, with Market Information a R^2 value of 0.552. Furthermore, the second-order constructs effectively predict the endogenous variable, Competitive Advantage, which has an R^2 value of 0.585. These findings indicate that the model demonstrates a strong fit with the data.

Hypotheses Testing

This study carried out a bootstrapping technique on PLS-SEM in order to express the t-statistics of the structural estimates, determine the significance of the relationships among the constructs and to test the hypothesized relationships.

Table 6. Hypotheses Testing

	Sample (Beta)	Sample mean (M)	Standard deviation (STDEV)	t-statistics (O/STDEV)	P- values	Decision
Entrepreneurial Pro-activeness -> Competitive Advantage	0.568	0.573	0.051	11.217	0.000	Supported
Entrepreneurial Pro-activeness -> Market Information	0.743	0.747	0.031	23.892	0.000	Supported
Market Information -> Competitive Advantage	0.765	0.765	0.040	19.088	0.000	Supported
Entrepreneurial Pro-activeness -> Market Information -> Competitive Advantage	0.567	0.573	0.051	11.217	0.000	Supported

Source: Researcher survey, 2025 (SMART PLS 4)

Table 6 presents the outcomes of the hypothesis testing. The results of the PLS-SEM analysis reveal that entrepreneurial pro-activeness (EP) significantly influences market information and competitive advantage (CA) of SMEs. The path coefficient for Entrepreneurial pro-activeness to Market Information was positive and significant ($t = 23.892$, $p < 0.000$), indicating that SMEs with higher levels of entrepreneurial pro-activeness are more likely to gain and sustain competitive advantage. Furthermore, the analysis confirms the moderating effect of market information (MI) on the relationship between EP and CA. The interaction term ($EP \times MI \rightarrow CA$) was positive and significant ($t = 11.217$, $p = 0.000$), suggesting that the influence of pro-activeness on competitive advantage becomes stronger when SMEs utilize higher levels of market information. This implies that access to and use of market information such as customer data, competitor analysis, and regulatory trends enhances the effectiveness of proactive initiatives in boosting SME competitive advantage.

The model explains 53% of the variance in competitive advantage ($R^2 = 0.585$), which is considered substantial in behavioral research (Hair et al., 2019). This shows that entrepreneurial pro-activeness, together with the moderating role of market information, accounts for a meaningful portion of SMEs' competitive advantage. For this reason therefore, hypotheses H1, H2, and H3 are hereby rejected thereby accepting alternative hypotheses. These findings demonstrate a strong relationship between entrepreneurial pro-activeness, market information and competitive advantage of small and medium scale enterprises. This supports the conceptual framework outlined in Figure 1 and carries important implications for small and medium scale business management. Specifically, it suggests that for small and medium scale enterprises to outperform competitors, the significance entrepreneurial pro-activeness cannot be overemphasized.

Discussion

The study examined the relationship between entrepreneurial pro-activeness and competitive advantage of SMEs; moderating effect of market information. The result of the research revealed that there is positive significant relationship between entrepreneurial pro-activeness and competitive advantage of SMEs. This result is in consonance with the research conducted by Nuhu et al., (2022), where they examined the relationship between entrepreneurial orientation and SME performance, their study confirmed that pro-activeness significantly contributes to competitive advantage, particularly in dynamic and resource-constrained

markets. They further observed that SMEs that act ahead of competitors by launching new products or entering new markets achieve higher customer satisfaction and profitability. On the other hand, research conducted by Wang et al., (2020), also supports the result of this research, they concluded their study by cautioning that pro-activeness alone may not guarantee competitive advantage unless firms possess complementary capabilities like market intelligence and dynamic capabilities to align initiatives with market demands

Result of the analysis also proved that market information has positive significant influence on competitive advantage of SMEs. This means that for competitive advantage to align with market requirements the significant of market information cannot be overemphasized. This result aligns with that of Shafique et al., (2023), whose study on Pakistani SMEs showed that firms that systematically collect and utilize customer data, competitor insights, and market trends are more adaptive and innovative, enabling them to achieve competitive advantage through innovation and responsiveness to market trends. Similarly, result from research by Rashidirad et al., (2023), corroborates this result as established that market information positively influences the relationship between entrepreneurial orientation and firm performance. They argued that firms that incorporate real-time market data into their strategic decisions are better able to navigate competitive pressures and sustain performance advantages.

Furthermore, result of the analysis established that market information positively moderates the relationship between entrepreneurial pro-activeness and competitive advantage of SMEs. This result is in agreement with result from research by Al-Hakimi and Borade (2020), in a study conducted in India, they found that market-oriented strategies moderated the relationship between entrepreneurial orientation and firm innovation, which in turn improved competitive advantage. They argued that SMEs that embed market intelligence in their proactive and innovative efforts are more likely to succeed in volatile markets. Additionally, research by Sulaiman and Al Mamun (2023), also confirmed this result where they emphasized that market information not only enhances decision-making quality but also ensures that proactive strategies are aligned with current market realities, reducing the risk of strategic misalignment.

Proactive firm that must get it right should leverage on market information which provides customers intelligence, competitors' intelligence, market trends analysis, and regulatory intelligence in order to rightly align to market needs and direction in the proactive efforts to ensure continuous existence and relevance in the competitive and volatile market. Any firm that fails to give credence to market information in operations may end up operating in misalignment with what the market requires, to market in a market, the understanding of such market is sacrosanct to enjoy endless competitive advantage.

Conclusion

The primary objective of this study was to examine the moderating effect of market information on the relationship between entrepreneurial pro-activeness and competitive advantage among small and medium-sized enterprises (SMEs) in Osun State, Nigeria. Employing a quantitative research design and analyzing data through Structural Equation Modeling (SEM), the study provided empirical evidence that entrepreneurial pro-activeness significantly enhances SMEs' competitive advantage. More importantly, the results demonstrated that market information positively moderates this relationship, suggesting that proactive firms that effectively acquire, interpret, and apply market information/intelligence are more likely to outperform competitors. The findings reinforce the Resource-Based View (RBV), which posits that firms achieve superior performance through the possession and deployment of unique, valuable, and inimitable resources. In this context, entrepreneurial pro-activeness and market information

jointly function as strategic organizational capabilities that enable SMEs to anticipate market trends, act ahead of competitors, and secure sustainable competitive positions. Proactive firms that embed information-driven strategies are better positioned to achieve customer loyalty, expand market share, and ensure long-term growth.

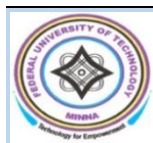
By implication, the study underscores the imperative for SME managers and owners to institutionalize data-driven decision-making processes. While entrepreneurial pro-activeness remains vital, its effectiveness is maximized when supported by timely and reliable market intelligence. Managers should therefore invest in market research tools, data analytics capabilities, and knowledge-sharing systems that foster informed strategic actions. Moreover, government agencies and support institutions should facilitate access to digital platforms, training programs, and real-time market information systems to strengthen SMEs' competitiveness within dynamic markets. Despite its contributions, this study is constrained by its geographical focus on Osun State and the exclusive reliance on quantitative analysis using SEM. Future researcher may consider comparative analyses across multiple regions or sectors and incorporate mixed-method approaches to capture contextual and behavioral dimensions that may further elucidate the interaction between entrepreneurial pro-activeness, market information, and competitive advantage.

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Impact of Macroeconomic Volatility on the Real Returns of Pension Fund Investments in Nigeria: A Vector Autoregression Analysis

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Abstract

Theories suggest that inflation and macroeconomic volatility diminish real pension returns in Nigeria; however, quantitative empirical studies to substantiate these theories have been limited, resulting in a knowledge gap. In this context, the study examined the dynamic influence of macroeconomic volatility on the real returns of pension funds in Nigeria from the first quarter of 2007 to the fourth quarter of 2024. Based on the Fisher Effect Hypothesis and Modern Portfolio Theory (MPT), the research utilised a Vector Error Correction Model (VECM) and supplementary time-series diagnostics to analyse both short- and long-term relationships among real pension fund returns (RRPF), inflation (INF), inflation volatility (INFVOL), and real GDP growth (RGDPG). The Granger causality analysis indicates that both inflation (INF; $p = 0.000$) and inflation volatility (INFVOL; $p = 0.003$) significantly influence variations in real pension returns (RRPF), whereas GDP growth does not exert a significant effect. Impulse response analysis shows that RRPF keeps reacting negatively to shocks in INF and INFVOL. The 12-quarter Forecast Error Variance Decomposition (FEVD) shows that 51%, 10%, 19% and 21% of the changes in RRPF are due to its own shocks, INF, INFVOL, and RGDPG respectively. These findings validate a partial Fisher effect and underscore inflation uncertainty as the primary non-diversifiable risk to pension sustainability in Nigeria. The study concludes that inflation volatility, (not inflation itself) is the primary systematic risk degrading real pension returns in Nigeria. Recommendations include coherent inflation management, predictable macroeconomic policy, and strategic portfolio diversification in line with global best practices.

Keywords: Pension Funds, Macroeconomic Volatility, Real Returns, Inflation, Vector Autoregression (VAR).

1. Introduction

High macroeconomic volatility poses a significant threat to the long-term viability of national pension systems in Nigeria. The core challenge lies in the relationship between macroeconomic instability and the real return on pension fund investments (Madukwe and Okeke, 2022). The real rate of return is the annual percentage of profit earned on an investment, adjusted for inflation (Finnish Centre for Pensions, 2024). It reflects the actual increase in an investor's purchasing power. For a retiree, the nominal growth of their pension pot is meaningless if its real value has been eroded.

Key macroeconomic volatility factors in an emerging economy like Nigeria include high and unpredictable inflation, severe currency volatility, and inconsistent economic growth (Ekpeyong, 2023; Oyadeyi, 2024). These factors are intrinsically linked to the real returns of pension funds (Ndume, 2025). Specifically, high inflation directly erodes the value of fixed-income securities, which are the dominant asset class in Nigerian pension portfolios.

The establishment of the Contributory Pension Scheme (CPS) in 2004 was a landmark reform. While successful in terms of asset accumulation with Assets Under Management (AUM) exceeding ₦22.51 trillion by late 2024 (National Pension Commission, 2025), the scheme's ability to deliver positive real returns has been questioned amidst Nigeria's turbulent economic environment. For instance, despite nominal growth, the US dollar value of pension assets

shrank by 56.8% between January 2023 and January 2024 due to currency devaluation (Ecofin Agency, 2024), highlighting extreme vulnerability.

The central problem this research addresses is the widening divergence between the nominal value of Nigerian pension assets and their real, inflation-adjusted value. There is a critical need to understand and quantify the dynamic forces that are systematically eroding the purchasing power of Nigerian retirees' savings. Specifically, the study quantified the short-term impact of inflation shocks on the real returns of pension funds and analysed the dynamic relationship between GDP growth shocks and pension portfolio performance. It is hypothesized in the study that macroeconomic volatility had significant negative effect on the real returns of pension fund investments in Nigeria.

2. Literature Review

2.1 Conceptual Review

2.1.1 Real Return on Pension Funds

The *real return on pension funds (RRPF)* represents the actual growth in the purchasing power of pension assets after adjusting for inflation. It is computed as the nominal rate of return on a fund's investment portfolio minus the prevailing rate of inflation (Finnish Centre for Pensions, 2024). A positive real return indicates that pension assets are appreciating faster than the cost of living, thereby enhancing the long-term welfare of retirees. Conversely, a negative real return implies that inflation is outpacing nominal gains, eroding the real value of savings and reducing the purchasing power of pensioners (Ring, 2010). Hence, maintaining positive real returns is a key measure of the effectiveness and sustainability of any pension system.

2.1.2 Macroeconomic Volatility

Macroeconomic volatility refers to the unpredictable fluctuations and instability observed in key aggregate indicators such as output growth, inflation, fiscal balances, and exchange rates across economic cycles (Fernández-Villaverde and Rubio-Ramírez, 2010). It captures both the frequency and magnitude of deviations from long-term macroeconomic trends and represents an important dimension of systematic risk that cannot be diversified away. Core manifestations of macroeconomic volatility include inflation volatility, exchange rate volatility, and real GDP growth volatility (Wolf, 2005). Persistent macroeconomic volatility creates uncertainty that distorts investment decisions, alters risk–return trade-offs, and undermines the stability of real pension fund returns.

2.2 Theoretical Review

This research is based on the Modern Portfolio (MPT) theory and the Fisher Effect hypothesis. Irving Fisher first proposed the Fisher Effect, which states that nominal interest rates should change based on expected inflation in order to keep the real rate of return the same (Chan-Lau, 2004). Empirical studies examining this relationship in Nigeria yield complex results. For instance, Asemota and Bala (2011) utilised a Kalman filter and cointegration analysis with quarterly CPI and nominal interest rate data from 1961 to 2009. Their findings demonstrate that nominal interest rates do not consistently align one-for-one with inflation over the long term, suggesting a partial Fisher effect within the Nigerian context. Awomuse and Alimi (2012) utilised Johansen cointegration and error correction models on data spanning from 1970 to 2009. They discovered that although nominal interest rates and anticipated inflation generally correlate over the long term, their relationship is not perfectly one-to-one; however, causality flows from inflation to nominal rates, highlighting a robust yet incomplete Fisher effect.

On the other hand, Modern Portfolio Theory (MPT), introduced by Harry Markowitz, defines risk as the difference between portfolio returns and stresses the importance of diversification to lower idiosyncratic risk (Chan-Lau, 2004). It also acknowledges that systematic risk, which is market-wide and cannot be avoided, is always present (Busse, Dacorogna, & Kratz, 2014). In this context, macroeconomic volatility characterized by unpredictable inflation, exchange rate fluctuations, or erratic GDP growth represents a category of systematic risk which cannot be avoided.

2.3 Empirical Review

The study reviewed scholarly research on impact of macroeconomic variables to identify on pension funds investment returns in Nigeria context. Madukwe and Okeke (2022), in their study titled "Effect of inflation on pension fund investment in Federal Government of Nigeria securities," investigated the relationship between the inflation rate (independent variable) and the nominal value of pension investments in FGN securities (dependent variable). Employing an Ordinary Least Squares (OLS) regression, their findings indicated that the inflation rate had no statistically significant impact on the nominal value of these investments. They concluded that the continuous inflow of monthly contributions was substantial enough to offset any erosive effects on the nominal stock of assets. However, the study's primary limitation is its focus on nominal rather than real values. This perspective masks the erosion of purchasing power, which is the ultimate concern for pensioners. Furthermore, by concentrating on a single asset class (FGN securities), the study provides an incomplete picture of the portfolio-wide impact of inflation.

Similarly focused on nominal performance metrics, Fadun, Oyerinde, and Isimoya (2024) in "The Analysis of Net Asset Value and the Performance of Pension Funds in Nigeria," examined Net Asset Value (NAV) as the independent variable and pension fund performance, measured by profit before tax (PBT), as the dependent variable. In a related study, Oyerinde, Fadun, and Isimoya (2025), titled "Returns on investment and performance of pension fund in Nigeria," explored the link between total investment returns and fund performance (PBT). Both studies utilized correlation analysis and found moderate positive associations, concluding that larger funds and higher returns correlate with better nominal outcomes. The critical shortcoming of these studies is their reliance on nominal performance indicators. They do not account for the impact of macroeconomic factors like inflation, which can render high nominal profits meaningless in real terms, thereby offering an incomplete assessment of the scheme's health. Shifting the focus towards real macroeconomic effects, Sani, Sani, and Hassan (2022) conducted a study titled "Modelling the effect of macro-economic variables on pension contribution in Nigeria." Their study modelled the impact of inflation and the exchange rate (independent variables) on the volume of pension contributions (dependent variable). Using an Autoregressive Distributed Lag (ARDL) model, the research revealed a significant and negative long-run relationship between the inflation rate and pension contributions. The authors concluded that high inflation diminishes the real disposable income of contributors, thereby reducing their capacity to contribute. They recommended that macroeconomic stability is essential for the sustainable growth of pension contributions. While this study valuably addresses real impacts, its scope is limited to the flow of new funds into the pension system. It did not analyse the effect of inflation on the accumulated stock of assets already under management, which affects a retiree's welfare.

The existing literature on the subject matter in Nigeria, while valuable, presents a fragmented picture. Studies like Madukwe and Okeke (2022), Fadun et al. (2024), and Oyerinde et al. (2025) are critically limited by their focus on nominal metrics, which ignores the corrosive effect of inflation on the purchasing power of pension assets. Conversely, while Sani et al. (2022) advance the discourse by examining real impacts, their analysis is confined to the flow

of new contributions, not the performance of the vast, accumulated portfolio. Consequently, a clear research gap emerges. There is a need for a dynamic, portfolio-wide analysis that prioritises real returns as a measure of success for pension beneficiaries. The literature, in the Nigeria context, has yet to explicitly model and quantify the impact of macroeconomic volatility, the uncertainty and unpredictability of key indicators as a distinct risk factor beyond the absolute level of inflation. This study is therefore designed to fill this critical gap by applying a Vector Autoregression (VAR) model to examine the dynamic, system-wide impact of macroeconomic shocks on the real returns of the Nigerian pension fund portfolio.

3. Methodology

3.1 Estimation Techniques

To model the dynamic nature of market uncertainty, volatility measures (INFVOL and EXRVOL) were first generated using a Generalised Autoregressive Conditional Heteroskedasticity (GARCH (1,1)) model. This GARCH specification captures time-varying volatility based on past squared errors and previous conditional variance, and is expressed as:

$$\sigma_t^2 = \omega + \alpha \epsilon_{t-1}^2 + \beta \sigma_{t-1}^2$$

Where σ_t^2 is the conditional variance, ω is the constant, α is the ARCH term (previous period's squared error), and β is the GARCH term (previous period's conditional variance). The Vector Autoregression (VAR) model serves as the core analytical framework. The VAR is utilized because it treats all four variables as endogenous (mutually influencing), allowing for an investigation of their dynamic interrelationships and feedback mechanisms. The reduced-form VAR model is expressed as:

$$Y_t = c + A_1 Y_{t-1} + \dots + A_p Y_{t-p} + \mu_t$$

Where Y_t is the vector of the four endogenous variables, c is a vector of constants, A_i is the matrix of estimated coefficients, p is the optimal lag length, and μ_t is the vector of white noise error terms.

Diagnostic Testing

Prior to estimation, diagnostic tests were conducted to ensure model validity. The stationarity of each series was confirmed using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, with non-stationary variables transformed via first differences. The optimal lag length (p) for the VAR model was determined using the Akaike (AIC), Schwarz (SIC), and Hannan-Quinn (HQ) information criteria. The data were analysed using Eviews econometric software version 12.

3.2 Data Issues

The study used quarterly time-series data spanning 2007:Q1 to 2024:Q4 (72 observations) sourced from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN). The variables examined are the Real Return on Pension Funds (RRPF), Real GDP Growth (RGDPG), Inflation Volatility (INFVOL), and Exchange Rate Volatility (EXRVOL).

4. Results and Discussion

This section presents the empirical results from the analyses of the relationships between macroeconomic volatility and the real returns of pension fund investments in Nigeria over 2007Q1–2024Q4. The results are organised sequentially to follow the econometric logic — beginning with preliminary tests, followed by model estimation, diagnostics, and dynamic analyses (Granger causality, Impulse Response Functions, and Forecast Error Variance Decomposition). Interpretations precede each table or figure, and findings are subsequently discussed with reference to relevant literature.

4.1 Preliminary Stationarity and Cointegration Tests

Before estimating the Vector Autoregression (VAR) model, the stationarity properties of the series were assessed using both the Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests. All variables—Real Return on Pension Funds (RRPF), Inflation (INF), Inflation Volatility (INFVOL), and Real GDP Growth (RGDPG)—exhibited

non-stationarity at levels (ADF $p > 0.05$), while the KPSS test rejected the null of level stationarity for all except RRPf.

Table 1: Stationarity Test Results (ADF and KPSS)

Variable	ADF Stat	p-value	Stationary?	KPSS Stat	p-value	Stationary?
RRPF	-0.776	0.826	No	0.356	0.096	Borderline
INF	0.564	0.987	No	0.752	0.010	No
INFVOL	5.255	1.000	No	0.596	0.023	No
RGDPG	-1.821	0.370	No	0.748	0.010	No

Since most variables are integrated of order $I(1)$, the Johansen cointegration test was performed to determine whether a long-run equilibrium relationship exists among them. As evident in Table 2, the Johansen cointegration test results confirmed one cointegrating relationship among the four variables, implying a stable long-run equilibrium.

Table 2: Johansen Cointegration Test Results

$r \leq$	Trace Stat	95% Crit	Decision	Max-Eigen Stat	95% Crit	Decision
0	54.27	47.85	Reject H_0	27.82	27.59	Reject H_0
1	26.45	29.80	Fail to Reject	19.43	21.13	Fail to Reject

4.2 VAR Estimation and Model Diagnostics

A ten-lag VAR (consistent with AIC/HQIC and the prior study specification) was estimated to capture the dynamic interdependencies among RRPf, INF, INFVOL, and RGDPG. Selected coefficient estimates for the RRPf equation are summarised below.

Table 3: VAR (10) Estimation Results (RRPf Equation)

Variable (Lag)	Coefficient	Std Err	t-Statistic	p-value
L1.RRPf	-0.94	0.21	-4.41	0.000
L1.INF	-2.13	0.98	-2.16	0.031
L1.RGDPG	-2.15	0.83	-2.59	0.010
L2.RRPf	-0.81	0.29	-2.78	0.005
L5.RGDPG	-2.86	1.27	-2.24	0.025
L9.RRPf	0.47	0.20	2.32	0.021
L9.INF	2.15	0.95	2.26	0.024

The negative and significant coefficient on L1.INF indicates that a 1% rise in inflation in the previous quarter reduces real pension returns by roughly 2.13%, confirming inflation's short-run erosive effect.

Table 4: VAR Companion Roots and Stability

Root	Modulus	Stability
1	2.147	Unstable
2	1.374	Unstable
3	1.254	Unstable

Table 5: Residual Diagnostic Summary

Equation	JB p-value	ARCH LM p-value	Ljung-Box p-value
RRPF	0.684	0.590	0.548
INF	0.284	0.699	0.070
INFVOL	0.000	0.858	0.590
RGDPG	0.202	0.642	0.115

4.3 Granger Causality Tests

To verify directional predictability, Granger causality tests were conducted for lags 1–8. The results indicate that $INF \rightarrow RRPf$ and $INFVOL \rightarrow RRPf$ are significant at 1% and 5% levels respectively, whereas $RGDPG \rightarrow RRPf$ is insignificant. Granger causality tests results reveal strong evidence that inflation (INF) and inflation volatility (INFVOL) Granger-cause RRPf, while real GDP growth (RGDPG) does not. This implies that both the level and volatility of inflation are significant predictors of real pension fund returns in Nigeria.

Table 6: Granger Causality (Minimum p-values across Lags 1–8)

Null Hypothesis	Min p-value	Decision
$INF \rightarrow RRPf$	3.7e-07	Reject
$INFVOL \rightarrow RRPf$	0.003	Reject
$RGDPG \rightarrow RRPf$	0.451	Fail to Reject

4.4 Impulse Response Analysis

Impulse Response Functions (IRFs) illustrate the dynamic reactions of RRPf to shocks in the endogenous variables over twelve quarters. Figures 1–4 illustrate the dynamic responses of RRPf to one-standard-deviation shocks in the endogenous variables. Each IRF chart is labeled with quarters on the X-axis and the response of RRPf on the Y-axis. The charts are interpreted below.

Results shown in Figure 1, capturing the response of RRPf to its own shock, reveals that when RRPf gets a positive shock, real returns go up at first, then slowly go down until they settle around zero after a few quarters. This pattern shows that short-term persistence and mean reversion are common in financial return series. It means that pension fund performance has some inertia, which means that strong returns tend to last for a short time before fading away. However, the system is still self-correcting. This dynamic supports the idea that there is short-term momentum but long-term stability, which is in line with the Johansen test's mild cointegration result. This means that portfolio managers can expect real returns to stay the same for a short time, but they shouldn't expect them to stay high for more than a few quarters. The

long-term viability of real returns is contingent upon macroeconomic stability rather than historical performance.

Evidence in Figure 2, which shows the response of RRPF to inflation (INF) Shock, reveals that a one-standard-deviation increase in inflation leads to an instant and steep drop in RRPF, which reaches its lowest point in two to three quarters. The bad effect lasts for almost three years, showing that recovery is slow and not complete. This shows that inflation shocks lower the real purchasing power of pension fund assets, especially in a system that relies heavily on nominal fixed-income instruments like government bonds. The ongoing negative trend indicates that pension fund returns in Nigeria do not fully respond to increasing prices, which goes against the Fisher Effect's prediction of nominal return adjustment. This finding highlights the necessity for inflation-indexed securities and macro-hedging strategies to safeguard the real wealth of pensioners. It also shows that unstable money directly hurts the long-term health of pensions.

Figure 3 results, capturing RRPF to inflation volatility (INFVOL) shock, shows that a shock to inflation volatility causes RRPF to respond negatively for a longer time and more deeply than a shock to the inflation level. The response is still very negative after 10 to 12 quarters, which shows that uncertainty about inflation, not just its level, makes pension returns less stable. This outcome indicates that volatility risk is factored into pension fund performance, and that the conservative investment strategies of PFAs render them particularly vulnerable to macroeconomic uncertainty. It is consistent with the conclusions of Chiang (2024) who underscore the predominance of inflation volatility over mean inflation in elucidating financial instability in emerging markets. The implication of these results for practice is that policymakers should prioritise inflation predictability (stability of expectations) over merely reducing average inflation. The finding indicates that volatility management via dynamic asset rebalancing or volatility-hedging derivatives is essential for the long-term performance of PFAs.

It is evident in Figure 4 which presents how RRPF reacted to a shock in real GDP growth (RGDPG), that an unanticipated positive shock to real GDP growth results in a subsequent decrease in RRPF over the following quarters. This negative reaction could be due to the monetary-tightening channel: strong output growth leads to higher interest rates to keep inflation in check, which lowers bond prices and, as a result, the value of pension portfolios that are heavy in fixed income. While the intensity of this response is lesser compared to inflation or volatility shocks, it remains consistent over the medium term, aligning with the empirical findings of Busse et al. (2014) regarding emerging markets. The results suggest that economic growth alone does not ensure improved pension performance in an unstable macro-financial environment. Policy-induced valuation losses during growth cycles can be lessened if PFAs invest in more than just domestic government bonds.

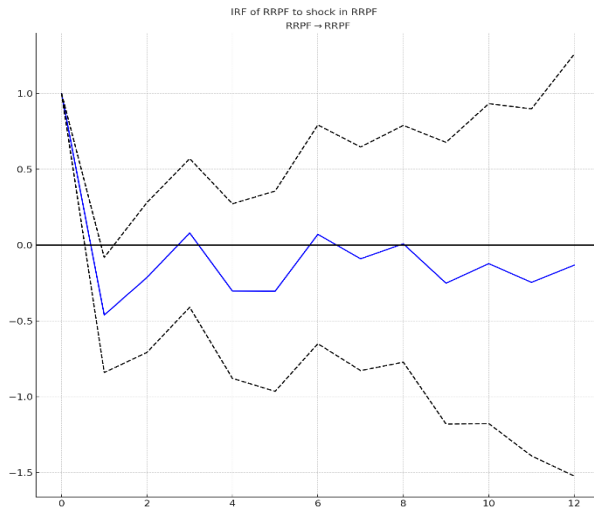


Figure 1: Response of RRPf to its Own Shock
Inflation (INF) Shock

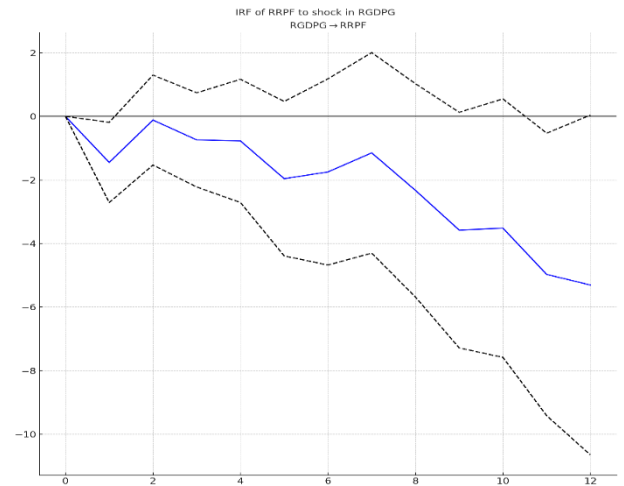


Figure 2: Response of RRPf to

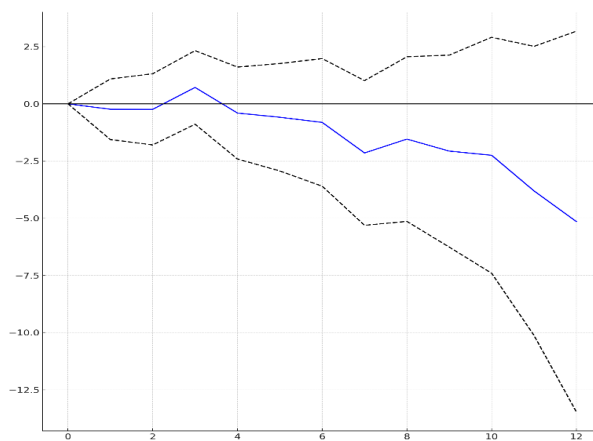


Figure 3: Response of RRPf to Inflation Volatility (INFVOL) Shock
GDP Growth (RGDPG) Shock

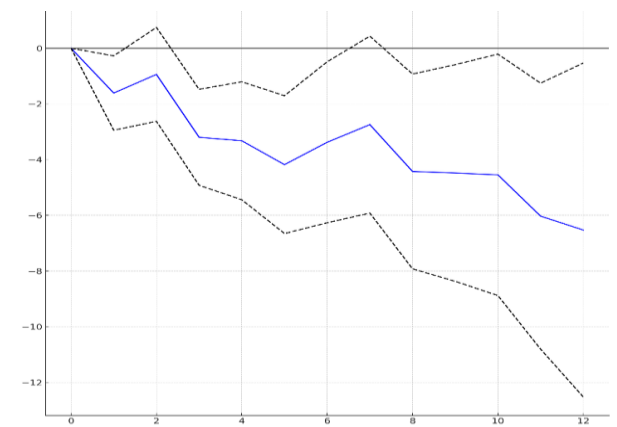


Figure 4: Response of RRPf to Real

Table 8: Summary of Chart Interpretations

Chart	Shock Variable	Effect on RRPf	Duration	Main Mechanism	Policy Implication
Fig. 1a	RRPF	Brief rise, then mean reversion	Short ($\approx 3Q$)	Autoregressive persistence	Past performance not predictive long-term
Fig. 1b	INF	Sharp & persistent negative	Long ($\approx 10-12Q$)	Inflation erosion	Inflation-indexed assets needed
Fig. 1c	INFVOL	Strong, long negative effect	Long ($\approx 12Q+$)	Inflation uncertainty	Prioritize inflation stability & hedging
Fig. 1d	RGDPG	Moderate negative	Medium-term ($\approx 8Q$)	Monetary tightening	Diversify beyond bonds

4.5 Forecast Error Variance Decomposition (FEVD)

To gauge each variable's relative contribution to the forecast variance of RRPF, a 12-quarter FEVD was computed. The Forecast Error Variance Decomposition (FEVD) assesses each variable's relative contribution to RRPF's forecast variance. At a 12-quarter horizon, RRPF's own shocks account for 51% of the variance, while macroeconomic factors jointly explain 49%—comprising inflation (10%), inflation volatility (19%), and real GDP growth (21%). This confirms that macroeconomic dynamics play a central role in determining real pension fund performance.

Table 9: Forecast Error Variance Decomposition of RRPF (12-Quarter Horizon)

Source of Shock	Variance Share (%)
RRPF	51
INF	10
INFVOL	19
RGDPG	21

4.6 Discussion of Findings

These findings provide empirical evidence of a partial Fisher Effect in Nigeria's pension system, consistent with Asemota and Bala (2011) and Awomuse and Alimi (2012), who documented that nominal rates in Nigeria fail to adjust one-for-one with inflation, leaving real returns vulnerable to erosion. The significant effects of inflation and inflation volatility suggest that price instability undermines pension sustainability.

The 21% contribution of RGDP growth demonstrates that macroeconomic expansion affects pension performance primarily through monetary transmission channels, where higher growth leads to policy rate increases and bond price declines, thereby reducing portfolio values. This outcome aligns with Busse et al. (2014) and Sani et al. (2022), who found that cyclical macro policies amplify systemic volatility and asset price adjustments in emerging markets.

This study advances existing literature by integrating macroeconomic volatility into pension fund performance models, addressing the gap left by studies such as Madukwe and Okeke (2022), Fadun et al. (2024), and Oyerinde et al. (2025), which focused on nominal metrics and ignored real value erosion. Unlike those works, this analysis captures dynamic interactions among macroeconomic variables and real returns, offering a comprehensive view of systematic risk.

The findings also bridge theoretical frameworks: while the Fisher Effect explains incomplete nominal adjustment to inflation, MPT accounts for macroeconomic volatility as systematic, non-diversifiable risk. Together, they underscore that stable real returns depend on both sound macroeconomic policy and diversified portfolio construction. In line with Fernández-Villaverde and Rubio-Ramírez (2010), macro volatility acts as an unavoidable systemic factor that cannot be eliminated by diversification alone.

Policy implications are clear. The Central Bank of Nigeria must prioritize anchoring inflation expectations to reduce volatility-driven erosion of pension value. For the National Pension Commission (PenCom) and Pension Fund Administrators (PFAs), diversification into inflation-protected and real assets is vital. This aligns with global recommendations (World Bank, 2023; IMF, 2024) promoting real-return and infrastructure-linked investments for pension resilience.

5. Conclusion and Recommendations

5.1 Conclusion

In conclusion, this study demonstrates that inflation uncertainty—not inflation itself—is the primary systematic risk degrading real pension returns in Nigeria. Sustainable pension performance requires coherent inflation management, predictable macroeconomic policy, and strategic portfolio diversification in line with global best practices.

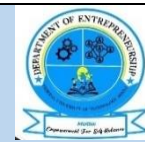
5.2 Recommendations

- i. The Central Bank of Nigeria should prioritize stabilizing inflation expectations to mitigate the erosive impact of inflation volatility on real pension returns.
- ii. Pension Fund Administrators should diversify portfolios toward inflation-indexed and real assets to hedge against macroeconomic instability.
- iii. The National Pension Commission should strengthen regulatory frameworks that promote risk-based asset allocation and macroeconomic resilience.
- iv. Coordinated fiscal and monetary policies are needed to minimize policy-driven volatility that undermines pension fund performance.

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Space Utilisation and Cassava Processing Industries Workers' Productivity in Oke-Ogun Region of Oyo State

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Abstract

Food security in different regions of the world is affected by various factors. However, little was said on guaranteeing food security through space utilisation in the agro-based industries such as the cassava processing industry (CPI). Thus, the aim of this paper is space utilisation and cassava processing industries workers' productivity in Oke-Ogun region of Oyo state. A multi-stage sampling and systematic random techniques were used to select five Local Government Areas (LGAs) out of 10 in the Oke-Ogun region with the highest cassava production and processing industries. A sample size of 400 cassava processing industries was considered. Nearest Neighbour Analysis and a factorial ANOVA statistic at $p \leq 0.05$ were used in the analysis. The result revealed that land size of 15m x 22.4m (336.0m²) which accounted for 45.7% of the selected CPIs was not adequate considering the activities involved in cassava processing. The space utilisation affected rates of production resulting in the dispersal of the cassava processing industries (Z-score = 5.498103). Therefore, there is the necessity of incorporating physical planning principles into cassava processing facility design. It was recommended that minimum of 3 metres must be observed between a row of fryers; minimum of 2 metres between a fryer and the other; and every fryer should have his/her small oven outside the industry. Space utilisation within the cassava processing industries was a challenge to achieving food security in the Oke-Ogun region.

Keywords: Food security, Space utilisation, Cassava processing, Industries and Oke-Ogun region

1.0 Introduction

The cassava processing industry is a vital sector in many developing economies, providing livelihoods for millions of people worldwide (FAO, 2018). However, the industry's productivity is often hampered by various factors, including inefficient workspace design (Muchiri & McNair, 2016). Space utilisation, in particular, plays a critical role in determining worker productivity, as it affects the ease of movement, accessibility of tools and equipment, and overall work environment (Dul & Neumann, 2009).

According to James et al. (2012), cassava roots are bulky, costly to carry and likely to rot within a few days of harvesting. It was confirmed by many scholars such as Adebayo & Akinpelu (2015), and Oyediran & Oyediran (2020) that cassava tubers contain cyanide; and roots provide an ideal raw material for many food products such as *fufu*, *gaàrí*, flour and starch. Notwithstanding these qualities, cassava roots cannot be consumed in whatever form without processing them. Oyediran & Oyediran (2020) establish the activities in the cassava processing to include off-loading the cassava tubers from the delivery vehicles at the processing industry, peeling and washing of the peeled tubers, grating roots into mash, de-watering and fermenting mash into wet cake, sieving wet cake into grits and roasting grits into *gaàrí*, bagging and storing

the gaàrí under a hygiene-compliance environment. All these activities require adequate spaces for their operation within each industry.

Research has shown that well-designed workspaces can improve worker productivity, reduce errors, and enhance job satisfaction (Robertson & Winsler, 2013). Conversely, poorly designed workspaces can lead to decreased productivity, increased injuries, and worker dissatisfaction (Hignett & McAtamney, 2000). Despite the importance of space utilisation in industrial settings, there is limited research on its impact on worker productivity in the cassava processing industry. This study aims to investigate the relationship between space utilisation and worker productivity in the cassava processing industry, in Oke-Ogun region of Oyo state. Specifically, it seeks to identify the key factors influencing space utilisation and explore strategies to improve workspace design and enhance cassava processing industry workers' productivity in the region. The objectives are to: determine the spatial distribution of cassava processing industries in Oke-Ogun region; examine the size of the industry in Metres Square; assess the standard space required and observed space in relation to the activity; investigate comfortability with the working environment and reaction by the workers; and examine the impact of working environment and coping strategies. Thus, the paper is sectioned into 5, which include: introduction, literature review, methodology, findings and discussion, and recommendations and conclusion.

2.0 Literature Review

This section discusses relevant literatures under the conceptual, theoretical and empirical review subheadings. The conceptual and theoretical frameworks are herein presented according.

2.1 Conceptual Review

The concepts of space and cassava processing are hereby discussed in the succeeding subsections.

2.1.1 Concept of Space

Space refers to the physical area or environment where activities, operations, or processes take place (Hignett & McAtamney, 2000). According to Robertson & Winsler (2013), in industrial settings, space can significantly impact worker productivity, safety, and overall efficiency. The authors submit that the key aspects of space include the workspace design such as layout, ergonomics, and organisation of workstations. In addition, adequate allocation of space for tasks, equipment, and movement, and environmental factors such as lighting, ventilation, noise levels, and temperature control. Effective space utilization can enhance worker comfort, reduce errors, and improve productivity.

Relating this concept to this study, cassava processing industry layout and location should follow all the space standards that guide both the intra- and inter- space uses. The intra-space includes the space within the working places such as the drying, frying, milling, store, sieving, peeling and pressing areas. If these areas really follow specified space standards, good working environment will be guaranteed. The inter-space include access (road networking) to the site, location of the cassava processing industries and impacts on the adjoining uses. It is noteworthy that the adoption of space standards in locating and designing cassava processing industries creates a balanced industrial system. Therefore, this study considers space available, space requirement and space relationship with a focus on food security and cassava processing industry in the Oke-Ogun region of Oyo state.

2.1.2 Concept of Cassava Processing

Cassava processing involves transforming cassava roots into various products, such as: flour, starch, gaàrí, fùfù, starch, ethanol, animal feed (Oyediran, 2024). The traditional method of processing cassava roots in Nigeria is using a knife to peel the roots, washing them, and then applying several processes to produce the desired end products (Ekpa, Adeola, Mukhtar, & Ekpa, 2016). According to Ajibade & Adetuji (2012), cassava has a high potential for products diversification and its processing offers the best opportunity for linkages between the agricultural and non-agricultural sectors. The processing stages typically include peeling and washing, grating or crushing, fermentation, drying/frying. Cassava processing is a vital industry in many tropical countries, providing employment and income opportunities (Adebayo & Akinpelu, 2015).

2.2 Theoretical Framework

The Ergonomics Theory was adopted as suitable to anchor and serves as a theoretical support for the research. It is discussed as follows:

2.2.1 Ergonomics Theory

Ergonomics theory, also known as human factors engineering, aims at designing workspaces, equipment, and processes to fit the needs of workers, safety, enhancing productivity, and comfort (Dul & Neumann, 2009; Robertson & Winsler, 2013). It was propounded or coined by Wojciesz Jastrzebowski in 1857, and explored the relationship between human work and efficiency (Dul & Neumann, 2009). The benefits of this theory are to increase job satisfaction, improve productivity, and injury prevention. It can be said that by applying ergonomics principles, cassava processing industries will create safer, more efficient, and more comfortable workspaces, ultimately enhancing productivity and worker well-being.

2.3 Empirical Review on the Space Utilisation and Workers' Productivity

Haynes (2008) in his article titled "the impact of office layout on productivity", adopted a qualitative research to achieve his aim. This involves reviewing of literature on the linkage between office layout and the affected office occupiers' productivity; and the open-plan versus cellular office debate. Haynes (2008)'s findings showed that the connection among the office user work patterns, office layout, and productivity is not clearly established. He concluded by stating that the behavioural and social relationship should be considered in the office environment, if workers will be productive.

Indriyati (2015) conducts a research on the architecture and behavior in environmental psychology with a focus on space performance to meet the workers' needs in terms of work productivity and satisfaction. This author carried out on how the physical and psychological condition of space affected workers' productivity; and coping coping behavior in their spaces of work. Indriyati (2015) uses staff of the university in Jakarta, Indonesia as subjects of the study. His methods involved post occupancy evaluation, interview and observation of the existing work conditions. His findings revealed that work productivity was influenced by both the physical and psychological performances. He concluded by recommending space adjustments as a means of securing productive work environment.

Housman & Minor (2016) conduct a research on: workplace design: the good, the bad, and the productive. The method employed included sampling of the performance of nearly 3,000 workers, with a large technology, in physical space and time. The distance between a worker and the other (radius) was measured; distance in terms of time and function were compared to establish their productivity, quality exhibition, and effectiveness. Housman & Minor (2016) find out that spillover is persistent and reducing in the physical distance (enough space) between 2 employees. In addition to their finding, they realised that pairing of workers in

physical space improved their performance by some 15%. It was concluded by these authors that workplace space design is a resource that creates a greater effective, productive and efficient organisation.

Despite the importance of space utilisation in industrial settings, there is limited research on how spatial arrangements in cassava processing industries specifically affect workers' productivity. As some studies have examined the general impact of work environment and space design on productivity in manufacturing industries, few have focused on the cassava processing industries in Nigeria, especially in the Oke-Ogun region of Oyo State. Thus, this research work is carried out to fill this identified gap.

2.5 Study Area

The Oke-Ogun region (Figure 1) is in Oyo state, Nigeria. The most value-based industries in this type of region as established by Rajkumar (2013) are the agro-based ones. The tendency for guaranteeing food security through cassava processing industry in region is very high because of some critical factors such as the abundance of fertile land for cassava production, livestock to consume the cassava peel-off, cheap labour, favourable climatic condition and large domestic and international markets (Daud, Amao, Ganiyu & Adeniyi, 2015). The region serves as the food basket of the state and about 70km from Ibadan, the capital of the State (Adebajo, Bolarinwa & Omotayo, 2015).

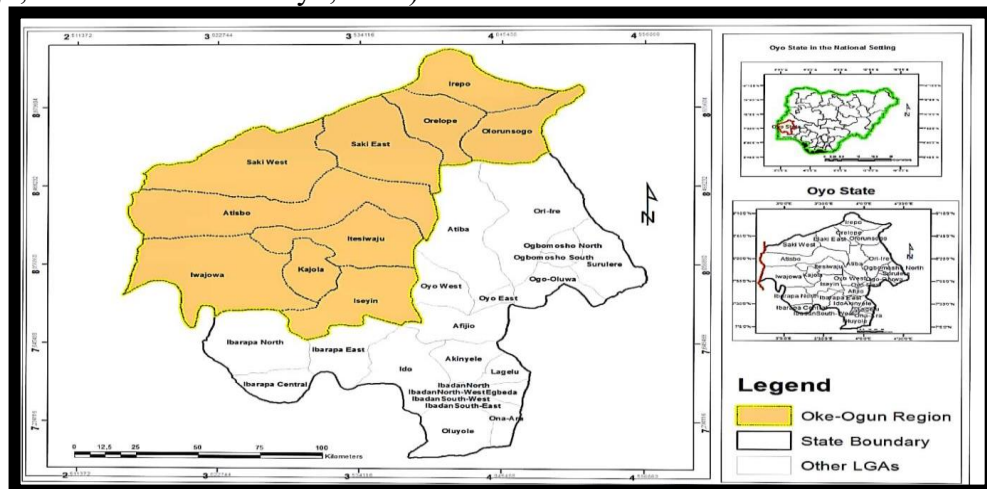


Figure 1: The Oke-Ogun Region within Oyo State Context
Source: Iseyin Central Zonal Town Planning Office, 2018

3.0 Methodology

This study adopted a mixed-methods approach to investigate the relationship between space utilisation and workers' productivity in cassava processing industries in the Oke-Ogun region of Oyo State. The research combined both primary and secondary data sources. The primary data were gathered through questionnaire administration, Focus Group Discussion, and observation checklists. A pre-tested structured questionnaire was administered to 400 respondents, including both workers and owners of cassava processing industries. The respondents were selected from a total sample frame of 3,015 (Cassava Processing Associations Register, 2021). Moreover, FDGs were conducted with six participants from each of the five selected Local Government Areas (LGAs)—Iseyin, Atisbo, Iwajowa, Kajola, and Itesiwaju. These groups were deliberately diversified by gender, age, occupation, and role in cassava processing to ensure a broad range of perspectives. In addition, an observation checklist was employed to assess compliance with key planning standards, including plot size, setbacks, accessibility, ventilation, and air quality in the selected cassava processing industries.

A multi-stage sampling procedure was adopted to select the sample for this study. First, five LGAs with the highest concentrations of cassava production and processing industries were purposively selected. From these, 15 communities were randomly chosen using systematic random sampling from a list of 62 communities. A total of 1,111 cassava processing industries were selected for the study, representing approximately 37% of the total number of industries in the region. A sample size of 400 respondents was selected from this pool, which aligns with Glenn's (2003) assertion that a minimum sample size of 400 is adequate for a population of 100,000 or more. Secondary data were sourced from literature review, government publications, and reports from relevant agencies, particularly focusing on policy recommendations related to space utilisation, cassava processing industries, and food security.

Descriptive and inferential statistics were used to analyse the data from the questionnaires. Descriptive statistics provided a summary of the data (e.g., frequencies, means), while inferential statistics was employed to test the hypothesis. Specifically, a Two-way analysis of variance for production rate per month (kg) as a function of physical work environment was used. Additionally, Geographical Information System (GIS) was utilised to map spatial distribution patterns of the cassava processing industries and analyse their proximity to essential infrastructure (e.g., roads, markets). The qualitative data from FGDs and open-ended questionnaire responses were analysed through narrative analysis to identify themes and insights regarding the perceptions of stakeholders on space utilisation and productivity. Ethical issues were carefully addressed throughout the study. Informed consent was obtained from all participants, ensuring their voluntary participation. Respondents' privacy was respected, and the confidentiality of their data was maintained throughout the research process. The study also adhered to ethical guidelines in the design of research instruments and data collection.

4.0 Results and Discussion

4.1 The Spatial Distribution of Cassava Processing Industries in Oke-Ogun Region

The pattern of the distribution of cassava processing industries within the Oke-Ogun region was tested using the nearest neighbour analysis. The result as presented in Figure 2 shows that cassava processing industries distribution was dispersed all over the region as the nearest neighbour index (1.8) was greater than 1. Given the Z-score of 5.49810284276564, there is less than 1% likelihood that this dispersed. When the nearest neighbour ratio is less than 1, the dataset is said to exhibit clustering behavior. When it is equal to 1, then the distribution is said to be random and when it is greater than 1, the distribution tends towards dispersion. In this case, the nearest neighbour ratio is greater than 1. Therefore, the cassava processing industries distribution in Oke-Ogun region is dispersed. The implication was that the distribution would not promote division of labour, sharing of facilities and ideas or enjoy economies of scale which will not allow for increased of improved production all of which will not enhancing food security.

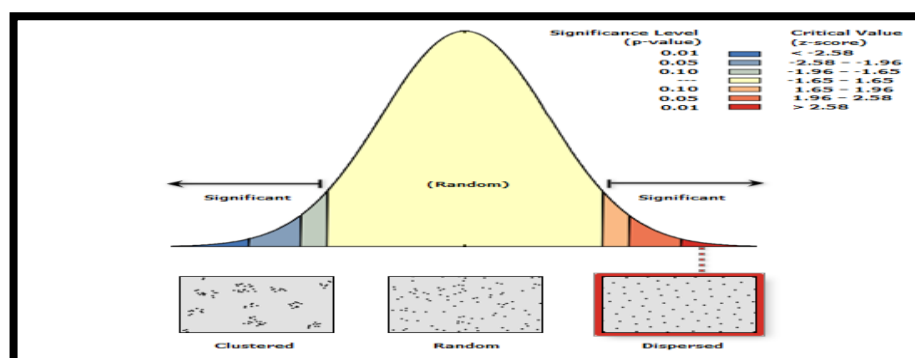


Figure 2: The Nearest Neighbour Analysis Result

Source: Author's Analysis, 2021

4.2 Size of the Industry in Metres Square

The results of the analysis as contained in Table 2 revealed that a large number (45.7%) of the cassava processing industry had 15m x 22.4m (333.76.0m²) and a small number (5.3%) operated on 3m x 3m (9.0m²) size of land. It should be noted that those that claimed to operate on 9.0m² and 14.4m² were *fufu* and *lafun* processors. It was observed that the size of the industries producing *fufu* under study was most inadequate as presented in Table 2. This is so in Iseyin, Itesiwaju and Atisbo as majority of the workers (Peelers and Sievers) worked in the sun (Plate 1) due to limited space and clumsiness of processing activities. Similar situations were noticed in Kajola and Iwajowa LGAs as the size of the land could not accommodate the number of the workers and thus peelers worked under nearby trees. Sizes of the industries were less than UNIDO standards reported by Abayomi (2015) that a standard cassava processing industry should have a land size of at least 917.0m². Thus, cassava processing was given about 1/3rd of the acquired space to work. This working condition may affect the productivity and health of workers. A fryer testified to this and said:

During the dry seasons when the weather becomes hot, our production rate is always less than that of the rainy season. This is because every place within the industry will be hotter and we did not use to work well under this condition else one suffocates or slumps (FGD, 17-12-2021, 1:43 p. m.).

Table 1: Size of the industry in metres square and processing output

Size in m ²	Frequency	Percentage	Processing Output per day	Remarks
3m x 3m (9.0m ²)	59	5.3	2 Head-pans	Space Not Adequate
3.6m x 4m (14.4m ²)	118	10.6	3-4 head-pans	Space Not Adequate
15m x 15m (225.0m ²)	372	33.5	6 Head-pans	Space Not Adequate
15m x 22.4m (330.0m ²)	508	45.7	7 Head-pans	Space Not Adequate
30m x 30m (900m ²)	54	4.9	10 bags	Almost Adequate
Total	1,111	100.0		

Source: Field work, 2021

4.3 Standard Space Required and the Observed Space in Relation to the Activity

A standard space for every activity in an industry boosts workers' efficiency, effectiveness and productivity and as found in this study may indirectly affects food supply. To determine the adequacy of space within cassava processing industry in the Oke-Ogun region of Oyo state, existing space standards were used to assess the provisions made by the subject industry owners and presented in Table 2. The assessment revealed that despite the availability of land in the Oke-Ogun region, none of the recommended/expected space standards was adequately observed. This could be attributed to ignorance of the industry owners that space (within and outside the industry) contributes to workers' productivity and reduces the supply of processed cassava products (food).

Table 2: Standard space required and the observed space in relation to the activity

Activity	Standard Space Required	Observed	Remark
Peeling Area/Shed	10m X 10m (100m ²)	8m X 11.2m	Not Adequate
Grating and dewatering	10m X 14m (140m ²)	6m X 10.6m	Not Adequate
Frying	10m X 13m (130m ²)	8.3m X 10.6m	Not Adequate
Sieving Area	16m X 16m (256m ²)	None	

Bagging and Storage	6m X 14m (84m ²)	6m X 11.2m	Not Adequate
Office	6m X 14m (84m ²)	None	
Wash Tank	7m X 4m X 0.4m (11.2m ³)	None	
Wet Area	10m X 14m (140m ²)	None	

Source: Abayomi (2015) and Author's Construct (2021)

4.4 Comfortability with the Working Environment and Reaction by the Workers

Comfortability of workers with the working environment increases productivity. Figure 3 shows that majority (82.0%) of the respondents were not comfortable with their working environment, while 18.0% claimed to be comfortable. A fryer among those that claimed not to be comfortable expressed that: "It is not easy for someone to be on the same spot for almost 8 hours because of access restriction within the industry. In addition, overheating and smoke from the firewood are real problems" (FGD, 17-12-2021, 2:45 p. m.). Additionally, a peeler also declared that: "Whenever we have cassava, we are always in the sun peeling cassava" (FGD, 17-12-2021, 2:50 p. m.). It should be noted that a poor and uncomfortable working environment is negatively affecting cassava products production in the industry which is in consonance with Abrey & Smallwood (2014) submission.

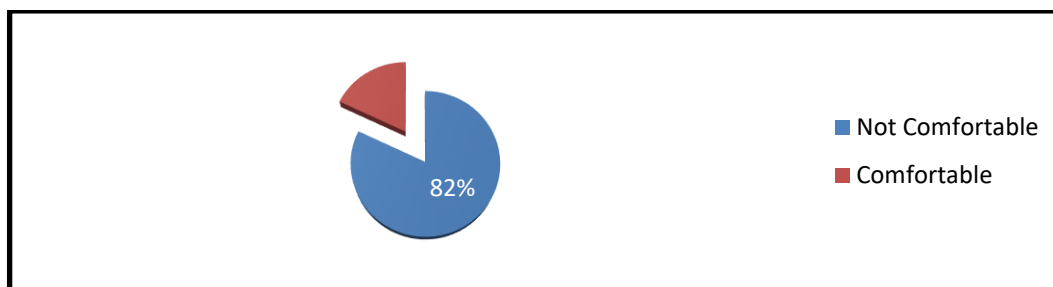


Figure 3: Comfortability with the working environment
Source: Field work, 2021

People have various ways to react to unfavourable conditions most especially working environment. This may be harsh, moderate or soft/simple. Figure 4 presents the reaction of cassava processors to the unfavourable condition of their working environment. Two-thirds (66.1%) of the respondents claimed to be frustrated with their working environment and reacted to it as thus; 17.9% of them through anger; 15.7% through stress; and 0.2 of the respondents through happiness. All these reactions can affect workers' productivity and lead to psychological problem (Sarode and Shirsath, 2014).

With how cassava processing had affected the respondents' health, a fryer expressed that: "There are many times I experienced some form of respiratory problems, headaches, and, fatigue, which in the long periods reduced my productivity" (FGD, 17-12-2021, 2:35 p. m.). This declaration is an evidence that there are some challenges that are associated with working under unfavourable environment. In another vein, majority (73.2%) of the respondents claimed that poor working environment had affected their health. An operator submitted that: "The noise generated from the grating machine I used every day has affected my hearing and made me not to be able to have silent communication as I always thought they were not hearing me" (FGD, 17-12-2021, 2:40 p. m.).

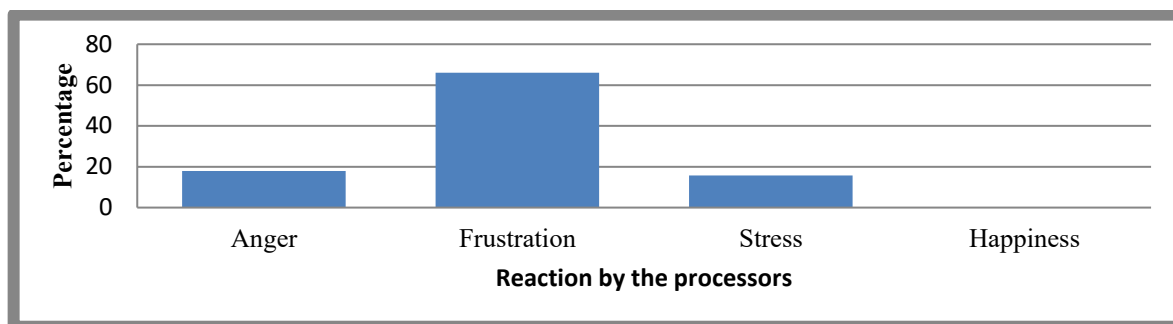


Figure 4: Reaction to the unfavourable work environment

Source: Field work, 2021

4.5 Impact of the Working Environment and Coping Strategies

The working environment is one of the factors that contribute to high productivity. The respondents were asked whether their working conditions contributed to stress from cassava processing activities or not. Majority (94.0%) of the respondents established that their working environment contributed a lot, while 6.0% submitted that it did not. The reason for the respondents not finding the activities stressful could be attributed to the limited time that they spent in the industry.

Respondents were asked how they coped with the stress accompanying the processing activities. Table 3 presents that majority (80.0%) of the respondents submitted that they took drugs (pain relievers many times) after closing from the work every day; 11.6% of them closed earlier so that they would leave the environment on time; 5.0% called for help/assistance from co-workers; 2.3% skipped a day; and 1.1% adopted spiritual means (prayers) and sleeping. Taking drugs every day after closing could be dangerous to their health as these drugs have their side effects. Further discussions with those that adopted taking drugs every day revealed that they would have withdrawn from the job but there were no other sources of livelihood that were as reliable and profitable as cassava processing, at least everybody has access to food. It could be deduced that all these measures/strategies affect the sustainability of food security within the region as the health of the workers in the future is not safe.

Table 3: Coping strategies for stress from cassava processing activities

Adopted Coping Strategy	Frequency	Percentage
Taking pain relieving drugs after closing everyday	889	80.0
Closing earlier	129	11.6
Skipping a day	25	2.3
Calling for assistance from co-workers	56	5.0
Others (prayers and sleeping)	12	1.1
Total	1,111	100.0

Source: Field work, 2021

The study went further to determine the difference in the production rate per month for workers with varied physical work environment. To test whether or not there exist any differences in the production rate per month for workers with varying physical work environment such as: *Comfortability with working environment*, *contribution to production stress by the working environment*, *assessment of air quality* and *assessment of ventilation*, Factorial ANOVA was conducted. Results on Table 4 reveals that production rate per month are significantly different with the workers' *comfortability with working environment* [$F_{(1,1101)}=13.57$], *assessment of air quality* [$F_{(4,1101)}=185.30$] and *assessment of ventilation* [$F_{(1,1101)}= 394.00$] $p<0.001$. The table also shows that there was a significant interaction between the effects of *assessment of air quality* and *assessment of ventilation* on production rate per month, $F_{(1,1101)}= 101.72$, $p<0.001$.

Also, the results of the Levene's Test of equality of error variances^{a,b} were presented in Table 4.

Table 4: Two-way analysis of variance for production rate per month (kg) as a function of physical work environment

<i>Variable and Source</i>	<i>df</i>	<i>Mean Squared</i>	<i>F</i>	<i>Partial Eta squared</i>
Production Rate per month				
Are you comfortable with the working environment?	1	41377561.66	13.57*	0.012
Air quality of the environment	4	565144587.50	185.30*	0.402
Ventilation of the environment	1	1201760925.00	394.00*	0.264
Air quality of the environment*Ventilation of the environment	1	310231339.40	101.72*	0.085
Error	1101	3049820.32		

*p < 0.001

Source: Field work, 2021

The Two-Way Analysis of Variance tested the production rate (kg) per month as a function of comfortability with working environment, contribution to production stress by the working environment, assessment of air quality and assessment of ventilation.

4.6 General Assessment of the Cassava Processing Industry by the Workers and Discussion

A factor is not enough to assess cassava processing industry in Oke-Ogun region. Therefore, factors were grouped into physical and work events. Table 5 reveals that majority (51.1%) of the respondents claimed that the rewards from cassava processing industries in the Oke-Ogun region was very adequate and just 0.1% submitted that the rewards were very adequate. It could be deduced from this that workers were being rewarded greatly for their services. Also, 74.6% of the respondents established that ventilation in their workplace was adequate and 1.2% claimed it was not.

The reason for adequate ventilation could be attributed to the fact that all the processing except grating and storing were done in the open areas under sheds. It should be noted in Table 5 that 64.8% of the respondents attested that the natural surroundings of cassava processing industries were moderate. This could be attributed to the fact that trees, farms and fisheries were not tampered with. In addition, 42.9% of the respondents submitted that their performance was not adequate due to their workplace environment.

Findings presented in Table 5 also show that 88.0%, 59.0%, and 53.2% of the respondents claimed respectively that space interaction, privacy and moving about were very inadequate. It could be deduced from Table 5 that cassava processing jobs may be economically viable, work environment has adequate ventilation and natural resources but job performance may not be adequate. This could be attributed to the fact that other factors such as accessibility within the industry, air quality, comfort, noise and temperature are absent. In summary, inadequate space (land) utilisation can affect the workers' performances/outputs and lead to shortage in food production.

Table 5: Assessment of the cassava processing industry by the workers

Factors	Very Adequate	Adequate	Moderate	Not Adequate	Very Inadequate	Total
Physical Factor						Percentage

Air quality	0.1	1.2	52.7	15.0	31.1	100
Air circulation	7.2	32.2	60.2	0.1	0.3	100
Ventilation	19.7	74.6	5.7	0.0	0.0	100
Natural surroundings	23.1	12.1	64.8	0.0	0.0	100
Visual quality	11.8	25.1	57.2	5.9	0.0	100
Furniture	13.6	29.3	15.9	41.2	0.0	100
Working Events						
Daily work type	11.8	59.4	28.8	0.0	0.0	100
Space interaction	0.0	0.0	5.9	6.0	88.0	100
Social interaction	24.8	57.2	18.1	0.0	0.0	100
Noise	6.1	21.5	13.0	24.2	35.2	100
Privacy	0.0	0.0	6.0	29.0	59.0	100
Moving about	6.1	11.8	19.0	9.9	53.2	100
Rewards	51.1	36.7	12.2	0.0	0.0	100
Output/Performance	11.9	17.4	27.8	42.9	0.0	100

Source: Field work, 2021

All findings pointed to the fact that space allocated to the various activities were inadequate and was affecting household food security. The peeling area of 3.6m by 3.0m which was expected to accommodate a minimum of 6 peelers might be inadequate for this type of job. In addition, research results and observation from the workspace/environment survey showed that workplace environment had direct impacts on workers' productivity, comfort, health and safety, workers' concentration on the works, job satisfaction and morale. Important factors in the work environment that should be considered include factory space building design, workplace layout, workstation set-up, equipment design and quality, ventilation, temperature, lighting, noise, vibration, radiation and air. It could be said that an increase in productivity level is a function of a conducive working environment for the workers.

5. Conclusion and Recommendations

Value additions to local cassava through processing is important to reduce the bulkiness of fresh tubers, minimise post-harvest losses, increase shelf life, stabilise product prices and facilitate easy transportation from farm to table or/and markets (local or urban). Notwithstanding, it is evident from this study that space (land) utilisation in terms of inadequate land availability for the industry, nonconformity with the space standards and poor space relationship, poses a serious threat to the cassava processing industries in achieving food security in the Oke-Ogun region of Oyo state. It is believed that if the recommendations are strictly adhered to, space utilization in cassava processing industry within the region and other regions with the same endowment will facilitate food security.

For space utilisation in the cassava processing industries to guarantee food security in the Oke-Ogun region, it is recommended that:

- The distribution of the cassava processing industries should be clustered to promote division of labour, sharing of facilities and ideas thereby facilitate food security.
- A cassava processing industry should have a land size of at least 917.0m², considering their activities.
- Recommended Town Planning requirements must be met by the owners of the industry before commencement of the processing operation.
- Improved working environment is recommended, as this contributed to the productivity rate. Workers should see their working place/space as their own offices and be comfortable.

v. Frequent taking of pain-relieving drugs (analgesics) after work every day may cause kidney damage or failure, stomach ulcers, respiratory depression and other effects (Oyediran, 2024). Therefore, they should stop the habit.

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Internally Generated Revenue and Infrastructural Development in Nigeria

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Abstract

Nigeria continues to grapple with severe infrastructural deficits despite years of public investment and development programmes. This has constrained productivity and living standards. The decline in oil revenue has prompted a shift toward Internally Generated Revenue (IGR) as a sustainable funding alternative. This study therefore examined the impact of internally generated revenue (IGR) on infrastructural development in Nigeria from 1985 to 2024. The variables employed in the study include infrastructural development, tax revenue, non-tax revenue, economic growth and corruption perception index. Relying on a correlation research design, the study deployed the Autoregressive Distributed Lagged (ARDL) model to analyze the time series data to capture both short-run and long-run dynamics among variables that are integrated of orders $I(0)$ and $I(1)$, but not $I(2)$. The empirical results revealed that both tax and non-tax revenues had a positive and statistically significant effect on infrastructural development, suggesting that efficient tax and non-tax revenue mobilization enhances government fiscal capacity to finance infrastructural projects. Gross Domestic Product per capita also showed a positive and significant relationship with infrastructural development, confirming that economic growth drives infrastructure investment. However, the corruption perception index (CPI) was negative and statistically significant, implying that corruption undermines infrastructural progress. The study thus concluded that internally generated revenue from both taxes and non-tax sources is a critical driver of infrastructural growth in Nigeria. The study recommended strengthening tax administration, diversifying non-tax revenue sources, promoting economic productivity, and implementing strong institutional reforms to curb corruption and enhance fiscal transparency.

Keywords: Internally Generated Revenue, Infrastructure Development, Tax Revenue, GDP_{per capita}, Corruption Perception Index.

1. Introduction

Nigeria continues to face persistent infrastructural challenges despite decades of public spending and development initiatives. Poor road networks, unreliable power supply, inadequate water systems, and decaying educational and health facilities have collectively hindered economic productivity and reduced the quality of life. While oil revenue has long dominated the nation's fiscal structure, its volatility and recent decline have exposed Nigeria's vulnerability and fiscal imbalance. Consequently, attention has shifted toward Internally Generated Revenue (IGR) as a sustainable source for financing infrastructure. Internally Generated Revenue (IGR) refers to all funds a government raises within its own jurisdiction through taxes, levies, fees, fines, and service charges, excluding allocations from external or federal sources (Adebayo, 2021). In modern societies, it is the responsibility of the government to provide the infrastructural needs of the people. To fulfill this social obligation, revenue in form of money is required. Hence government needs money to protect lives and property, provide amenities for the people and enhance people's living standard. Government at all levels in Nigeria has been constitutionally permitted to generate revenues either through the collection taxes from the public and or exploitation of mineral resources according to the

legislative competence of each level of government, in order to discharge their functions to the people (Adeleke, 2011).

Low level or inadequate infrastructural will scare away both domestic and foreign potential investors. This in turn will lead to low government revenue from taxes such as Petroleum Profit Tax (PPT), Company Income Tax (CIT), value Added Tax (VAT), Personal Income Tax (PIT), Excise duty, Stamp duty etc. Hence, government will be forced to depend on the already dwindling oil revenue, thus impeding the growth and development of the economy and inability of government to execute its function.

Nigeria's infrastructure development is a critical aspect of its economic growth and development. The state of infrastructural development in Nigeria is characterized by significant challenges, including inadequate transportation networks, insufficient energy supply, and limited access to quality healthcare and education (Adebayo, 2021; Okoro and Okonkwo, 2022). These challenges hinder economic growth, affect citizens' quality of life, and discourage foreign investment (Ogbonna and Nwankwo, 2020). Today, inadequate infrastructure is holding back Nigeria's economic growth per capital by 2% each year and reducing firms' productivity by as much as 40%. The largest deficit in infrastructure in Nigeria can be found in the power sector, where only one in four Nigerian can have access to electricity, with a large percentage of Nigerians estimated to be experiencing regular blackouts due to power shortages. Another short coming in infrastructure can be found in roads in Nigeria. There are about 200000km of roads in Nigeria and 36000km belong to the federal government, of the later, only about 30% are in good condition. The share of the states and local government are in terribly worse conditions. The above contending inadequacies in infrastructural development scare potential investors away. This led to low income and the attendant income tax accruing to government.

Internally generated revenue (IGR) is a major source of funding for federal, state and local government operations, which help in broadening and widening the overall non-oil revenue structure of the state (Oti and Odey, 2017). The motive is to provide basic infrastructure capable of improving the welfare of the citizen and enabling environment for business operation. It is the responsibility of various tiers of government in Nigerian to provide infrastructure. But due to the paucity of fund, this inherent obligation has turn to a mirage. Nigeria as an oil producing nation has relied mostly on revenue from oil and gas and constantly neglected other sources of revenue. The key enforcer of social contract between them government and its citizen is the level of revenue generated internally to execute it primary objectives of internal defence and infrastructural development. IGR is crucial for budgeting and effective fiscal instrument that guide the advancement of any economy (Olayinka and Irewole, 2019). Internally Generated Revenue (IGR) plays a pivotal role in driving infrastructural development, particularly in developing economies such as Nigeria, where fiscal resources are often constrained. A sustainable level of IGR enables governments at all tiers to fund critical infrastructure projects such as roads, electricity, healthcare, and education without overreliance on oil revenue or external borrowing. According to Adebayo (2021), increased IGR enhances fiscal autonomy and strengthens the capacity of subnational governments to deliver social and economic infrastructure. Similarly, Olayinka and Irewole (2019) found that IGR has a positive and significant effect on infrastructural development, as states with higher revenue mobilization tend to record greater improvements in public utilities.

In the same vein, Muojekwu and Udeh (2023) revealed that tax revenue significantly contributes to capital expenditure on roads, schools, and healthcare facilities in Nigeria. These studies collectively affirm that IGR serves as a catalyst for infrastructural development and

sustainable economic growth. Despite extensive research on internally generated revenue (IGR) and infrastructure in Nigeria, most studies focused only on tax revenue, neglecting the combined impact of tax and non-tax sources at the national level. Previous works also relied on static models like OLS, which ignore the dynamic and time-dependent nature of fiscal relationships. Moreover, institutional factors such as corruption and governance quality were often overlooked, and many studies were limited in scope and duration. This study fills these gaps by applying the Autoregressive Distributed Lag (ARDL) model, integrating institutional quality (CPI), and using extended data (1985–2024) to capture both short- and long-run effects of IGR on infrastructure development. Therefore, the focus of this study is to empirically investigate the impact of internally generated revenue on infrastructural development in Nigeria.

2.0 Literature Review

2.1 Conceptual Review

To provide a clearer conceptual foundation for this investigation, it is essential to first examine the underlying concepts that underpin the study. The concepts reviewed here are internally generated revenue and infrastructural development.

2.1.1 Concept of Revenue and Internally Generated Revenue

Revenue or government revenue includes all monies (i.e., taxes and fees) received from sources outside the government entity (Popp, 1993). According to BudgIT (2024), Internally Generated Revenue (IGR) encompasses all revenues mobilized by a government whether federal, state, or local within their respective jurisdictions, excluding grants, loans, or transfers from higher tiers of government. It generally consists of two major categories: tax revenue, which includes personal income tax, company and corporate taxes, value-added tax (VAT), withholding tax, stamp duties, property or land taxes, and licensing fees; and non-tax revenue, which covers service charges, administrative fees, fines, rents, royalties, dividends from state-owned enterprises, and miscellaneous receipts from ministries, departments, and agencies. Oseni (2013) similarly defined IGR as income generated domestically within the jurisdiction of government through taxes, levies, and other charges, excluding externally sourced funds such as oil allocations or foreign aid. This view emphasizes the government's fiscal efficiency, innovation, and accountability in mobilizing local resources through mechanisms like taxes, service fees, and returns on investments.

In the same vein, Adesoji and Ogechi (2013) described IGR as revenues collected within a state from diverse sources including taxes, rates, fees, fines, and commercial ventures under direct state control. Their perspective highlights fiscal decentralization, implying that a state's capacity to generate sufficient internal revenue determines its ability to deliver infrastructure and social services. Thus, IGR reflects administrative capability and governance effectiveness in leveraging local economic potentials. Oluwole and Gbolahan (2020) defined IGR as funds generated by subnational governments (such as states or municipalities) independently of federal allocations, primarily from taxes, fees, fines, and charges for government services. They assert that IGR enhances fiscal autonomy and sustainability, empowering local authorities to meet community-specific development needs.

Similarly, Iheonu et al. (2021) explain IGR as funds realized through an organization's internal activities rather than through borrowing or external assistance a view supported by Arowosola and Oni (2019), who note that such revenues exclude loans, asset sales, or debt instruments.

The generation and effective management of IGR are essential for subnational governments' financial independence, enabling improved budgeting, local project financing, and citizen accountability (Akor et al., 2024). In the report of the Nigerian Extractive Industries Transparency Initiative (NEITI, 2013), Internally Generated Revenue (IGR) is defined to include the following: personal income tax which applies to the residents of the state; withholding tax which applies to individuals only; capital gains tax for individuals only; stamp duties applicable to instruments executed by individuals only; road taxes, like vehicle licenses; taxes on pool bets, lottery and casino wins; business premises and registration fees; developments levy applicable to taxable individuals only; fees for right occupancy on urban land owned by the state government; market taxes and levies where state finance is involved; and miscellaneous revenue including but not limited to rent on government property, incomes from investment.

2.1.2 Concept of Infrastructural Development

Infrastructure is defined in many ways. According to business dictionary, infrastructure is defined as relatively permanent and foundation capital investment of a country, firm or project that under and make possible all its economic activities. They include: administrative, telecommunication, transportation, utilities and waste removal and process facilities. The term infrastructure could be defined as the provision of essential services and amenities to the industry and household in the society (Martin and Lee (1996). Hence, investment in infrastructural development projects is a key input in the development of the economy and Panacea to economic activity and growth. Infrastructural development is the improvement in the quality of various components of infrastructure such as road, electricity, health, education, water, sanitation, security, and ICT Ports among others in a country, (Osei-Hwedie and Kurantin, 2017). Infrastructure is a relatively permanent and foundation capital investment of a country, firm or project that makes possible all its economic activities. They include administrative telecommunication, transportation, utilities and waste removal and process facilities. Infrastructure is classified as hard infrastructure and soft infrastructure.

Hard infrastructure is the tangible, physical assembly of structures such as roads, bridges Hard infrastructure refers to the tangible, physical structures that form the foundation of economic and social activity, including roads, bridges, tunnels, railways, power plants, and water systems. These assets are essential for facilitating production, trade, and movement, serving as the backbone of a functional economy (Calderón and Servén, 2014). Hard infrastructure comprises facilities such as transport networks, energy supply, telecommunications, health systems, educational facilities, and agricultural support structures that enable the smooth functioning of society. In contrast, soft infrastructure consists of institutions, systems, and human capital that uphold and manage the economy, such as governance structures, financial institutions, healthcare systems, education, legal frameworks, and security agencies (Akinwale and Adekunle, 2022). Soft infrastructure provides the regulatory and organizational framework necessary for the efficient utilization and maintenance of hard infrastructure and the overall development process. Broadly, infrastructure represents the provision of essential services and amenities that support industrial, commercial, and household activities, thereby enhancing productivity and quality of life. Investment in infrastructural development—both hard and soft—is a critical input for economic growth and a catalyst for sustainable development. It enhances connectivity, promotes industrialization, improves access to healthcare and education, and fosters technological progress (Adebayo, 2021). Development, being a sine qua non for modern civilization, relies heavily on adequate infrastructure. Governments utilize revenue generated internally through taxation and non-tax sources to fund key projects such as the construction of roads, bridges, schools, healthcare centers, and water facilities. Therefore, infrastructure investment serves as a vital mechanism through which governments stimulate

economic activities, create employment, and improve citizens' welfare (Adesoji and Ogechi, 2013).

2.2 Theoretical Framework

To provide a strong analytical foundation for this study, it is essential to anchor the discussion within an appropriate theoretical framework. Theoretical framework x-rayed the relationship between internally generated revenue and infrastructural development.

2.2.1 Fiscal Federalism Theory

The study was anchored on the fiscal federalism theory. The Fiscal Federalism Theory was developed in the mid-20th century by Richard Musgrave (1959) and Wallace Oates (1972). The formal articulation of fiscal federalism as a distinct concept was later advanced by Wallace Oates (1972) in his seminal book "*Fiscal Federalism*," which provided a comprehensive framework for understanding the allocation of functions and resources among different tiers of government within a federal system. Oates' theory was further refined in subsequent works (Oates, 1999; 2005), which explored how decentralization and intergovernmental fiscal arrangements affect efficiency, accountability, and development outcomes. There are three roles expected from the government sector within the framework and they include the role of government in correcting various forms of market failure, the role of ensuring equitable distribution of income and the role of maintaining stability in the macro economy at full employment and stable prices. This study is mostly related to the role of the government in correcting various forms of market failures. Hence the government is expected to step in where the market mechanism failed due to various types of public goods characteristics.

The theory focused on situations where different levels of government provide efficient level of outputs of public goods for those goods whose special patterns of benefits were encompassed by geographical scope of their jurisdictions and such situation is known as "Perfect Mapping" or fiscal equivalent (Olson 1969). However, it was noticed that, given the multiplicity of local public goods with varying geographical patterns of consumption, there was hardly any level of government that could produce a perfect mapping for all public goods. Thus, it was recognized that there would be local public goods with inter jurisdiction spill overs. e.g. a road may confer public goods characteristics, the benefits of which are enjoyed beyond the local jurisdiction. The local authority may then under provide for such a good. To avoid this, the theory then resorts to traditional pigouvian subsidies, requiring the central government to provide matching grants to the lower level government so that it can internalize the full benefits. Fiscal Federalism Theory is relevant to the study because the theory underscores the need for stronger fiscal decentralization and by enhancing IGR through efficient tax administration, financial innovation, and transparency, Nigeria can achieve sustainable infrastructural development and reduce dependence on volatile oil revenues.

The Fiscal Federalism Theory explains how the allocation of fiscal responsibilities and revenue powers influences national economic performance. The theory explains how the federal government's control over major revenue sources, such as oil, shapes funding for capital infrastructure, tax and non-tax revenue generation, and overall economic growth (GDP per capita). It suggests that effective fiscal management and coordination across sectors are vital for mobilizing resources to finance infrastructure and promote development. Strong institutional governance is also essential to ensure transparency, accountability, and efficient utilization of public funds, thereby enhancing Nigeria's economic performance and sustainable growth. Thus, this study adapted the Fiscal Federalism Theory as its guiding framework because it provides the conceptual justification for examining how internally generated revenue

contributes to infrastructural development in Nigeria. The theory supports the argument that fiscal autonomy, when properly managed, leads to improved service delivery, accountability and balanced regional development.

2.3 Empirical Review

The study reviewed the works of other authors which are relevant to the study on the relationship between internally generated revenue and infrastructural development. These studies employed different econometric methods and data sources to examine how internally generated revenue influences infrastructure growth and development. They are discussed below:

Amadi and Okorontah (2024) investigated the effect of internally generated revenue on infrastructure development in River state. The study adopted econometrics analytical method centered on Dynamic Ordinary Least Square technique (DOLS). The Kwiatkowski-Philips-Schmidts-Shin (KPSS) unit root test was applied to test for the stationarity of the time series data. The study adopts ex-post facto research design. Secondary data were extracted from Nigeria Bureau of Statistics annual report and Rivers state internal revenue office of 2010 to 2022. The empirical results from DOLS revealed tax revenue, revenue of ministries, department and agencies as well as federal allocation have a positive effect on infrastructural development in Rivers state. Meanwhile, inflation rate was observed to exhibited negative influence on infrastructure. The study concluded that internally generated revenue has a significant effect on infrastructural development of Rivers state.

Muojekwu and Udeh (2023) assessed the effect of tax revenue on infrastructural development of Nigeria. Petroleum profit tax, company income tax, value added and custom and excise duties tax were used to proxy tax revenue, while capital expenditure was used to measure economic growth for a period of twenty seven years spanning from 1995 to 2021. The time series data were obtained from Federal Ministry of Finance, Federal Inland Revenue Services, Central Bank of Nigeria, National Bureau of Statistics and the World Bank Publications. The study employed descriptive statistics and inferential statistics using Pearson correlation and Ordinary Least Square (OLS) regression analysis. The specific findings showed that: Petroleum profit tax has a significant and positive effect on capital expenditure of Nigeria, Company income tax has a significant and positive effect on capital expenditure, Value Added Tax has a significant and positive effect on capital expenditure of Nigeria at 5% level of significance respectively. It was recommended that Government should put in place adequate measure to ensure that revenue generated from tax is effectively utilized to develop and grow the economy through proper infrastructural development.

Mustapha et al. (2022) investigated tax revenue collections and healthcare infrastructural development in Nigeria for a period covering 2013 to 2020. The study utilised secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Office of Federal Inland Revenue for analysis. The multiple linear regression method was adopted for data analysis. The result of the study found that petroleum profit tax and value-added tax strongly influenced infrastructural development in Nigeria's healthcare sector. It is recommended that taxes be collected efficiently and effectively in order to boost infrastructural development in the healthcare sector.

Odoemene (2020) examined the effects of internally generated revenue on infrastructural development of Local government Areas in Nigeria. The study adopted survey research design and dwelled on the use of both primary and secondary data generated from mailed questionnaire and official documents such as periodicals, annual reports, journals and

newspapers as well as data base of the National Bureau of Statistics (NBS) and the Central Bank of Nigeria. The result indicated that IGR of local governments is grossly inadequate and the enhancement of revenue sources and the efficient utilization of these revenues would promote infrastructural development in the local communities. Based on the findings, it was recommended that the Nigerian government (at all levels) and the people should pay more attention to the enhancement of local government revenue generation sources so as to drive development at the community level.

Nkechi and Onuora (2018) examined the Effect of Internally Generated Revenue on Infrastructural Development of the South Eastern States in Nigeria. Ex- post facto design was used in the study. Data used were extracted from budget estimates of each of the five South Eastern States. The study employed descriptive statistics, correlation and linear multiple regression for data analysis and data interpretation. Findings from the study revealed that there a significant relationship between Internal Generated Revenue and the cost of infrastructure in the South East States as at the date of the study. Based on the findings, the researcher recommends that government should increase IGR in other to meet up the cost of infrastructures.

Ogbu, Okezie and Okezie (2017) evaluated impacts of Internally Generated Revenue (IGR) utilization on structural development in Ebonyi State. It explicitly seeks to discover the degree of contributions of the IGR to infrastructural development like road, water plus educational infrastructure. This study used secondary data extracted from the audited financial reports from the office of the Auditor-General for 1996-2014. The study employed simple regression analysis to test the hypothesized variables and using this research design to analyze the data, it showed p-value of $0.578 > 0.05$ Road Infrastructure (RDI), p-value of $0.38 < 0.05$ Educational Infrastructure, and p-value of $0.033 < 0.05$ Water Infrastructure at 0.05 alpha level of significance. It was discovered that IGR has insignificant impact on Road infrastructure but significantly impacted on Educational and Water infrastructure. It is therefore concluded that IGR has made positive but uneven distribution to the development of infrastructure in the State as some aspect like water and educational infrastructure is seen to have received more boost than road infrastructure.

Joseph and Omodero (2020) examined the relationship between government revenue and economic growth in Nigeria. The study employed exploratory and ex post facto research design. Secondary data from 1981- 2018 were used. The study used the ordinary least square (OLS) regression technique. The result revealed that federally received revenue and value-added tax (VAT) have a moderate and positive impact on economic growth. Onwuka and Christian (2019) examined the impact of revenue generation on infrastructural development in Nigeria. Secondary data were adopted in the study. The ordinary least square (OLS) regression analysis technique was employed in the study from 1981-2018. The study revealed that revenue generated has a significant impact on infrastructural development in Nigeria.

3.0 Methodology

This study adopted correlational research design. The design is appropriate for analyzing the relationship between internally generated revenue (IGR) proxied by tax revenue and infrastructural development in Nigeria over time. It employed a quantitative approach, using econometric tool (Eviews) to measure the magnitude and direction of the relationship among variables. The population of the study consists of all fiscal and infrastructural activities in Nigeria across the study period. The study focuses on annual time series data from 1990 to 2023, giving a total of 34 observations. This period was chosen based on data availability and to capture major fiscal reforms such as the introduction of the Joint Tax Board. A purposive

sampling method was adopted. Nigeria is selected as a case study because of its federal fiscal structure and the increasing importance of IGR in financing infrastructure amid declining oil revenue. The choice of time series data allows the study to examine how changes in IGR over time influence infrastructure development. The study relied solely on secondary data obtained from credible and verifiable sources, including: Central Bank of Nigeria (CBN) Statistical Bulletin and World Development Indicators (World Bank). The variables include: Infrastructural Development (Dependent Variable), Internally Generated Revenue proxied by Tax revenue, Real GDP per Capita and institutional governance proxied by corruption perception index (CPI). The study employed econometric time series techniques; the Autoregressive Distributed Lag (ARDL) Bounds Testing Approach was applied to test for long-run relationships among variables; internally generated revenue proxied by tax revenue and infrastructural development using Eviews 10 software.

3.1 Model Specification

The main aim of the paper is to investigate the effect of internal generated revenue on infrastructural development in Nigeria for the period 1985-2023. The study adapted the model used by Akpan and Namseh (2013) on revenue and infrastructural development in Akwa Ibom State. Their model is stated thus:

$$Y = \beta_0 + \beta_1 X_t + u_t \dots \dots \dots (1)$$

Where:

Y_t = Infrastructure in specific sector (road, electricity, or water) at time t

X_t = Internally Generated Revenue at time t

β_0 = Intercept

U_t = Error term

For the purpose of this study model (1) above can be modified as:

$$GCI = f(TAX, NON - TAX, GDP_{pc}, CPI \dots \dots \dots (2)$$

Equation 2 reads that Government capital infrastructure (GCI) is a function of TAX revenue, Non-tax revenue, and gross domestic product per capita and institutional governance proxied by Corruption Perceptions Index (CPI). In order to capture the influence of the stochastic or random variable, the equation is explicitly transformed econometrically as:

$$GCI = \beta_0 + \beta_1 Tax_t + \beta_2 Non - Tax_t + \beta_3 GDP_{pc_t} + \beta_4 CPI_t + U_t \dots \dots \dots (3)$$

Where:

GCI = Government capital infrastructure

Tax = Tax revenue (Proxy for internally generated revenue)

Non-Tax = Non-Tax Revenue

GDPpc = Gross domestic product percapita

CPI	=	Corruption Perceptions Index proxy for institutional governance
β_0	=	Constant
$\beta_1 - \beta_4$	=	Parameter Estimates
t	=	Time t
U_t	=	Error Term

With apriori expectation of β_1, β_2 and $\beta_3 > 0$, and $\beta_4 < 0$

4.0 Results and Discussion

This section presents and discusses the results of the empirical analysis carried out to examine the relationship between internally generated revenue (IGR) and infrastructural development in Nigeria.

4.1 Unit root test

In order to test for the unit root property of the series, the study adopted the Augmented Dickey-Fuller (ADF). The results of the Augmented Dickey-Fuller (ADF) unit root test show that the variables in the model possess mixed levels of stationarity. Specifically, non-tax revenue (NON-TAX) and corruption perception index (CPI) were stationary at level form, indicating that they are integrated of order zero, $I(0)$. In contrast, government capital expenditure (GCI), tax revenue (TAX), and gross domestic product per capita (GDPpc) became stationary only after first differencing, implying that they are integrated of order one, $I(1)$. This mixture of $I(0)$ and $I(1)$ variables suggests that while some series are mean-reverting in their level form, others required differencing to achieve stationarity. Consequently, the presence of both $I(0)$ and $I(1)$ variables justifies the application of the Autoregressive Distributed Lag (ARDL) modeling approach, which is suitable for analyzing relationships among variables with different orders of integration but none integrated of order two, $I(2)$.

4.2 Cointegration Test Result

Having established that the variables are integrated of order zero and order one, the ARDL bounds test for cointegration was carried out. The results of the ARDL Bounds Test showed that the computed F-statistic value of 12.2459 is greater than the upper critical bound value ($I(1)$) of 4.37 at the 1% significance level. This implies that the null hypothesis of no long-run relationship among the variables is rejected. Therefore, it can be concluded that there exists a long-run cointegrating relationship between infrastructural development and its explanatory variables tax revenue, non-tax revenue, GDP per capita, and corruption perception index in Nigeria.

4.3 Post Diagnostic Test

Table 1: ARDL Model Diagnostic Test

	F-Statistics	Prob.
Serial correlation	3.436239	0.6714
Homoscedasticity	5.624193	0.2362
Normality	6.260581	0.8731

Source: Authors' computation using Eviews 10 (2025).

The diagnostic test results suggest that the model is well-specified and reliable. The tests for serial correlation, homoscedasticity, and normality indicate no significant issues, with p-values of 0.6714, 0.2362, and 0.8731, respectively. These results imply that the residuals are randomly distributed, have constant variance, and are normally distributed, thereby validating the model's assumptions and inferences. Overall, the model appears to be robust and suitable for making reliable predictions and interpretations.

4.4 Result of ARDL Model Estimation

The Autoregressive Distributed Lag (ARDL) model estimation was conducted to examine both the short-run and long-run relationships between internally generated revenue and infrastructural development in Nigeria. The results are presented in table 1 below:

Table 2: Result of ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TAX	0.633582	0.327477	1.934740	0.0666
NON-TAX	1.978746	0.409979	4.826456	0.0001
GDP _{pc}	1.367297	0.342004	3.997897	0.0007
CPI	-0.881494	0.108633	-8.114429	0.0000
C	19.53342	4.884370	3.999168	0.0007
R-squared	0.871475			
Adjusted R-squared	0.817098			
Durbin-Watson stat	2.303872			

Source: Authors' computation using Eviews 10 (2025).

The regression analysis revealed the relationships between internally generated revenue Proxied by tax (Tax) and non-tax revenue and government capital infrastructure (GCI). The result in Table 2 shows that tax revenue (TAX) has a positive and statistically significant effect on infrastructural development in Nigeria at the 10% level, with a coefficient of 0.6336 and a probability value of 0.0666. This implies that a 1% increase in tax revenue leads to approximately a 0.63% increase in infrastructural development, holding other factors constant. This study aligns with the findings of Muojekwu and Udeh (2023), who established that petroleum profit tax, company income tax, and value-added tax all had significant and positive effects on capital expenditure in Nigeria. Similarly, Amadi and Okorontah (2024) found that tax revenue positively influenced infrastructure in Rivers State.

The positive sign aligns with fiscal theory, suggesting that higher tax revenue enhances the government's capacity to finance public investment in infrastructure such as roads, power, and water supply. The coefficient of non-tax revenue (NON_TAX) is positive and highly significant at the 1% level, with a value of 1.9787. This indicates that a 1% increase in non-tax revenue results in about a 1.98% increase in infrastructural development. The magnitude of this coefficient suggests that non-tax sources such as levies, fines, and fees may play a crucial role in supplementing government budgets for infrastructure financing. This finding emphasizes the importance of diversifying revenue sources beyond taxation for sustainable infrastructural growth. The result agrees with the works of Adesoji and Ogechi (2013) and Oti and Odey

(2017), who both reported that revenues from levies, fines, service charges, and fees significantly support capital expenditure and social amenities. However, this result contrasts slightly with Ogbu et al. (2017), who found uneven effects of IGR components on different types of infrastructure. The coefficient of gross domestic product per capita (GDPPC) is 1.3673 and statistically significant at the 1% level. This positive relationship implies that as the level of economic growth (measured by GDP per capita) increases, infrastructural development also improves. This finding supports the notion that economic prosperity enhances fiscal capacity and investment in infrastructure, reinforcing the growth-development nexus in Nigeria.

The study corroborates the findings of Adeyemi and Adeyemi (2020) and Ogbonna and Nwankwo (2020), who concluded that economic growth and infrastructure development are mutually reinforcing. As the economy expands, fiscal capacity and investment in capital projects also increase. On the other hand, corruption perception index (CPI) has a negative and highly significant coefficient of -0.8815 ($p = 0.0000$), indicating that higher levels of corruption (lower CPI scores) adversely affect infrastructural development in Nigeria. Conversely, improved institutional integrity and transparency (higher CPI scores) enhance infrastructure outcomes by ensuring efficient use of public funds. The result aligns with the findings of Odoemene (2020) and Transparency International (2023), which show that corruption undermines efficient utilization of public funds and leads to poor infrastructure outcomes. The finding also agrees with Akor et al. (2024), who noted that fiscal transparency and accountability are critical for translating revenue gains into tangible development. Therefore, this result strongly supports the view that institutional reforms and anti-corruption measures are indispensable for effective infrastructure delivery in Nigeria. The R-squared value of 0.8715 suggests that approximately 87.1% of the variations in infrastructural development are explained by the included independent variables, indicating a strong explanatory power of the model. The adjusted R-squared of 0.8171 further confirms the model's robustness, accounting for the number of predictors. Additionally, the Durbin-Watson statistic of 2.30 falls within the acceptable range, indicating the absence of significant autocorrelation in the residuals. In order words, the model is free from the problem of autocorrelation.

5. Conclusions and Recommendations

The study examined the impact of Internally Generated Revenue (IGR) proxy by tax and non-tax revenue on infrastructural development in Nigeria, using government capital expenditure (GCE) as a measure of infrastructure. The findings revealed that both tax and non-tax revenues have positive and significant effects on infrastructural development, indicating that improved revenue mobilization enhances the government's ability to finance critical infrastructure such as roads, energy, education, and healthcare facilities. Economic growth, measured by GDP per capita, was also found to significantly promote infrastructure investment, confirming that sustained economic expansion provides the fiscal capacity needed for long-term development. Conversely, the Corruption Perception Index (CPI) showed a negative and significant effect, suggesting that corruption remains a major impediment to infrastructure delivery despite revenue growth. The high R-squared value further demonstrates that the model has strong explanatory power, and the absence of autocorrelation validates the reliability of the estimates.

Based on these findings, the study recommended that: the government should improve efficiency in tax collection through digitalization, broadening the tax base, and reducing evasion to enhance revenue for infrastructure financing, greater attention should be given to non-tax revenues such as levies, user charges, rents, and dividends from state-owned enterprises to supplement public investment funds, policies that stimulate productive sectors like manufacturing, agriculture, and services should be prioritized to expand the fiscal space for capital expenditure and anti-corruption reforms, fiscal transparency, and accountability

mechanisms must be reinforced to ensure that internally generated funds are effectively utilized for developmental projects.

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Influence of Gen Z's Social Responsibility Expectations on Brand Marketing Strategies: A Study of Young Consumers and Marketing Professionals in Ibadan, Oyo State, Nigeria

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ABSTRACT

Gen Z, is reshaping the consumer landscape through its strong emphasis on ethics, sustainability, and social justice. Unlike previous generations, these consumers do not treat corporate social responsibility (CSR) as an optional add-on but as a baseline expectation for brands. This paper explores the influence of Gen Z's CSR expectations on brand marketing strategies, with particular attention to how these values shape product innovation, communication practices, and campaign design. The objectives were to identify the CSR values Gen Z prioritizes, test their influence on loyalty and brand preference, and examine how brands adapt their strategies in response. Two null hypotheses guided the analysis: that CSR perception has no significant effect on brand loyalty, and that CSR expectations have no significant relationship with brand preference. A mixed-methods design was employed. Quantitatively, a survey of 286 Gen Z consumers was analyzed using descriptive statistics and linear regression. Qualitatively, thematic analysis of five in-depth interviews with brand managers provided contextual insight. The results demonstrated that CSR perception significantly predicted brand loyalty ($R^2 = .28$, $p < .001$), while CSR expectations strongly influenced brand preference ($R^2 = .25$, $p < .001$). Interviews highlighted sustainable packaging, authentic storytelling, cause-driven campaigns, and alignment between internal practices and external communication as key strategic responses. The study concludes that CSR is no longer peripheral but central to marketing in the Gen Z era. Recommendations include embedding CSR into product strategies, enhancing transparency, and leveraging authentic digital engagement to build credibility, trust, and long-term loyalty among this socially conscious generation.

Keywords: Gen Z, Corporate Social Responsibility, Brand Loyalty, Brand Preference, Marketing Strategy

1.0 Introduction

Over the past decade, the emergence of Generation Z (born approximately between 2000 and 2010) has transformed how brands communicate and build relationships with consumers. Unlike earlier cohorts, Gen Z is both digitally native and socially conscious, having come of age amid global movements for climate action, gender equality, and social justice (Turner, 2021). This generation expects brands not only to deliver quality products but also to embody values of authenticity, inclusivity, and corporate responsibility (Williams and Page, 2022).

These evolving expectations have disrupted traditional marketing logic. Conventional approaches that focus on persuasion or aspirational imagery often fall short with Gen Z audiences who prioritize purpose driven engagement and transparency (Deloitte, 2023). In response, global brands have increasingly integrated sustainability narratives, social activism,

and ethical sourcing into their marketing strategies to meet this demand (Naderer and Oprea, 2021; Lim *et al.*, 2023). Yet, whether these strategies genuinely resonate or risk being perceived as “performative activism” remains an open question (Kowalska and Kujawski, 2022).

Existing literature on corporate social responsibility (CSR) and consumer perception (Kim *et al.*, 2020) has established that socially responsible behavior enhances brand image and loyalty. However, much of this research has focused on older consumer groups or broad populations. Few studies have specifically examined how Gen Z’s unique social and digital culture shaped by activism, online identity, and skepticism toward “performative” branding translates into measurable influence on marketing strategy design (Southgate, 2020; Vitelar, 2023).

This study therefore situates itself at the intersection of generational marketing, CSR communication, and brand strategy, aiming to explore the influence of gen z's social responsibility expectations on brand marketing strategies. Specifically, the study investigates: What social responsibility values are most important to Gen Z consumers? How do these values influence brand perception and loyalty? And what strategic marketing changes have brands implemented in response? Guided by null hypothesis H_0 : There is no significant relationship between Gen Z’s social responsibility expectations and their preference for particular brands. H_0 : Gen Z’s perception of a brand’s CSR initiatives has no significant influence on their brand loyalty. Through a mixed-method approach, this paper aims to bridge the gap between generational values and corporate strategy, offering insight into how ethical alignment with Gen Z may serve not only as a marketing necessity but also as a long-term value creation model.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Gen Z Consumer Profile and Values

Generation Z, commonly defined as individuals born between 2000 and 2012, is emerging as a powerful consumer cohort characterized by a deep sense of social consciousness, technological fluency, and ethical awareness. Unlike previous generations, Gen Z grew up in a digitally connected, socially aware global environment, shaped by climate anxiety, political polarization, and rapid social change. As such, their purchasing behavior reflects a synthesis of personal identity, value alignment, and social impact (Zarkawia and Chelekkal, 2023). They are less influenced by traditional advertising and more by authenticity, transparency, and brands’ alignment with social causes. This shift marks a transition from brand loyalty based on function or aesthetics to loyalty rooted in shared beliefs and value congruence.

Gen Z consumers not only demand product quality but also scrutinize the ethical and environmental implications of the production process. For instance, environmental sustainability, diversity and inclusion, and mental health advocacy rank high among the causes they expect brands to support (Aidoo, 2025). Moreover, this cohort demonstrates a readiness to hold companies accountable through social media often engaging in "cancel culture" when brands fail to meet their ethical standards (Narayanan, 2022). Studies show that Gen Z rewards brands that take genuine stances on pressing issues with engagement, loyalty, and advocacy, and penalizes those that are perceived as performative or opportunistic in their social activism (Theocharis and Tsekouropoulos, 2025; Mitchell, 2022).

2.1.2 Brand Authenticity and Gen Z Skepticism

Brand authenticity refers to the extent to which a brand is perceived as genuine, transparent, and true to its core values and identity. Authentic brands are those that consistently demonstrate integrity in their operations, communications, and social engagements. Beverland and Farrelly (2023) define authenticity as a consumer perception that a brand is faithful to itself, honest in its messaging, and socially responsible. In the era of digital transparency, brand authenticity has become a strategic asset, especially for companies targeting younger, more discerning demographics.

Among these demographics, Gen Z individuals born between approximately 2000 and 2012 demonstrate high levels of skepticism toward brands, particularly those perceived as opportunistic or inauthentic. Raised in a digital environment saturated with advertising and information, Gen Z is more adept at detecting inconsistencies and performative marketing. According to Djafarova and Bowes (2021), Gen Z consumers tend to question the motives behind branded content, especially when it lacks genuine emotional or ethical resonance. They are particularly wary of brands that engage in “woke-washing” or use social causes merely as marketing tools without real commitment.

The intersection of brand authenticity and Gen Z skepticism is critical for modern marketers. Research shows that Gen Z is more likely to engage with brands that align with their values, offer transparency, and reflect real-world diversity (Turner, 2022). This generation prefers brands that share behind-the-scenes processes, take public stands on social justice issues, and engage in authentic storytelling. When brands fail to meet these expectations, Gen Z often responds with disengagement, negative word-of-mouth, or social media backlash (Chatzidakis *et al.*, 2020; Marques, 2023).

2.1.3 Marketing Strategy Adaptation to Gen Z's CSR Expectations

The growing influence of Generation Z is fundamentally reshaping how brands conceptualize and implement marketing strategies. Unlike earlier approaches that treated Corporate Social Responsibility (CSR) as a supplementary campaign, brands are now reengineering the entire marketing mix (4Ps) to align with Gen Z's demand for value-based engagement. Gen Z expects brands to be not only transparent and responsible but also proactively involved in societal change (Narayanan, 2022). This generational pressure has driven strategic shifts across the domains of product innovation, pricing, distribution, and promotional tactics.

From a product standpoint, there has been a marked rise in eco-design, sustainable packaging, and ethical sourcing. For example, brands are now incorporating circular economy principles and traceability tools to showcase supply chain ethics (Lopes *et al.*, 2024). This aligns with Gen Z's preference for tangible, measurable impact over symbolic gestures. Pricing strategies have also shifted contrary to assumptions about price sensitivity. Gen Z shows a willingness to pay a premium for brands that share their values, particularly in fashion, beauty, and food sectors (Theocharis and Tsekouropoulos, 2025). This behavioral trend positions CSR not as a cost but as a value-adding differentiation.

2.2 Theoretical Review

2.2.1 Expectancy-Disconfirmation Theory

The Expectancy-Disconfirmation Theory (EDT) was originally introduced by Richard L. Oliver in 1977 and further developed in 1980 to explain consumer satisfaction judgments in the post-purchase stage. According to EDT, satisfaction is a result of the discrepancy between

consumer expectations and actual perceived performance of a product or service (Oliver, 1980). If performance meets or exceeds expectations, positive disconfirmation occurs, leading to satisfaction; if performance falls short, negative disconfirmation results in dissatisfaction. This theory has been extensively applied in consumer behavior research and is considered a foundational model for evaluating consumer-brand relationships and loyalty formation (Gupta et al., 2024).

The core assumption of EDT is that consumers enter interactions with brands holding prior expectations, which are often shaped by marketing communications, social norms, and personal values. This makes EDT particularly applicable to understanding Gen Z, whose consumption is driven not just by functionality or quality, but by deep-seated values such as sustainability, inclusion, and corporate ethics (Ridwan et al., 2025).

A key strength of EDT lies in its flexibility and adaptability across industries and behaviors, from customer service to core marketing. It offers a valuable predictive lens for brand managers, enabling them to monitor gaps between expected and actual CSR performance. This is vital in an era where digital platforms enable Gen Z to rapidly validate or debunk brand claims (Theocharis and Tsekouropoulos, 2025). Moreover, EDT supports strategic efforts to consistently meet or surpass ethical expectations, which is now a determinant of long-term brand equity.

Nonetheless, EDT has been criticized for being overly cognitive and underestimating emotional and affective components of consumer reactions (Petruzzellis et al., 2020). From the perspective of Gen Z, whose behavior is influenced not just by rational evaluation but also by social influence, peer validation, and emotional resonance, this limitation is particularly salient. Furthermore, EDT traditionally focuses on post-purchase evaluation, which may not fully capture pre-purchase brand perception, an area increasingly critical in CSR-driven marketing.

Despite these critiques, EDT remains highly relevant in evaluating how Gen Z consumers assess brand credibility and consistency in CSR practices. It provides a robust framework for understanding expectation management in CSR communication, helping brands avoid misalignment between what they promise and what they deliver. For marketers seeking to win Gen Z loyalty, maintaining positive disconfirmation through credible, consistent, and value-aligned messaging is essential.

2.3 Empirical Review

Ghosal, (2025) in their study CSR and Its Influence on Consumer Behaviour: A Comparative Study of Gen Z and Millennials explored generational differences in responses to corporate social responsibility (CSR) efforts. Using a quantitative comparative survey of 600 respondents across Europe, the study assessed purchase intentions, trust, and advocacy behavior among both cohorts. Findings revealed that Gen Z consumers were more influenced by CSR transparency and ethical supply chain practices than Millennials, who prioritized product quality. The author recommended that brands targeting Gen Z emphasize traceable CSR communication, visual storytelling, and social media activism to maintain trust and brand engagement.

Silveira and Lawande (2025) in their work Redefining Employer Branding Metrics: Integrating Gen Z Expectations and AI-Powered Sentiment Analysis in the Digital Hiring Landscape applied a mixed-methods design, combining social media analytics with focus group data. The study discovered that Gen Z evaluates brand image and employer identity through authentic communication, diversity representation, and social impact initiatives. The authors concluded that traditional branding metrics are insufficient to capture Gen Z's value-driven orientation

and recommended the integration of AI-based sentiment tracking to monitor and adapt CSR messaging effectively.

3.0 Methodology

3.1 Research Design

This study adopts a mixed-methods research design, integrating quantitative and qualitative approaches to provide both breadth and depth of insights. The quantitative component captures the generalizable patterns of Gen Z's expectations and behaviors, while the qualitative component (in-depth interviews) explores contextual nuances, motivations, and managerial perspectives. This design is particularly suited to consumer behavior studies where statistical generalization must be complemented by interpretive understanding (Creswell & Plano Clark, 2018).

3.2 Sample Size

Two target groups were selected:

Gen Z Consumers: A purposive sample of 300 participants aged between 18 and 26 years was recruited through online panels and social media platforms. The sample was stratified to ensure diversity across gender, ethnicity, socioeconomic status, and geographic location. This approach ensures representativeness within the demographic group while addressing potential sampling biases.

Brand Managers: In addition, five (5) in-depth interviews were conducted with brand and marketing managers across industries such as fashion, food, technology, and personal care. These sectors are selected given their strong visibility in CSR and sustainability discourse.

3.3 Data Collection

Quantitative Survey: Questionnaires were administered to Gen Z consumers. Items measure CSR expectations, brand authenticity perception, purchase intentions, and loyalty using established Likert-scale instruments.

Qualitative Interviews: Semi-structured interviews with brand managers explore how CSR considerations are integrated into marketing strategies. Questions probe CSR decision-making, campaign design, and responses to consumer feedback.

3.4 Method of Data Analysis

Quantitative Analysis: Surveys were analyzed using descriptive statistics to map CSR expectations, followed by regression analysis to examine relationships between CSR perceptions and consumer behaviors (loyalty and engagement). Statistical software SPSSv24 is employed.

Qualitative Analysis: Interview transcripts and campaign materials will be subjected to thematic analysis (Braun & Clarke, 2006). Coding will identify recurring themes such as authenticity, sustainability, inclusivity, and consumer backlash.

4.0 Results and Discussions

Table 1: What social responsibility values are most important to Gen Z consumers? (N=286 respondents)

Items	Mean	SD
I prefer brands that actively reduce their environmental footprint (e.g., sustainable packaging, carbon neutrality).	4.01	0.65
Environmental sustainability is an important factor when I decide which brand to purchase from.	4.04	0.75
I support brands that ensure fair wages and ethical treatment of workers.	4.00	0.67
I avoid brands that are associated with unfair labour practices or exploitation.	3.95	0.72
I am more likely to support brands that represent diversity and inclusion in their workforce and advertising.	4.03	0.74
Representation of different social and cultural groups in brand campaigns is important to me.	3.98	0.72
I expect brands to be transparent about their supply chains and sourcing practices.	3.92	0.73
When brands are open about their CSR initiatives, I am more likely to trust them.	3.97	0.71
I believe brands should take a public stance on important social issues (e.g., gender equality, climate activism).	4.03	0.67
I feel more loyal to brands that actively advocate for causes I care about.	4.06	0.69

Source: Field Survey, 2025

The findings from this study provide important insights into how Gen Z consumers perceive corporate social responsibility (CSR) in shaping their brand preferences. A total of 286 valid responses were collected through the online survey. The demographic breakdown showed that 61% of respondents were female, 39% male, with 72% aged between 18–26 years, reflecting the core demographic of Gen Z consumers who are most vocal in demanding brand accountability.

The results reveal that respondents generally show high levels of agreement with CSR-related items, as most mean scores clustered around 4.0, indicating that CSR practices significantly influence consumer preferences. The highest mean ($M = 4.06$, $SD = 0.69$) was recorded for the statement “*I feel more loyal to brands that actively advocate for causes I care about.*” This suggests that advocacy and alignment with consumer values foster strong brand loyalty among Gen Z, aligning with recent evidence that social values are key triggers of purchase behavior in this cohort (Jamali, 2025).

Environmental sustainability ($M = 4.04$, $SD = 0.75$) and diversity and inclusion ($M = 4.03$, $SD = 0.74$) also received high agreement levels, highlighting that these domains are particularly critical areas for brands to prioritize. These findings are consistent with Hy (2024), who reports that Gen Z’s loyalty is strongly shaped by visible commitments to sustainability and inclusivity, particularly within industries like fashion. Similarly, Coutinho (2025) emphasizes that

sustainability not only influences consumer perceptions but also strengthens emotional brand attachment.

Interestingly, transparency in supply chains and CSR disclosure scored slightly lower ($M = 3.92$, $SD = 0.73$), though still leaning towards agreement. This indicates room for improvement in how brands communicate their CSR initiatives to Gen Z audiences. Prior research by Košičiarová and Mateášiková (2024) supports this result, showing that while Gen Z values CSR, they expect transparency and authenticity in digital communication as proof of genuine commitment.

The standard deviations (0.65–0.75) across items indicate moderate variability in responses, suggesting that while most respondents agree with CSR-driven brand strategies, the intensity of these opinions varies. This variation may be influenced by personal values, exposure to CSR campaigns, or cultural context. Such diversity in perspectives reflects global findings that CSR priorities differ across markets, requiring brands to adapt messaging strategies to local contexts (Hy, 2024). Overall, the results suggest that Gen Z consumers strongly value advocacy, environmental sustainability, and inclusivity in brand strategies, with loyalty most strongly tied to perceived authenticity and cause alignment. However, transparency and disclosure remain weaker areas, highlighting the need for brands to improve communication strategies to fully resonate with this demographic.

Table 2: How do these values influence brand perception and loyalty? (N=286 respondents)

Items	Mean	SD
When a brand supports social or environmental causes that align with my values, I perceive the brand more positively.	4.32	0.74
CSR-driven initiatives make a brand stand out from its competitors in my mind.	4.15	0.81
I feel a stronger emotional connection to brands that consistently demonstrate social responsibility.	4.21	0.77
If a brand aligns with my social responsibility values, I am more likely to remain loyal to it over time, even if competitors offer similar products.	4.28	0.72
I am more likely to recommend brands to others when I believe they are genuinely committed to social and environmental responsibility.	4.35	0.70

Source: Field Survey, 2025

The results suggest that Gen Z respondents generally place high importance on CSR values in shaping brand perception and loyalty. The item with the highest mean score, “*I am more likely to recommend brands to others when I believe they are genuinely committed to social and environmental responsibility*” ($M = 4.35$, $SD = 0.70$), indicates that CSR commitment strongly enhances word-of-mouth advocacy. This finding aligns with Minton (2021), who found that Gen Z consumers are more likely to advocate for brands that demonstrate ethical responsibility, particularly on social and environmental issues. Similarly, high scores for items related to brand loyalty ($M = 4.28$, $SD = 0.72$) and positive brand perception ($M = 4.32$, $SD = 0.74$) demonstrate that CSR alignment is a critical determinant of long-term consumer relationships. This observation resonates with Papadas *et al.* (2022), whose cross-national study confirmed that CSR perceptions significantly strengthen brand loyalty and repurchase intention among Gen Z consumers.

Relatively lower, though still strong, mean scores for competitive differentiation ($M = 4.15$, $SD = 0.81$) imply that while CSR helps brands stand out, its greater influence lies in building emotional connection and loyalty. This is consistent with Yoon *et al.* (2022), which showed that congruent CSR strategies foster deeper trust and emotional bonds with Gen Z audiences, whereas incongruent efforts can diminish credibility. Overall, the consistency across all high mean scores reflects the salience of CSR in Gen Z's consumption values. This supports the findings of Deloitte (2023) and McKinsey & Company (2022), which emphasize that CSR is not a peripheral factor but a core driver of purchase intention, brand loyalty, and advocacy for this generation.

Qualitative Findings

5 brand managers participated in semi-structured interviews. Thematic content analysis of interview transcripts revealed five key themes:

Theme 1: Marketing Mix Adaptations

"Can you describe specific changes in your product, pricing, or distribution strategies that were influenced by Gen Z's demand for social responsibility?"

Theme 2: Communication Shifts

"How has your brand's messaging or storytelling evolved to reflect values such as sustainability, inclusivity, or social justice?"

Theme 3: Digital & Social Media Strategy

"In what ways has your brand modified its digital marketing (e.g., influencer partnerships, social media content) to better connect with Gen Z's ethical expectations?"

Theme 4: Campaign Design

"Can you provide an example of a recent campaign where CSR considerations directly shaped the creative concept or execution?"

Theme 5: Internal-to-External Alignment

"Have Gen Z's expectations prompted changes in internal practices (e.g., sourcing, operations) that are now highlighted in your marketing strategy? If so, how are these changes communicated externally?"

Brand Manager (s) Response

"In the last two years, we switched all our packaging to biodegradable materials because Gen Z customers kept asking about sustainability. We also decided to partner with micro-influencers who are known for their activism on climate change, instead of mainstream celebrities. One of our recent campaigns was entirely focused on promoting diversity in hiring. We featured real employees from underrepresented groups, and it got amazing engagement on Instagram. Internally, we've also started sourcing raw materials only from certified ethical suppliers, and we make sure to highlight that in our social media updates to show we are transparent."

The findings from the interviews indicate that Gen Z's demand for sustainability is a primary driver of product-related changes. Several brand managers emphasized that packaging innovation, such as biodegradable or recycled materials, was not only implemented in response to consumer concerns but was also strongly tied to younger consumers' expectations of corporate responsibility. This demonstrates how sustainability is no longer a peripheral consideration but a core element of the marketing mix, shaping product design and innovation strategies. This finding aligns with Jamali and Karam (2018), who argued that for Gen Z, CSR traits like sustainability are not peripheral add-ons but strategic imperatives that directly trigger purchasing behavior and long-term loyalty.

Test of Hypotheses

Table 3: Gen Z's perception of a brand's CSR initiatives and Brand loyalty

H₁: Gen Z's perception of a brand's CSR initiatives has **no significant influence** on their brand loyalty

Predictor	B	SE B	B	t	P
Constant	1.92	0.21	—	9.14	<.001
CSR Perception	0.52	0.06	.45	8.67	<.001

Model Fit: $R^2 = .28$, Adjusted $R^2 = .27$, $F(1, 298) = 75.19$, $p < .001$

Table 4: Gen Z's social responsibility expectations and Brands

H₁: There is **no significant relationship** between Gen Z's social responsibility expectations and their preference for particular brands.

Predictor	B	SE B	B	t	P
Constant	2.11	0.19	—	11.11	<.001
CSR Expectations	0.48	0.05	.42	9.60	<.001

Model Fit: $R^2 = .25$, Adjusted $R^2 = .25$, $F(1, 298) = 92.16$, $p < .001$

The first hypothesis (H₁) examined whether perceptions of CSR initiatives predicted brand loyalty. Results indicated that CSR perception was a significant positive predictor of brand loyalty, $F(1, 298) = 75.19$, $p < .001$, with an R^2 of .28 (see Table 2). This suggests that CSR perception accounts for 28% of the variance in brand loyalty. Specifically, for every one-unit increase in CSR perception, brand loyalty increased by .52 units ($\beta = .45$, $p < .001$). Thus, the null hypothesis (H₀: CSR perception has no significant influence on brand loyalty) was rejected.

The second hypothesis (H₁) tested whether Gen Z's CSR expectations predicted brand preference. The results revealed a significant effect, $F(1, 298) = 92.16$, $p < .001$, with an R^2 of .25, indicating that CSR expectations explain 25% of the variance in brand preference (see Table 3). A one-unit increase in CSR expectations was associated with a .48 increase in brand preference ($\beta = .42$, $p < .001$). Therefore, the null hypothesis (H₀: there is no significant relationship between Gen Z's CSR expectations and brand preference) was also rejected.

Taken together, these findings provide strong evidence that Gen Z's CSR perceptions and expectations exert a significant and positive influence on both brand loyalty and brand preference. The results highlight the strategic importance of aligning CSR initiatives with consumer values, as socially responsible practices not only improve reputational outcomes but also foster deeper emotional connections with Gen Z consumers.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study demonstrates that Gen Z's expectations for social responsibility significantly shape their brand preferences and loyalty. The quantitative findings revealed that CSR perception and expectations explain a meaningful portion of the variance in both loyalty and preference, with advocacy, sustainability, and inclusivity emerging as central drivers. The qualitative interviews with brand managers further emphasized how these expectations are reshaping marketing strategies, from eco-friendly product innovations to authentic storytelling and transparent

communication. Together, these insights confirm that CSR is no longer an optional add-on but a strategic imperative that directly influences consumer behavior and brand competitiveness.

5.2 Recommendations

Based on the study's findings and objectives, the following recommendations are proposed to help brands, marketers, and organizations effectively align their marketing strategies with Gen Z's social responsibility expectations:

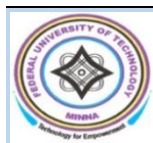
- i. **Integrate CSR into Core Brand Strategy:** Corporate social responsibility should not be treated as a peripheral activity but embedded into the brand's strategic framework. Brands must integrate sustainability, ethical sourcing, and inclusivity into every aspect of their product and service design. This structural alignment between CSR and brand identity will strengthen authenticity and long-term brand equity.
- ii. **Enhance Transparency and Accountability:** Findings revealed that Gen Z values openness in how brands communicate their CSR initiatives. Companies should therefore adopt transparent disclosure practices such as publishing CSR performance reports, using traceability tools, and providing real-time updates on sustainability progress to maintain consumer trust and loyalty.

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Foreign Direct Investment, Corruption, and Economic Growth in Nigeria

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Abstract

Nigeria's struggle to achieve sustainable economic expansion and advancement has been compounded due to the two challenges of inadequate Foreign Direct Investment (FDI) and entrenched corruption, which have eroded investor confidence, stifled economic progress, and perpetuated poverty and inequality. This paper investigates the impacts of foreign direct investment and corruption on economic growth in Nigeria, using annual data from 1996 to 2023. The Autoregressive Distributed Lag (ARDL) approach was employed to examine the long-run and short-run dynamics among the variables. The result showed that foreign direct investment has a positive and significant impact on economic growth while corruption has a negative long-term effect on economic growth. The short-run dynamics demonstrate that foreign direct investment has a positive and significant impact on economic growth while corruption and inflation have negative impacts on economic growth in Nigeria. The study recommends that the Nigerian government should promote FDI, implement effective anti-corruption measures, and control inflation to achieve sustainable economic growth.

Keywords: Corruption, Economic Growth, Foreign Direct Investment.

JEL Code: F21, F23, O40, O55, K42

1.0 Introduction

Numerous factors, including market development, technological expertise, cost advantages, resource accessibility, and the possibility of higher returns on investment, are expected to contribute to Nigeria's economic growth (Akinola & Ohonba, 2024; Shido-Ikwu et al., 2023). Many advantages are anticipated from the *FDI* inflow for both the investment companies and the host nation. The benefits that are anticipated from the *FDI* inflow for both the investment companies and the host nation include technology transfer, infrastructure development, and job possibilities. According to Arezki et al., (2021). *FDI* is a major driver of export growth and technological diffusion, creating beneficial spillover effects that support overall economic expansion.

Despite this, global *FDI* flows have decreased due to the economic recession and geopolitical tensions, *FDI* flows in Nigeria have fluctuated significantly, with an 11% decline to \$1.5 trillion in 2024 (UNCTAD, 2025). Notably, while *FDI* inflows into Nigeria decreased from \$1.873 billion in 2023 to \$1.080 billion in 2024, outflows of Nigerian investments overseas increased significantly from \$256 million in 2023 to \$408 million in 2024 (United Nations Conference on Trade and Development, 2025).

FDI is widely regarded by policymakers in both developing and developed nations as a crucial component of a successful development plan (Pallan et al., 2023). *FDI* is the amount of money that foreign investors significantly infuse into the economy of the host nation, measured in US dollars. *FDI* frequently helps the manufacturing sector because it provides access to infrastructure, skilled workers, and advantageous business conditions. Similar to this, *FDI* is

drawn to the services industries, which include banking, telecommunications, and hospitality, due to their potential for large returns on investment and market expansion (UNCTAD, 2020). Due to its role in domestic investment, job creation, and technology transfer, foreign direct investment is widely acknowledged as being important in fostering economic growth (World Bank, 2018). Nigeria's economy has demonstrated resiliency recently, as evidenced by the GDP growth rate of 3.46 per cent in the third quarter of 2024, which exceeded the growth rate of 2.54 per cent in the same period in 2023 (NBS, 2024). With a growth rate of 4.32 per cent and a contribution of 58.04 per cent to the GDP overall, the services sector was the primary engine of this expansion (NBS, 2024).

The industry and agricultural sectors, on the other hand, improved as well, expanding by 2.19 per cent and 0.18 per cent, respectively (National Bureau of Statistics [NBS], 2024). In light of this, FDI and corruption are two important elements influencing Nigeria's economic expansion. According to the World Bank (2020), corruption is defined as the misuse of public office for one's own gain. Mauro (1995) stated that this act has a negative impact on economic growth. More so, corruption skews the distribution of resources, undermines public confidence, and discourages entrepreneurship (Rose-Ackerman, 1999). Nigeria has had severe corruption, which has affected public service delivery, economic growth, and government (Transparency International, 2021). The country has also faced significant economic difficulties, such as high rates of poverty, inflation, and inadequate infrastructural development. Many studies have studied the effects of corruption on Nigeria's economic development and growth, specifically, Awolaja et al., (2024), Danlami, (2024), Oyekale & Awolaja, (2024), Nwachukwu & Wasurum, (2024) and Anam et al., (2024). Nigeria has a governance score of 3 on the Country Policy and Institutional Assessment (CPIA), which indicates serious governance deficiencies (CPIA, 2024).

The research topic is important because pervasive corruption and inadequate FDI have made it difficult for Nigeria to achieve sustainable economic growth and development. These issues have undermined investor confidence, slowed economic progress, and increased poverty and inequality (Akinola & Ohonba, 2024). Nigeria has the potential to draw significant FDI, but due to corruption and governance deficiencies, there have been fluctuations in FDI inflows and outflows. The primary objective of the study is to investigate the relationship among FDI, corruption, and economic growth in Nigeria, with an emphasis on identifying the important elements that support these linkages and guiding policy measures to address them. The rest of the paper is segmented into literature review, methodology, results and discussion, conclusion, and suggestions.

2.0 Literature Review

2.1 Conceptual Review

This section provides concise review of FDI, Corruption and Economic Growth

2.1.1 Foreign Direct Investment

FDI, as defined by the OECD (2023), refers to an investment made by an individual or entity in one country (the direct investor) into a different country (the host economy) that secures the investor at least a 10 percent stake in a company located in the host economy, providing significant authority over its management. This type of investment typically involves obtaining majority ownership, or at least 10 percent of voting shares or common stock, which allows the investor to influence key policies and operations of the foreign enterprise. The Corporate Finance Institute (2024) describes FDI as an investment made by an entity in one nation into a business or corporation in another to establish a continuing interest. Saurav & Kuo (2020)

contend that FDI has become the primary source of external financing for many developing nations. FDI is also a major driving force behind globalization (Adegboye et al., 2020). FDI constitutes a complicated economic activity with various dimensions (Wang et al., 2021). This involves equity capital—funds that a foreign investor injects into a business when acquiring shares or equity in a foreign firm. Such capital is crucial for initiating or expanding business ventures in other countries.

2.1.2 Corruption

Corruption is a societal issue present in various "degrees and manifestations in all but the most primitive societies," as noted by Staats (1972). Ekiyor (2005), in his comprehensive perspective on corruption, described it as the illegal exploitation of official authority or influence by a government official, either for personal gain, to advance his agenda, or to benefit another individual, all at the expense of the public, violating his oath of office and/or contravening existing regulations or laws. It is particularly unfortunate that this scourge does not recognize any specific time or era; it can occur at any point in a nation's history. Supporting this, Gould and Kolb (1964) argue that corruption is not limited to a specific period in political history or to any single country; it is prevalent in both authoritarian and party-based systems of governance. Moreover, as further evidence that the history of corruption is as ancient as the world itself, Scott (1972) asserts that corruption "should be viewed as a regular, repetitive, and integral aspect of the functioning of most political systems."

2.1.3 Economic Growth

According to the Reserve Bank of Australia (2024), economic growth refers to the upward trajectory of a nation's economy over time. This growth is typically represented as a monetary figure that signifies the aggregate of all products and services produced within the economy, known as GDP. GDP represents the market value of all final goods and services produced within a country during a specified time frame. Dragoi (2020) characterizes economic growth as an increase in the amount of goods and services both produced and consumed within a nation's economy over time. Growth can occur through various means, such as advancements in education, the introduction of cutting-edge technologies, or adding more value to products and services within each sector of the economy. Economic growth, along with its associated societal development, calls for a complex approach to task organization where numerous extensive and multifaceted agents must collaborate and specialize in labor (Wang, 2019).

2.2 Theoretical Framework

This study is underpinned by Dunning's (1988) eclectic theory of international production, which states that internalization benefits, ownership, and location are important factors in FDI decisions. The impact of corruption on economic growth is explained by the "grease the wheels" theory (Leff, 1964; Huntington, 1968), the theory argues that corruption increases transaction costs and uncertainty, which hinders economic growth (Mauro, 1995; Shleifer and Vishny, 1993). According to the "Corruption Tolerable Level of Investment" (CTLI) idea, at a certain point corruption encourages FDI and it becomes counterproductive (Dreher and Gassebner, 2013).

2.3 Empirical Review

Research has explored the effects of foreign direct investment (FDI) on economic growth in Nigeria. Solomon and Mailamba (2024) determined that agricultural FDI positively and significantly influenced GDP growth, with a 1% rise in agricultural FDI associated with a 0.051% increase in GDP growth. Eberechukwu et al. (2024) found that both trade openness

and FDI provided long-term and short-term advantages for economic growth. Additional research has analyzed the connection between FDI and economic growth in Nigeria. Chike and Okeke (2024) discovered that FDI greatly impacts overall and urban unemployment, while Chijioke (2024) noted that FDI and remittances significantly contribute positively to economic progress.

Investigations have also underscored the significance of governance and the control of corruption in fostering economic growth. Awolaja et al. (2024) identified a direct relationship between political stability, voice and accountability, and corruption control with actual gross domestic product. Yahyaoui (2023) stressed the importance of effective public policies to reduce corruption and create a conducive environment for foreign investment.

Some analyses have produced contrasting findings. Omake et al. (2019) reported a negative long-term connection between FDI and economic growth in Nigeria, while Jalil et al. (2016) found that FDI positively influences economic growth, whereas corruption and inflation exert negative effects.

A thorough grasp of the complex relationship between FDI, corruption, and economic growth in Nigeria is provided by the synthesized literature. The present gap in the existing body of literature on the relationship among FDI, corruption and economic growth in Nigeria, particularly with regard to the years 1996-2023 and the use of these variables [Real GDP (Constant 2015 US\$), FDI, net inflows (Bop, current US\$), Consumer price index (a proxy for inflation) and Corruption perception index (a proxy for Corruption)]. Majority of research has used inadequate measurements of inflation and corruption. By examining the impacts of foreign direct investment and corruption on economic growth in Nigeria for the year 1996 - 2023, using modified measures of inflation and corruption, this study seeks to close the gap

3.0 Methodology

In order to understand the connection among FDI, corruption, and economic growth in Nigeria, this study used a quantitative research design. The analysis made use of yearly data from the World Bank's World Development Indicators and Transparency International for the years 1996 through 2023. The variables include Real GDP (Constant 2015 US\$), FDI, net inflows (Bop, current US\$), Consumer price index (a proxy for inflation) and Corruption perception index (a proxy for Corruption). The Autoregressive Distributed Lag (ARDL) approach, which was proposed by Pesaran and Shin (1995, 1999) and expanded upon by Pesaran et al., (2001), was the data analysis method employed to test for the existence of a relationship (cointegration). This approach is more effective in cases where the sample size is small than other approaches, such as the procedures developed by Engle and Granger (1987), Johansen (1988), and Johansen and Juselius (1990). The ARDL bounds F testing also has the flexibility to be used in situations where not all of the analysis's variables are integrated in mixed order [1(0), 1(1)], or a combination of both. According to Pesaran et al. (2001); Acaravci & Ozturk, (2012), the order of the variables must be at most one in order for the integration order to be valid.

3.1 Model Specification

The study uses an empirical growth model, similar to that used by Omake and Okwori (2019) to examine the relationship among economic growth, FDI, and openness to trade, exchange rate inflation and interest rate. The model developed by Omake and Okwori (2019) is as follow:

$$GDPCG_t = \beta_0 + \beta_1 FDI_t + \beta_2 TOPT_t + \beta_3 INF_t + \beta_4 INT_t + \varepsilon_t \dots \dots \dots (1)$$

The following is the updated model which was modified to include corruption and real GDP instead of GDP per capita growth:

$$RGDP_t = f(FDI_t, COR_t, INF_t) \dots \dots \dots (2)$$

Equation (2) shows that economic growth is the function of foreign direct investment, corruption and inflation

The above equation (2) can be transformed into a regression function and to a logged regression model as given below:

$$RGDP_t = \alpha_0 + \beta_1 FDI_t + \beta_2 COR_t + \beta_3 INF_t + \varepsilon_t \dots \dots \dots (2)$$

$$\ln RGDP_t = \alpha_0 + \beta_1 \ln FDI_t + \beta_2 COR_t + \beta_3 INF_t + \varepsilon_t \dots \dots \dots (3)$$

Where: RGDP = Economic Growth, FDI = Foreign Direct Investment, COR = Corruption, INF = Inflation, ε_t = stochastic error term. β_1 , β_2 and β_3 , are the coefficients of the explanatory variables. Every variable was transformed to log as extracted.

Pesarani (2001) model of ARDL is as follows for equation (3):

$$\begin{aligned} \Delta \ln RGDP C_t = & \alpha_0 + \sum_{i=1}^p \beta_1 \Delta \ln RGDP C_t + \sum_{i=1}^p \beta_2 \Delta \ln FDI_t + \sum_{i=1}^p \beta_3 \Delta COR_t - 1 \\ & + \sum_{i=1}^p \beta_4 \Delta INF_t - 1 + \lambda_1 \ln RGDP C_t - 1 + \lambda_2 \ln FDI_t - 1 + \lambda_3 COR_t - 1 \\ & + \lambda_4 INF_t - 1 + \varepsilon_t \dots \dots \dots (4) \end{aligned}$$

The long-term relationship among the variables is shown by the range of values from λ_1 to λ_4 to the right, while the short-term relationship is shown by the range of values from β_1 and β_4 with the summation signs. The drift constant is represented by α_0 . and the disturbance term is represented by μ_t when looking at the other side of the equation. $H_0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 0$ denotes the equation (4) null hypothesis. This implies that there are no long-term partnerships at all. The alternative hypothesis is represented by $H_1: \lambda_1 \neq 0, \lambda_2 \neq 0, \lambda_3 \neq 0$, and $\lambda_4 \neq 0$.

In order to avoid size bias, this study uses the critical values of fewer samples obtained from Narayan (2005) for bound testing. The no co-integration null hypothesis will be rejected if the F-calculated value is greater than the upper value, regardless of its degree of stationarity, that is, $I(0)$ or $I(1)$. The short-run dynamics and error correction model are represented below.

$$\begin{aligned} \Delta \ln RGDP C_i = & \beta_0 + \sum_{i=1}^p \beta_1 \delta_i \Delta \ln RGDP C_{t-1} + \sum_{i=1}^p \beta_2 \phi_i \Delta \ln FDI_{t-1} \\ & + \sum_{i=1}^p \beta_3 \omega_i \Delta COR_{t-1} + \sum_{i=1}^p \beta_4 \lambda_i \Delta INF_{t-1} + \alpha ECM_{t-1} + U_t (5) \end{aligned}$$

After the model's short-run anomaly, the ECM assesses the equilibrium recovery rate over the long term (Onisanwa et al., 2018). According to Narayan (2005), the error correction model's coefficient must be both negative and less than zero for the system to eventually reach equilibrium.

4.0 Results and Discussion

4.1 Descriptive Statistics

The descriptive statistics shows the mean, median, maximum, minimum, standard. deviation, skewness, kurtosis, jarque-bera, probability, sum and sum square deviation of the dependent variable.

Table 1: Descriptive Statistics Result

Measurement	RGDP	FDI	INF	COR
Mean	3.59E+11	3.38E+09	141.0213	21.46071
Median	3.72E+11	2.40E+09	93.95989	24.00000
Maximum	5.51E+11	8.84E+09	524.9054	28.00000
Minimum	1.61E+11	-1.87E+08	21.74804	6.900000
Std. Dev.	1.37E+11	2.67E+09	130.8861	5.849555
Skewness	-0.146015	0.657526	1.390999	-0.923692
Kurtosis	1.483507	2.290675	4.239965	2.776218
Jarque-Bera	2.782538	2.604585	10.82320	4.040058
Probability	0.248759	0.271908	0.004464	0.132652
Sum	1.00E+13	9.46E+10	3948.597	600.9000
Sum Sq. Dev.	5.05E+23	1.92E+20	462541.7	923.8668
Observations	28	28	28	28

Source: Authors' Computation using Eviews

Table 1 above the detail distribution of variables, RGDP has a mean of \$3.59 trillion and a median of \$3.72 trillion, indicating a slightly skewed distribution with considerable variability. FDI exhibits a mean of \$3.38 billion and a median of \$2.40 billion, suggesting a skewed distribution with substantial variability. Inflation rates are highly variable and skewed, with a mean of 141.02 and a median of 93.96. Corruption shows a mean of 21.46 and a median of 24.00, indicating moderate variability and a slightly skewed distribution. The Jarque-Bera results show for each variable provide insights into the normality of their distributions. RGDP, FDI, and corruption are approximately normally distributed, while inflation shows significant deviations due to high skewness and kurtosis, indicating the presence of extreme values in the dataset.

4.2 Unit Root Test Result

The ARDL Bound test by Pesaran et al. (2001) was used in the study to ascertain the link among the variables. But first, the degree of stationarity of the variables needed to be tested before moving further with the ARDL analysis. The variables must all be stationary at I (0) or I (1) and none at I (2) in order for the ARDL model to work. In order to do this, the study used the Augmented Dickey-Fuller (ADF) unit root test to determine whether the data series was stationary. All variables are non-stationary at their levels, I (0), according to the ADF test

results, which are shown in Table 2. This suggests the existence of unit roots. All variables, however, become stationary when the first difference, or I (1), is taken, signifying that they are integrated of order 1. This suggests that since these variables satisfy the condition of being stationary at either I (0) or I (1), the ARDL model can be used with them.

Table 2: Results of the Unit Root Test

Variable Trend	Constant	Const. & Trend
Levels I (0)		
LRGDP	0.2367	0.9976
LFDI	0.3183	0.7631
INF	0.9987	0.9304
COR	0.0000***	0.0866
First Difference 1(1)		
LRGDP	0.1108*	0.1253*
LFDI	0.0001***	0.0002***
INF	0.1892*	0.2436
COR	0.1855 *	0.1115*

(*) Significant at 10%; (**) Significant at 5 %; (***) significant at 1% and (no) Not Significant, lag length based on SIC and probability on MacKinnon's (1996) one-sided p-valued.

Source: Authors' Computation using Eviews

From the ADF results, COR was determined to be stationary at 5% and 1% when taking into account constant, whereas RGDP, FDI and INF were found not stationary at level for all tests. After correcting for the initial difference, all of the series were determined to be stationary for all tests, as shown in the second panel of table 2. None of the data series is I (2), however the data series are stationary at I (0) and I (1). Thus, the rationale behind employing the ARDL model.

4.3 ARDL Bounds Test

The ARDL Bounds Test was employed to estimate the presence of long-run cointegration among the variables. The test results, presented in Table 3, show the existence of a long-run equilibrium relationship among economic growth, foreign direct investment, inflation, and corruption.

Table 3: Bounds Test for Co-integration Result

F Statistics			
LRGDP = F (LFDI, LINE, LCOR)			8.4643
			(n=30, k=3)
Narayan (2005)	Critical Value	Lower Bound I (0)	Upper Bound I (1)
	1%	5.333	7.063
	5%	3.71	5.018
	10%	3.008	4.15

Critical values of Narayan (2005) were used.

Source: Authors' Computation using Eviews

At the 1% significance level, the F-Statistic (8.4643) surpasses the Upper Bound critical value (7.063), hence rejecting the null hypothesis that there is no cointegration. Furthermore, at the 5% and 10% significance levels, the F-Statistic exceeds the Upper Bound critical values, offering compelling proof of long-term cointegration among the variables. This result demonstrates that the ARDL model is a valid tool for determining the connections among inflation, foreign direct investment, economic growth, and corruption in Nigeria.

4.4 ARDL Long-run Estimate

The long-run coefficient estimates, presented in Table 4, reveal the relationships among foreign direct investment (FDI), corruption (COR), inflation (INF), and economic growth (RGDP).

Table 4: ARDL Long-run Result

Dependent variable: GDP			
Independent variable	Coefficient	t-ratio	probability
C	17.1748	4.4778	0.0065
LFDI	0.1664	11.0766	0.0001
INF	0.4932	15.1644	0.0000
COR	-0.4378	-4.1373	0.0090

Source: Authors' Computation using Eviews

The results indicate a positive and statistically significant relationship between foreign direct investment and economic growth with this positive relationship, the variable indicates that on average, the higher the FDI, the higher the economic growth (RGDP), *ceteris paribus*. While the results of corruption shows a negative and statistically significant relationship with economic growth; revealing that a 1% increase in corruption is associated with a 0.4378% decrease in economic growth, this indicates that on average, the higher corruption, the lower the economic growth, *ceteris paribus*. The findings are in line with studies (such as Eberechukwu et al. (2024); Chijioke (2024)); Danlami (2024)) whose outcomes suggest that FDI has impacted on economic growth and corruption affects economic growth in Nigeria. In contrast, the relationship between inflation and economic growth is positive and statistically significant, with a 1% increase in inflation leading to a 0.49% increase in RGDP in the long run.

4.5 ECM Short-run Estimate

The short-run coefficient estimates, presented in Table 5, reveal the relationships among foreign direct investment (D(FDI)), inflation (D(INF)), corruption (D(COR)), and economic growth (D(RGDP)).

Table 5: ECM Short-run Result

Dependent variable: D (GDP)			
Independent variable	coefficient	t-ratio	probability
C	17.1748	4.4778	0.0065
D (LFDI)	0.1283	5.3368	0.0031
D (LINF)	-0.2884	-3.2134	0.0236
D (LCOR)	-0.0909	-2.0430	0.0965
CointEg (-1)*	-0.7716	-7.3601	0.0007

Source: Authors' Computation

The results indicate a positive and statistically significant relationship between foreign direct investment and economic growth, with a 1% increase in FDI leading to a 0.1283% increase in RGDP in the short run. In contrast, the relationship among corruption, inflation and economic growth is negative and statistically significant, with a 1% increase in COR and INF leading to a 0.2884% and -0.0909 decrease in RGDP respectively in the short runs. One of the important outcomes of this short-run result, is the error correction term coefficient, CointEg (-1) which has the correct sign and as well as significant at 5 percent. In this case, CointEg (-1) is -0.7716, indicating that the disequilibria of the previous year's shock will return to the long-run equilibrium in the current year at the speed of 77.16 %.

4.6 Diagnostics Tests

Table 6: Diagnostics Tests Results

Test Statistics	Chi-square/LM Test	Probability Value
Serial Correlation	0.6257	0.1000
Normality	0.5115	0.7743
Heteroscedasticity	0.6208	0.5923
Ramsey RESET Test	1.2958	0.2984

Source: Authors' Computation using Eviews

The diagnostic test results, presented in Table 6, indicate the Lagrange multiplier test of residual serial correlation suggests that there is no significant serial correlation in the residuals, with a probability value of 0.1000. The test of normality based on skewness and kurtosis indicates that the residuals are normally distributed, with a probability value of 0.7743. The test of heteroscedasticity based on squared residuals and squared fitted values suggest that there is no significant heteroscedasticity in the residuals, with a probability value of 0.5923.

5. Conclusion and Recommendations

This paper sheds light on the connections among FDI, inflation, corruption, and Nigeria's economic growth. Empirical evidence indicates that FDI has a positive and significant impact on economic growth while corruption has a negative long-term effect on economic growth. The short-run dynamics demonstrate that FDI has a positive and significant impact on economic growth while corruption and inflation have a negative effect on economic growth in Nigeria. These results emphasize how critical it is to encourage foreign direct investment and combat corruption in order to achieve sustained economic progress in Nigeria. The study suggests that the Federal government of Nigerian should critically promote FDI by implementing policies that enhance the business environment and lower uncertainty, implement efficient anti-corruption measures to reduce impact of corruption on individuals and enterprises. For instance, monetary policies that support price stability and limit inflation.

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Enterprise Risk Management and Sustainable Performance of Small and Medium-Sized Enterprises in Osun State, Nigeria

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Abstract

This study investigates the effect of Enterprise Risk Management (ERM) practices on the sustainability of Small and Medium-sized Enterprises (SMEs) in Osun State, Nigeria. It specifically examines how ERM dimensions such as risk identification, risk assessment, and risk mitigation influence three critical indicators of SME sustainability: profitability, operational efficiency, and employment creation. The study employs a quantitative research design, using structured questionnaires to gather data from 300 SME owners and managers. The responses were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) technique to test the hypothesized relationships. The findings reveal that ERM practices significantly impact SME performance in diverse ways. Risk assessment and mitigation have positive effects on profitability ($\beta=0.165$, $p=0.008$; $\beta=0.368$, $p=0.00$ respectively), while risk identification shows a negative relationship ($\beta=-0.419$, $p=0.00$). All the ERM components positively influence operational efficiency, with risk identification having the most substantial effect ($\beta=0.531$, $p=0.00$). Regarding employment creation, risk identification and assessment significantly contribute to job growth ($\beta=0.719$, $p=0.00$; $\beta=0.239$, $p=0.00$ respectively), while risk mitigation does not exhibit a statistically significant influence ($\beta=0.021$, $p=0.685$). These outcomes underscore the importance of adopting a balanced and strategic approach to ERM implementation. The study concludes that while ERM enhances SME sustainability, its effectiveness depends on how each component is integrated into business strategy. The research contributes to the growing discourse on SME development and provides practical recommendations for business owners, policymakers, and future researchers.

Keywords: Enterprise Risk Management; SMEs; Profitability; Operational Efficiency; Employment Creation.

1.0 Introduction

It is well acknowledged that Small and Medium-sized Enterprises (SMEs) are the main drivers of economic expansion, contributing significantly to the creation of jobs, innovation, entrepreneurship, and general economic growth (Ayyagari et al., 2017). Profits from these companies are the main sources of income for many economies, particularly those in developing countries where they dominate the business sector. These profits also support public policies aimed at enhancing service delivery, reducing poverty, leveling the socioeconomic development gap, and frequently, opening up opportunities for more equitable wealth creation and distribution.

In Nigeria for example, SMEs account for around 48% of the GDP and employ about 84% of the workforce in the private sector (National Bureau of Statistics NBS, 2020). SMEs are crucial economic development engines, especially in states like Osun where they support thousands of direct and indirect employments in industries ranging from manufacturing and retail to services and agriculture (OSUCCIMA, 2025). Despite being the backbone of the economy, there is increasing concern regarding their long-term viability. On the other hand, in the face of numerous internal and external obstacles, many SMEs strive just to survive. Researches have

shown that about 80percent of SMEs in Nigeria fail within the first five years of operation (Ogundele et al., 2018). Such a high rate of failures could be attributed to strategic policies within these businesses needed to make them resilient and sustainable.

According to the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) the number of registered SMEs in Osun state stands at 2,272 (SMEDAN, 2022). Given the crucial role SMEs play in economic development, it is predicted that these enterprises will make a considerable contribution to the state's growth. However, Osun still ranks among the less developed states in Nigeria (World bank index, 2021) with its attendant problems bothering on poor workers welfare and weak infrastructure development. One strategic approach that has gained attention in recent years is Enterprise Risk Management (ERM). ERM is a structured, holistic approach to identifying, assessing, managing, and monitoring risks that can affect an organization's ability to achieve its objectives (Bromiley et al., 2015). Unlike traditional risk management, which often focuses on specific risks in isolation, ERM takes a comprehensive view of all risks facing a business, integrating risk management into the strategic planning process. For SMEs, this is particularly crucial, as they are more vulnerable to risks such as financial instability, operational disruptions, regulatory changes, and market volatility (Baştürk & Giray, 2021). A strong ERM framework has been shown to help businesses stay resilient, manage their operations more efficiently and adapt to changes, setting them up for long-term success. Hence this study investigated the impact of ERM strategies on the profitability, operational efficiency and employment creation of SMEs in Osun state.

2.0 Literature Review

2.1 Conceptual Review

Enterprise Risk Management (ERM) is a comprehensive approach designed to identify, assess, and manage all potential risks that could affect an organization's goals and objectives. Unlike traditional risk management, which tends to focus on addressing risks in specific areas such as financial or operational issues, ERM is an integrated and also organization-wide framework. This means that ERM considers all possible types of risks, including financial, operational, strategic, regulatory, and external risks, in a cohesive manner (Kraus & Lehner, 2016). For Small and Medium-sized Enterprises (SMEs), ERM involves a structured process for determining the likelihood of potential risks and their impact on business operations. The process typically includes several key stages which includes risk identification, assessment and mitigation. Risk identification includes all processes aimed at discovering both internal and external threats to a business, while risk assessment explores their likelihood and potential severity of their impacts. At the mitigation stage, strategies are developed to manage or minimize the identified risks (Soin & Collier, 2018).

It is a common practice for SME to first identify the risks that may affect their business. This could be internal, such as operational inefficiencies, employee-related issues, financial management problems or external, including changes in the regulatory environment, economic downturns, or shifts in market demand. Once these risks are identified, there is need to assess the likelihood of their occurrence possible impact on the business. This stage helps in prioritizing risks based on their significance and urgency. Thereafter, strategies are developed to mitigate their impact which could involve diversifying suppliers to avoid operational disruptions, setting aside financial reserves for unforeseen expenses, or investing in technology that enhances operational efficiency.

Sustainable performance for SMEs refers to their capacity to operate effectively over the long term, ensuring they meet the current needs of stakeholders without jeopardizing future opportunities for growth. This concept involves balancing business profitability with long-term resilience, growth, and social responsibility. According to Klewitz and Hansen (2016), sustainability in SMEs is more than just financial survival; it is about maintaining the ability to

withstand internal and external pressures while continuing to contribute to the broader economic ecosystem. Research has shown that SMEs implementing ERM practices tend to experience improvements in operational efficiency and are also able to contribute to job creation and workforce expansion (Soin & Collier, 2018). The conceptual framework highlighting the interactions among the core variables in the study is presented in figure 1.

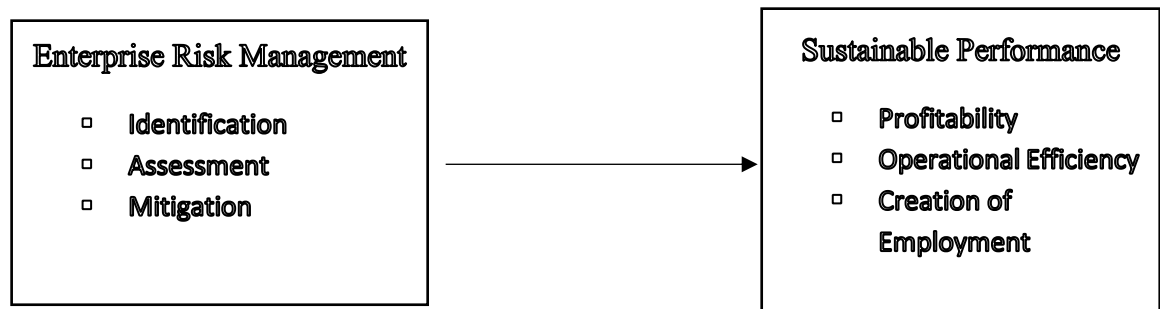


Figure 1: Interactions between ERM and Sustainable Performance

Source: Author's Conceptualization (2025)

2.2 Theoretical Framework

The theoretical framework guiding this study combines several interrelated perspectives that help explain how Enterprise Risk Management (ERM) contributes to the sustainable performance of Small and Medium Enterprises (SMEs). At the heart of this framework is the understanding that sustainability for SMEs goes beyond profitability encompassing operational efficiency, and employment creation. This broad view is supported by the sustainability theory, which emphasizes the need for businesses to operate in ways that balance economic objectives with social and environmental responsibilities (Khalid et al., 2020).

Equally important is the resource-based view (RBV) theory, which argues that firms achieve competitive advantage through the development and deployment of valuable internal resources (Barney, 1991). ERM, in this regard, becomes more than just a compliance activity but a strategic capability. However, no single management strategy works universally, which is where contingency theory adds nuance to this framework. The theory posits that organizational success depends on the fit between management practices and specific contextual factors (Donaldson, 2001). Tying all of this together is the dynamic capabilities theory, which underscores an organization's ability to integrate, build, and reconfigure internal competencies in response to a rapidly changing environment (Teece et al., 1997). This is perhaps the most action-oriented perspective in this study's theoretical foundation. In real-world terms, SMEs that use ERM effectively are not just reacting to problems, they are constantly learning, adapting, and innovating to stay ahead of risk.

Together, these theories provide a comprehensive and practical framework for understanding how ERM contributes to SME sustainability. They underscore the importance of tailoring risk management strategies to the unique internal capacities and external conditions of SMEs, particularly those operating in vulnerable economic settings like Osun State. By drawing from sustainability theory, RBV, contingency theory, and dynamic capabilities, this study captures both the structural and behavioral dimensions of how SMEs can manage risk to not only survive, but thrive.

2.3 Empirical Review

Scholars have sought to elucidate how the implementation of Enterprise Risk Management (ERM) practices influences the productivity and overall operational performance of Small and Medium-sized Enterprises (SMEs). In a study conducted by Fadun et. al., (2020), the authors

examined the influence of risk management practices on the survival and operational resilience of SMEs in Lagos state, Nigeria. Using a cross-sectional survey design involving 400 SME operators, the study revealed that organizations which proactively integrate risk management into their daily operations are more likely to demonstrate agility in responding to market fluctuations. The emphasis on operational resilience reinforces the notion that effective ERM does not merely safeguard assets; it empowers SMEs to thrive amid uncertainties. This insight is particularly relevant when considering the challenges faced by businesses, especially SMEs in Osun State, where market conditions can be volatile and unpredictable.

Furthermore, Hwang et.al., (2021) conducted a survey on twenty managers in Indian construction company using structural equation modeling technique. The findings reveal that organizations must strike a balance between risk aversion and proactive engagement in new ventures. While other studies have shown that excessive caution in risk management could stifle innovation, ultimately hindering sales growth (e.g. Sadgrove, 2020), the contrasting viewpoint underscores the necessity for SMEs to tailor their ERM strategies, ensuring that they do not inhibit their ability to pursue growth opportunities.

Muda et. al., (2021) conducted a comprehensive analysis of ERM on firm performance in the Malaysian retail sector. The study involved the Balanced-Scorecards four perspectives (finance, customer, internal process & growth) and the findings revealed that organizations which adopted robust ERM strategies experienced a notable increase in sales volume due to improved customer trust and loyalty. The result suggests that when SMEs effectively manage risks, they can enhance their reputation, foster stronger customer relationships and ultimately increase revenue generation. This suggests that connection between ERM and sustainability in SMEs lies in its capacity to ensure that businesses are well-prepared to face risks and uncertainties. Other studies have also shown that SMEs that adopt comprehensive ERM practices are more likely to experience sustainable growth and stability (e.g. Florio & Leoni, 2017; Afolabi & James, 2018; Odia & Omosah, 2022). However, the direction of such influence of ERM strategies on performance remains a concern among SMEs in Osun State, where businesses face external pressures from both the local market and the broader economy and hence the need for the current investigation.

3.0 Methodology

The descriptive survey research design was adopted in this study. According to the statistics from the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2022), Osun state has approximately 5,000 registered SMEs classified into key sectors including retail, manufacturing and services. The Taro Yamane formula (1973) for finite population gives an appropriate sample size of 370. This sample was purposively drawn from the indicated sectors to include retail (50% - 185 SMEs), services (30% - 111 SMEs) and manufacturing (20% - 74 SMEs). Each sector's sample size was randomly selected from its respective SME population, ensuring fair representation in the study.

The state capital (Osogbo) and Olorunda Local Government area of Osun State were purposively chosen as the study area. Osogbo is the business hub for the state and houses the largest number of SMEs. A structured questionnaire was used to harvest firsthand information from owners/managers of the selected SMEs on the subject matter. The questionnaire consists of two parts which are the demographic information of respondents and question items on study variables, captured on a five-point likert scale. The data gathered were subjected to descriptive analysis using frequency tables and percentages. The functional models representing the linear regression for the construct variables are thus stated as:

$$\text{Profitability} = \beta_0 + \beta_1 \text{Risk Identification} + \beta_2 \text{Risk Assessment} + \beta_3 \text{Risk Mitigation}$$

$$\text{Operational Efficiency} = \beta_0 + \beta_1 \text{Risk Identification} + \beta_2 \text{Risk Assessment} + \beta_3 \text{Risk Mitigation}.$$

$$\text{Employment Creation} = \beta_0 + \beta_1 \text{Risk Identification} + \beta_2 \text{Risk Assessment} + \beta_3 \text{Risk Mitigation}$$

Where β_0 , β_1 , β_2 & β_3 are the repression parameters.

Estimations for the model parameters involved the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique via the Smart-PLS 4 software. This include the factor loadings, internal consistency test (Cronbach's Alpha and Composite Reliability), construct validity test (Average Variance Extracted) and the discriminant validity test (Fornell-Larcker and Heterotrait-Monotrait). In addition, the standardized root mean squares and R-squared statistics were used to ascertain the model fit.

4.0 Results

4.1 Demographic Analysis

The demographic distribution of the respondents is presented in Table 1, which includes the frequencies and percentages.

Table 1 – Demographic Characteristics

Demographics	Categories	Frequency	Percent
Gender	Male	164	54.7
	Female	136	45.3
Age	25years and below	79	26.3
	26-35years	151	50.3
	36-45years	20	6.7
	46-55years	50	16.7
	56years and above	0	0
Operations	Less than 1year	53	17.7
	1-3years	157	52.3
	4-6years	13	4.3
	More than 6years	77	25.7
Employees	10-49 staff	116	38.7
	50 - 99 staff	69	23
	100 - 199 staff	115	38.3
Total (N)		300	

Source: Survey (2025).

The results in Table 1 shows that majority are male (54.7%), aged between 26-35years (50.3%) and have been running their business for 1-3years (52.3%). These results suggest a predominance of the young and male-gender in small business activities in the state, particularly in recent times. Further results from Table 1 reveal that most of the enterprises have a staff strength which ranges between 10 and 49 (38.7%) and which is consistent with the employee-size requirement for SMEs.

4.2 Assessment of the Measurement Items and Construct Variables

The factor loading result for the measuring items in the research instrument is presented in figure 2.

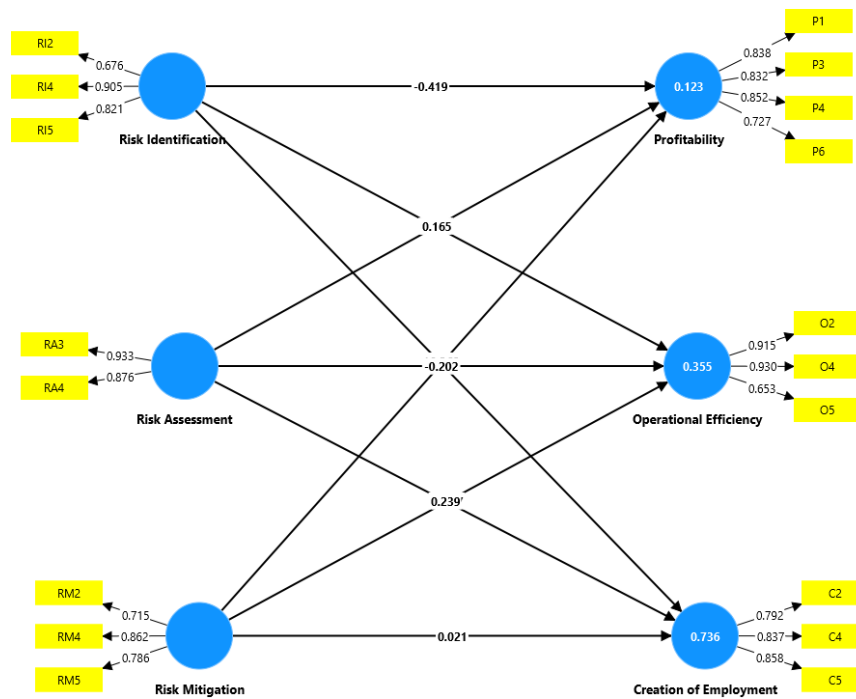


Figure 2: Factor Loadings for Retained Measuring Items

Source: Outputs from Smart-PLS 4 (2025)

The minimum acceptable factor loading requirement is 0.6 and only items who meet this condition are retained in figure 2 and are thus included in the SEM path analysis. Furthermore, the reliability results of the construct variables are presented in Table 2.

Table 2 - Reliability and Construct Validity

Constructs	Cronbach's Alpha	Composite reliability (rho_A)	Composite reliability (rho_A)	Average variance extracted (AVE)
Creation of Employment (C)	0.774	0.783	0.868	0.688
Operational Efficiency (O)	0.803	0.928	0.877	0.709
Profitability (P)	0.83	0.848	0.887	0.662
Risk Assessment (RA)	0.783	0.829	0.9	0.819
Risk Identification (RI)	0.723	0.75	0.846	0.65
Risk Mitigation (RM)	0.726	0.757	0.832	0.624

Source: Outputs from Smart-PLS 4 (2025).

The results in Table 2 show that all the construct variables have reliability statistics (Cronbach Alpha & Composite reliabilities) above the minimum threshold of 0.7. This confirms the internal consistency of the retained items are their reliability in jointly measuring their individual constructs. In addition, the Average Variance Extracted (AVE) results also indicate

that all the construct variables have values above the minimum acceptable requirement of 0.5. This confirms the convergent validity of the construct variables.

Furthermore, the discriminant validity is necessary to ascertain that the measuring items do not have discriminant problem. The Fornell-Larcker and Heterotrait-Monotrait (HTMT) criteria were computed to test this validity and the results are presented in Tables 3 and 4.

Table 3 - Fornell-Larcker Discriminant Validity

Constructs	Creation of Employment	Operational Efficiency	Profitability	Risk Assessment	Risk Identification	Risk Mitigation
Creation of Employment	0.829					
Operational Efficiency	0.506	0.842				
Profitability	-0.097	0.188	0.814			
Risk Assessment	0.537	0.059	0.093	0.905		
Risk Identification	0.729	0.552	-0.124	0.407	0.806	
Risk Mitigation	0.529	0.442	0.153	0.266	0.618	0.790

Source: Outputs from Smart-PLS 4 (2025)

The Fornell-Larcker criterion requires that the square root of the AVEs (bolded & diagonal values in Table 3) must be greater than any of the inter-construct correlations (unbolded values in Table 3). The results show that this condition is satisfied.

Table 4 - Heterotrait-Monotrait Discriminant Validity

Constructs	Creation of Employment	Operational Efficiency	Profitability	Risk Assessment	Risk Identification	Risk Mitigation
Creation of Employment						
Operational Efficiency	0.639					
Profitability	0.184	0.281				
Risk Assessment	0.672	0.15	0.185			
Risk Identification	0.88	0.686	0.222	0.532		
Risk Mitigation	0.641	0.465	0.216	0.391	0.802	

Source: Outputs from Smart-PLS 4 (2025)

Similarly, all the HTMT ratios in Table 4 do not exceed the maximum threshold of 0.9, which also ascertain that there is no problem of discriminant validity among the construct variables.

4.3 Path Analysis

Table 5 shows the result of the goodness of fit criteria for the structural model.

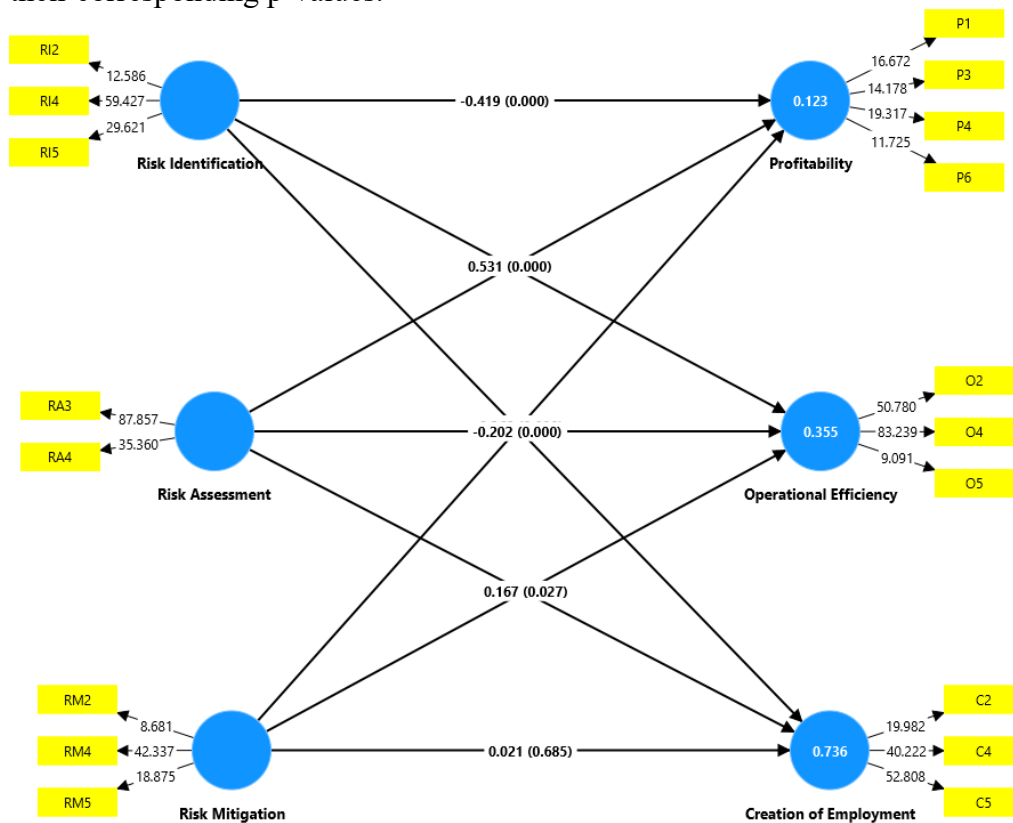
Table 5 - Model Fit

	Estimated Model	Benchmark
SRMR	0.131	< 0.08
d_ULS	1.644	<HI _{.95} =1.74
d_G	1.243	<HI _{.95} =1.27
Chi-square	1933.303	

Source: Smart-PLS 4 (2025)

While the Standardized Root Mean Residual (SRMR=0.131) is above the maximum acceptable benchmark of 0.08, the overall model fit indices (d_ULS = 1.6440 & d_G = 1.243) are both within the acceptable benchmarks (HI_{.95} = 1.74 & 1.27 respectively). This suggests a good model fit for the structural model.

Figure 3 shows the output of the bootstrapping for the SEM revealing the path coefficients and their corresponding p-values.

**Figure 3: Path Diagram**

Source: Outputs from Smart-PLS 4 (2025)

The path diagram in figure 3 reveal the path coefficients and their corresponding p-values for the linear relationship between each of the independent variables (proxies for Enterprise Risk Management) and the dependent variables (proxies for SME sustainable performance). These allow for the test of the hypothesized path.

4.4 Hypotheses Testing

Table 6 shows the regression results for the path analysis, which includes the coefficients, t-statistics and p-values.

Table 6 – Regression Results

Hypothesized Paths	Coefficients	t-statistics	p-values	Decision
Risk Identification -> Profitability	-0.419	4.682	0.00	Reject
Risk Assessment -> Profitability	0.165	2.672	0.008	Reject
Risk Mitigation -> Profitability	0.368	4.049	0.00	Reject
Risk Identification -> Operational Efficiency	0.531	8.998	0.00	Reject
Risk Assessment -> Operational Efficiency	-0.202	5.432	0.00	Reject
Risk Mitigation -> Operational Efficiency	0.167	2.215	0.027	Reject
Risk Identification -> Creation of Employment	0.719	14.315	0.00	Reject
Risk Assessment -> Creation of Employment	0.239	6.112	0.00	Reject
Risk Mitigation -> Creation of Employment	0.021	0.406	0.685	Accept

Source: Outputs from Smart-PLS 4 (2025)

Results from Table 6 shows that the path coefficient from Risk Identification to Profitability is negative ($\beta=-0.419$), implying an indirect effect. The t-statistic ($t=4.682$) of this path is significant at the 5% level ($p=0.00$). This implies that risk identification has a significant effect on the profitability. Similarly, the coefficient of the path from Risk Assessment to Profitability is positive ($\beta=0.165$), which indicates a direct impact. The t-statistic ($t=2.672$) of this path is also significant at the 5% level ($p=0.008$), suggesting that risk assessment significantly affect profitability. Furthermore, the path coefficient from Risk Mitigation to Profitability is positive ($\beta=0.368$), implying a direct effect. The t-statistic ($t=4.049$) of this path is also significant at the 5% level ($p=0.00$), indicating that risk mitigation has a significant effect on profitability. From these results, the null hypotheses for these paths are rejected and it is concluded that all the dimensions of enterprise risk management significantly impact the profitability of SMEs in Osun state.

Further results from Table 6 reveal that path coefficient from Risk Identification to Operational Efficiency is positive ($\beta=0.531$), indicating a direct effect. The t-statistic of this path ($t=8.998$) is significant at the 5% level ($p=0.00$). This implies that risk identification significantly influences operational efficiency. Similarly, the coefficient of the path from Risk Assessment to Operational Efficiency is negative ($\beta=-0.202$), indicating an indirect impact. The t-statistic of this path ($t=5.432$) is also significant at the 5% level ($p=0.00$), suggesting that risk assessment significantly affect operational efficiency. Furthermore, the path coefficient from Risk Mitigation to Operational Efficiency is positive ($\beta=0.167$), implying a direct effect. The t-statistic ($t=2.215$) of this path is also significant at the 5% level ($p=0.027$), suggesting that risk mitigation has a significant effect on operational efficiency. Overall, the null hypotheses

for these paths are rejected it can be concluded that all the dimensions of enterprise risk management practises significantly influence the operational efficiency of SMEs in Osun state.

Additionally, the path coefficient from Risk Identification to Creation of Employment ($\beta=0.719$), is positive implying a direct impact. The t-statistic ($t=14.315$) of this path is significant at the 5% level ($p=0.00$). Hence, it can be said that risk identification has a significant impact on the creation of employment. Also, the coefficient of the path from Risk Assessment to Creation of Employment is positive ($\beta=0.239$), which also indicates a direct effect. The t-statistic ($t=6.112$) of this path is significant at the 5% level ($p=0.00$), indicating that risk assessment significantly affects creation of employment. However, the path coefficient from Risk Mitigation to Creation of Employment is positive ($\beta=0.021$), implying a direct effect. The t-statistic ($t=0.406$) of the path is not significant at the 5% level ($p=0.685$), suggesting that risk mitigation has no significant effect on creation of employment. Therefore, it is concluded here that only risk identification and assessment (as dimensions of enterprise risk management practices) significantly affect creation of employment among SMEs in Osun state.

4.5 Discussion of Findings

The study has provided substantial empirical evidences supporting the role of Enterprise Risk Management (ERM) in enhancing the sustainability of Small and Medium-sized Enterprises (SMEs) in Osun State, particularly through the lenses of profitability, operational efficiency, and employment creation. The empirical findings have shown that ERM practices; specifically risk assessment and mitigation; positively and significantly impacted profitability. This suggests that when SMEs identify and manage financial and operational risks effectively, they are more likely to experience stable revenues and improved financial outcomes. The result is in tandem with Muda et al. (2021), who opined that a robust ERM framework enhances organizations productivity and improves sales growth. However, the negative relationship between risk identification and profitability highlights the potential burden or cost implications of extensive risk cataloguing without strategic alignment, echoing Hwang et al. (2021)'s caution about over-cautious risk approaches hindering financial performance.

In terms of operational efficiency, all three ERM components (risk identification, assessment & mitigation) exhibit significant influence. Notably, risk identification had the strongest effect, reinforcing the view that understanding potential internal and external threats is foundational to building resilient operations. However, the negative coefficient of risk assessment suggests that excessive or misaligned evaluation of risks may create bureaucratic inefficiencies, which can hinder smooth operations if not properly managed. The results are supported by the finding of Fadun et al. (2020), who posited that well-integrated ERM frameworks streamline processes, improve decision-making, and reduce inefficiencies. Lastly, the impact of ERM on employment creation revealed a mixed result. While risk identification and assessment significantly influenced job creation; likely due to improved stability and growth, risk mitigation did not show a significant effect. This contradicts expectations but aligns with Sadgrove (2020), who emphasized that risk mitigation strategies must be carefully tailored to avoid stagnation. In essence, while ERM fosters an enabling environment for expansion, overemphasis on mitigating every potential threat could discourage innovative growth necessary for workforce expansion.

5.0 Conclusion and Recommendations

This study set out to examine the effect of Enterprise Risk Management (ERM) on the sustainability of Small and Medium-sized Enterprises (SMEs) in Osun State. The Structural Equation Modeling revealed significant interactions among the study variables. Specifically, risk assessment and risk mitigation were found to significantly and positively affect profitability, while risk identification surprisingly had a negative effect. For operational

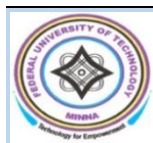
efficiency, all three ERM components had statistically significant effects. However, in terms of employment creation, risk identification and risk assessment positively impacted outcomes, while risk mitigation had no significant effect. Overall, the findings affirm that ERM is crucial to SME sustainability, but its components must be thoughtfully applied to yield the desired benefits. The study concludes that ERM is a fundamental tool for enhancing the long-term sustainability of SMEs, especially in dynamic and risk-prone environments like Osun State. Based on the findings, it is recommended that SMEs in Osun State should adopt a more strategic and balanced approach to their ERM. Business owners and managers should not view risk identification as an end in itself but rather as a means to facilitate proactive planning and decision-making. They should prioritize actionable insights from risk assessments and ensure that mitigation strategies are aligned with their long-term growth objectives. Additionally, training programs and capacity-building initiatives should be developed to enhance SME managers' understanding of risk management tools and techniques.

Furthermore, government agencies and SME support organizations should consider integrating ERM education into their entrepreneurship development programs. Regulatory bodies could also create incentives for SMEs that demonstrate effective risk management frameworks, such as tax breaks or access to funding. This would encourage more SMEs to institutionalize ERM practices. Policymakers should recognize that while ERM may seem resource-intensive, its long-term benefits such as improved profitability, process efficiency, and job creation; far outweigh the initial costs, particularly in volatile economic environments like Osun State.

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Digital Innovation and Employee Performance in the Nigerian Banking Sector: A Case Study of Zenith Bank Plc

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Abstract

Organisations in the Nigerian banking sector increasingly invest in digital technologies, yet many still struggle to translate these innovations into improved employee performance. This study addresses this problem by examining how digital innovation capabilities conceptualized across four dimensions: digital innovation initiation, development, implementation, and exploitation, influences employee performance at Zenith Bank Nigeria Plc. It further investigates whether employee engagement mediates the relationship between digital innovation and employee performance. A quantitative survey design was adopted, and data were collected from employees at the bank's corporate headquarters and branch offices in the Federal Capital Territory, Abuja. Of the 317 questionnaires distributed, 300 valid responses were analyzed using multiple linear regression in SPSS (version 26). Findings revealed that the four predictors jointly explained approximately 18.6% of the variance in employee performance ($R^2 = .186$; Adjusted $R^2 = .174$). The correlation coefficient ($R = .432$) indicates a moderate positive relationship between the dimensions of digital innovation and employee performance. The standard error of the estimate (.16087) suggests a reasonably good model fit, while the overall regression model was statistically significant, $F = 14.67$, $p < .001$, indicating that at least one digital innovation dimension significantly predicts employee performance. Results further showed that employee engagement mediates the relationship between digital innovation and employee performance. The study underscores the importance of effective implementation strategies and high employee involvement in unlocking the performance benefits of digital innovation. It concludes that organisations such as Zenith Bank Nigeria Plc should not only invest in digital technologies but also cultivate an engagement-driven culture that empowers employees to integrate innovation into their daily work processes.

Key words: Digital Innovation, Employee Performance, Employees Engagement

1. Introduction

The fourth industrial revolution has brought a huge change to corporate organisation's operation as digital technology and innovation has become a critical driver in this change. Digital innovation has to do with the use of digital technology during the process of innovating, which is described as fully or partly, the outcome of innovation that involves radical change in the nature and structure of new products and services, spawned novel value creation and value appropriation pathways (Nambisan et al., 2017). Digital innovation encompasses the adoption of advanced technologies to improve services, products, and processes as customers expectations, competitive pressure, and technology advancement are key drivers of digital innovation in banking sector. In today's rapidly evolving financial landscape, digital innovation has become a critical driver of change, particularly within the banking industry. Digital banking like mobile banking, internet banking, biometric validation and artificial intelligence like chatbots and virtual assistants, fraud detection personalized banking are basic examples of digital innovation which is propelled by digital technology. All the aforementioned digital innovation in banking sector is deployed to enhance customer experience, increase efficiency, enhance security and bring about innovative products and services to attract new customers to the sector. In the banking sector these technologies aim to make banking faster, more efficient,

and more customer-centric. Banks around the world are leveraging these innovations to enhance operational efficiency, reduce manual processes, and offer better services to customers (Sri-Annisa, 2024).

Meanwhile, Digital innovation implementation within corporate organisations could be a driving factor. It includes change management, user adoption, system integration and data security. Digital innovation exploitation on the other hand involves scalability, expanding the innovation to new markets or customer segments which are targeted to drive basic organizational outcomes (Kohli, et al, 2019). Corporate organisations make huge investment on the employees to attain performance and overall organisational excellence but the challenge in attaining employees' performance is still a concern within the organisations (Pradhan & Jena, 2017).

The Nigerian banking sector has increasingly become a focal point of innovation within the national economy, mirroring the transformative impact of the Fourth Industrial Revolution (4IR) on global financial systems. Data from the National Bureau of Statistics (NBS) indicate that the financial services sector contributed ₦3.8 trillion to Nigeria's Gross Domestic Product (GDP) in 2023, representing a 26.5% increase from ₦3.01 trillion in 2022. By 2024, the sector's contribution rose to approximately 6.40% of GDP, nearly double the 3.60% recorded in 2022. This upward trajectory underscores the sector's deepening integration of digital technologies and its strategic alignment with global trends in automation, artificial intelligence, and data-driven financial management.

Within this broader technological landscape, Zenith Bank Plc exemplifies the growing digital innovation in Nigeria's banking industry. The bank's 2024 annual report records an 86% increase in gross earnings, reflecting the tangible outcomes of its adoption of advanced digital solutions such as automated workflows and customer relationship management (CRM) systems. The bank stands as the lead among the first four leading banks in Nigeria (Tokede, 2025). However, the efficacy and sustainability of these digital transformations are contingent upon employees' ability to adapt to technological change, develop requisite competencies, and maintain high levels of engagement and performance in increasingly digitalized work environments. Although digital innovation has been widely recognized as a catalyst for organizational competitiveness in the era of the Fourth Industrial Revolution (4IR), empirical inquiry into its human-centered consequences within emerging economies remains limited (Hanelt et al; 2021).

The extant literature on digital innovation in Nigeria's financial services sector tends to focus predominantly on technological adoption, service delivery efficiency, and financial performance indicators. However, considerably less scholarly attention has been directed toward understanding how these innovations reshape employee experiences, work engagement, and performance outcomes. This gap is particularly evident in the banking industry, where technology-driven restructuring has intensified the demand for digital competencies, agility, and adaptability among employees.

Therefore, this study is justified by the need to bridge the empirical gap between digital innovation and employee performance in Nigeria's banking sector. The study seeks to examine the influence of digital innovation as conceptualised across four key dimensions on employee performance, with an evidence on the mediating role of employee engagement within Zenith Bank Nigeria Plc

2. Literature Review

Digital Innovation: In reviewing the concept of digital innovation, the study explored extant literature to be able to understand the concept. Some scholars have defined the concept of digital innovation to mean the process of combining different components of digital and physical components together to achieve a purpose within the organisation (Yoo et al. 2012). Whereas, some other scholars defined the concept of digital innovation with its effects while most definitions include several 'digital' terms such as digital objects or digital technologies. Stated differently, in digital innovation, digital technologies and associated digitizing processes form an innate part of the new idea and/or its development, diffusion, or assimilation (Nambisan et al., 2017). The concept is further described as new combinations of digital and physical components to produce new products (and services) by combining digital data from heterogeneous sources easily 'to deliver diverse services, which dissolves product and industry boundaries (Barrett, et al., 2015) and in a related way, as the recombination of digital components in a layered, modular architecture to create new value-in-use to users or potential users of a service (Huang et al, 2014). Moreover, digital innovation' is used to refer to a product-centric perspective involving new combinations of physical and digital products to form new products. In this conceptualization, innovation refers to the role of underlying architectures of IT artifacts in enabling and constraining the development of new IT artifacts and the implications for structuring and managing innovation within firms (Kohli and Melville., 2018). This is done in the creation or adoption and exploitation of an inherently unbounded, value-adding novelty such as product, service, process or business model through the incorporation of digital technology.

Meanwhile, Nambisan et al. (2020), opined that digital innovation "is the use of digital technology during the process of innovating", and state that the resulting digital innovation has radically changed the way services and products are created and structured, enabling new ways of creating values in the organisation. The authors opined that digital innovation is a sociotechnical phenomenon and conceptualize it "as the creation of (and consequent change in) market offerings, business processes, or models that result from the use of digital technology. They opined that, in digital innovation, digital technologies and associated digitizing processes form an innate part of the new idea and/or its development, diffusion, or assimilation". This reasoning reflects that innovation outcomes and processes are less bounded and digital innovation provides a new level of fluidity where, e.g., the innovation process as well as outcomes such as a new products or services are constantly re-scoped.

Furthermore, Kohli and Melville (2019) provides a model of a combined component of digital innovation to fully describe its capability. They opined that digital innovation activities include digital innovation initiation (triggers, opportunity identification, decision making), digital innovation development (designing, developing, adopting), digital innovation implementation (installing, maintaining, training, incentives) and digital innovation exploitation (maximising returns, leveraging existing systems/data for new purpose). These four dimensions are expressed to be present in any digital innovation activities. They further opined that these activities do not just occur in a vacuum within the organisation but are framed to be strategic initiatives. These activities signify the integration of digital technology (e.g. cloud computing, data analytics artificial intelligence) into all aspect of a business to deliver values among employees to customers. This is done by disrupting the market and gain a competitive edge.

Employee Performance: The concept of employee performance is strategic in the organisation as it encompasses both what has to be accomplished and how it can be realized. The term performance comes from the word job performance or actual performance (work performance or actual achievement achieved by a person), namely the quality and quantity of work achieved by an employee in carrying out his duties in accordance with the responsibilities assigned to

him (Mangkunegara, 2011). This definition provides an understanding that performance is an act or behavior of a person in carrying out his duties, which can be observed and assessed by others. Berberoglu, (2015) described employees' performance as a driver to overall organizational performance. Griffiths (2004) opined that employee performance reflects the employees' contributions to achieving organizational goals. Moreover, employees performance is a strategic concept in the organization that stands as a fundamental benchmark for organizational outcomes (Kreitner & Kinicki, 2010). It is further opined by Meyer et al, (2011) that employees performance also encompasses the action of engaging in activities with a focus on monitoring progress and achieving objectives through measurable criteria.

The concept of employee performance has been researched in literature and various measures have been identified to constitute the dimensions of employee performance (Pradhan & Jena, 2017). These dimensions include, *Task Performance*: This comprises of job explicit behaviours which includes fundamental job responsibilities assigned as a part of job description. Task performance requires more cognitive ability and is primarily facilitated through task knowledge (requisite technical knowledge or principles to ensure job performance and having an ability to handle multiple assignments), task skill (application of technical knowledge to accomplish task successfully without much supervision), and task habits (an innate ability to respond to assigned jobs that either facilitate or impede the performance) (Conway, 1999). Therefore, the primary antecedents of task performance are the ability to do the job and prior experience. *Adaptive Performance*: An individual's ability to acclimatize and provide necessary support to the job profile in a dynamic work situation is referred to as *adaptive performance* (Hesketh, & Neal, 1999). Earlier studies have found that once the employees derive a certain amount of perfection in their assigned tasks, they try to adapt their attitude and behavior to the varied requirements of their job roles (Huang et al., 2014). An effective adaptive performance necessitates employees' ability to efficiently deal with volatile work circumstances (Baard, Rench, & Kozlowski, 2014), for example, technological transformations, changes in one's core job assignment, restructuring of organization and so on. Evolutions of various new occupations as an offshoot of technological innovation need employees to engage in fresh learning and get oneself adaptable with changes in an efficient manner. *Contextual Performance*: This is a kind of prosocial behaviour demonstrated by individuals in a work set-up. Such behaviours are expected of an employee but they are not overtly mentioned in one's job description. These kind of unstated expectations are called prosocial behaviour or extra role behaviour, which is referred to as contextual performance.

Employees Engagement: Employee engagement has been conceptualized in literature as a means of employee devotion to their physical and emotional roles in the work place. It reflects personal energies to drive into the role behaviours and find the self within that role (Hameduddin & Lee, 2019). Employee engagement consists of three prime components: absorption, dedication and vigor (Aboramadan & Kundi, 2020; Schaufeli *et al.*, 2006). The extent of employee enthusiasm toward the role is absorption, whereas dedication indicates the level of employee concentration while performing the roles (Ali *et al.*, 2020). Vigor denotes the extent to which employees become ready to invest time, energy and effort (Ali *et al.*, 2020). It is observed in literature (Chopra *et al.*, 2024; Kundu and Lata, 2017) that engaged employees are more likely to stay with the organisation and eager to learn about the organisational process. Meanwhile, there are related empirical studies on digital transformation and employees performance to digital innovation on employees performance with different scope in terms of coverage. These studies were carried out in organisations where transformation is taking place, which is an offshoot of digital innovation related with the fact that the duo rest on digital technology. Such studies include (Melati et al, 2024; Chandrashekar, 2021; Singh et al. 2021; Sri-Annisa et al, 2024).

Hypothesis1 (H_{01}): There is no significant effect of digital innovation initiation on employees' performance.

Hypothesis2 (H_{02}): There is no significant effect digital innovation development on employees' performance

Hypothesis3 (H_{03}): There is no significant effect of digital innovation implementation on employees' performance

Hypothesis4 (H_{04}): There is no significant effect of digital innovation exploitation on employees' performance

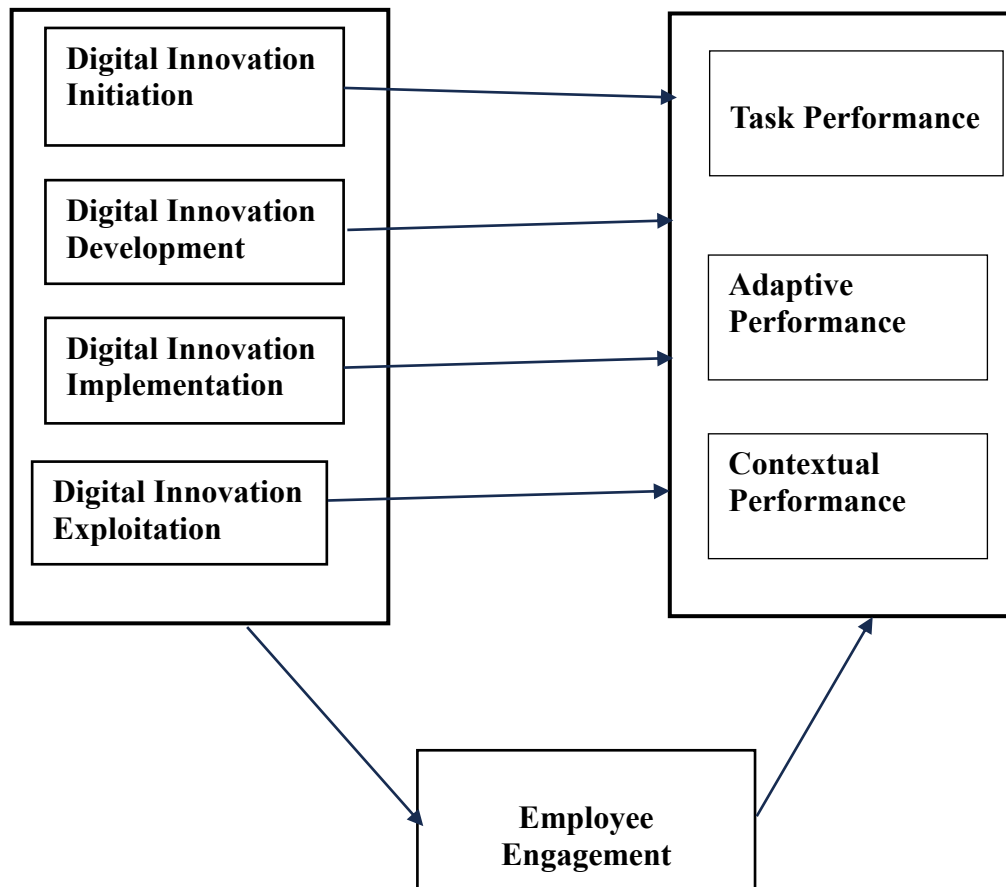
Hypothesis 5 (H_{05}): There is no significant mediating effect of employees' engagement on the relationship between digital innovation and employees' performance

Theory Underpinning: The theory underpinning this study is Unified Theory of Acceptance and Use of Technology (UTAUT). This theory synthesizes eight prominent technology adoption models to explain variance in individuals' behavioural intention to use a system and their actual use (Venkatesh, et al, 2003). UTAUT posits four core determinants of performance expectancy, effort expectancy, social influence, and facilitating conditions that shape intention and use. UTAUT offers a clear mechanism linking digital innovation to employee performance. Innovations influence employees' beliefs about expected gains (performance expectancy) and ease of use (effort expectancy), which, together with social influence (leadership and peer pressure) and facilitating conditions (training, infrastructure, bandwidth, support), drive intention and subsequent system use. This intention use chain provides the theoretical conduit through which technology adoption can plausibly translate into task performance, adaptive performance and contextual performance, which are the dimensions of employee performance this study.

Meanwhile, UTAUT has broadened the model for consumer contexts by adding motivation, price value, and habit (Venkatesh, et al, 2012). While these additions are less central in mandated workplace settings, habit and aspects of motivation can still illuminate routinization and intrinsic engagement with digital tools. For the present study, UTAUT can be productively adapted by modeling employee engagement as a mediator between intention to use and performance outcomes, reflecting the view that engaged employees more fully leverage digital affordances to deliver superior results.

Notwithstanding its strengths, UTAUT has been critiqued for emphasizing adoption over downstream outcomes. Addressing this limitation, the present study explicitly links UTAUT's belief intention to use pathway to objective and subjective performance indicators, thereby extending the theory's criterion space from acceptance to work outcomes. In this view, UTAUT provides a theoretically coherent and empirically supported framework for explaining how digital innovation shapes employees' technology use and, through engagement, their performance in a Fourth-Industrial-Revolution banking environment.

Fig 1: Conceptual Framework



Source: Adapted from Kohli and Melville (2019); Pradhan and Jena (2017).

3. Methodology

Research Design: The study engaged survey design with a quantitative research approach carried out within Zenith Bank Nig Plc in Abuja, Nigeria. The bank is renowned for its innovative products and services, strong financial performance, and commitment to customer satisfaction. The study focused on the headquarters of the bank and other branches situated in FCT Abuja with total of thirty-nine (39) branches of 1,550 employees spread across various departments engaged in the use of digital innovation activities. Random sampling technique was used with Slovin (1960), sampling size determination formula to determine the sample size, with 5% margin of error which resulted to 317 employees.

Measurement: Constructs were measured through existing validated indicator items from literature. Digital innovation was measure with the four-model developed by Kohli and Melville (2019). This comprised digital innovation initiation, development, implementation and exploitation. Employee performance was measured via items developed in three dimensions of task performance, contextual performance and adaptive performance by Pradhan and Jena (2017). Employee engagement was measured via items developed by Bakker and Schaufeli (2003).

Data Collection: Primary data was used with a well-structured questionnaire in five-point Likert scale format, as data instrument. The survey with validated items covered the three main variables of the study was administered online via Google form template to the employees'

official e-mail to capture their responses. A total of 317 copies of questionnaire were administered and 300 copies were retrieved which represents 94.6% of the total administered.

Method of Data Analysis: The study engaged both descriptive and inferential statistics. The descriptive was used to analyse the demographics responses of the respondents and the inferential statistics to test the formulated hypotheses. The descriptive used percentages while the inferential used regression tool in SPSS statistical package, version 26 for the analysis. The regression model is in two parts, the first shows the direct effect of digital innovation in four dimensions on employees performance and second is the mediating effect of employees' engagement on the relationship between digital innovation and employees' performance.

$$EP = \beta_0 + \beta_1 DII + \beta_2 DID + \beta_3 DIM + \beta_4 DIE + e_1 \quad (1)$$

$$EP = \sigma_0 + \sigma_1 DI + \sigma_2 DI*EE + e_2 \quad (2)$$

Where: $EP = f(DI)$

$EP = (TP, AP, CP)$. $DI = (DII, DID, DIM, DIE)$

$\beta_1 - \beta_4$ = Regression Coefficient

$\sigma_1 - \sigma_2$ = Regression Coefficient

e = error

EP = Employees Performance (TP-Task Performance, AP-Adaptive Performance, CP-Contextual Performance)

DI = Digital Innovation

DII = Digital Innovation Initiation

DID = Digital Innovation Development

DIM = Digital Innovation Implementation

DIE = Digital Innovation Exploitation

EE = Employees Engagement

$DI*EE$ = Mediation effect of Employees Engagement

4. Results and Discussion

Table 1: Profile of Respondents.

Characteristics	Frequency	Percentage (%)
Sex:		
Male	185	61.66
Female	115	38.33
Age:		
below 20 years	57	19
20 – 29 years	123	41
30 – 39 years	54	18
40 – 49 years	35	11.66
50 years above	31	10.33

Marital status:		
Married	166	55.33
Widowed	4	1.33
Single	130	43.33
Literacy Level:		
School Certificate	13	4.33
NCE/OND	89	29.66
HND/BSC	154	51.33
Post Graduate	44	14.66
Length of service in the Organisation:		
1 - 5 years	65	21.66
6 – 10 years	112	37.33
11 – 15 years	43	14.33
16 – 20 years	58	19.33
21 years +	22	7.33
Departments within the organisation:		
Corporate communication	19	6.33
Human Resources Management	20	6.66
Customer Services Management	60	20
Financial Control	21	7
Marketing	98	32.66
Operations	64	21.33
Funds Transfer	18	6

Source: Field survey 2025

The demographic profile of respondents as shown from Table 1, provides insight into the personal and professional characteristics of participants involved in the study, including sex, age, marital status, educational level, length of service, and departmental distribution.

Table 1 indicates that majority of respondents were male, with 185 participants (61.66%), while 115 respondents (38.33%) were female. This indicates a male-dominant workforce among the surveyed population, suggesting that men constitute a larger proportion of employees in the organisation.

Also, Table 1 shows that the respondents were mostly young adults. The largest age group was 20–29 years, accounting for 123 respondents (41%), followed by below 20 years with 57 respondents (19%). Participants aged 30–39 years comprised 54 respondents (18%), those aged 40–49 years were 35 (11.66%), and 50 years and above accounted for 31 respondents (10.33%). Overall, the data reveal a predominantly youthful workforce, with nearly 60% of respondents under the age of 30.

Furthermore, Table 1 reveals that more than half of the respondents were married (166 respondents; 55.33%), while 130 (43.33%) were single. Only a small proportion were widowed

(4 respondents; 1.33%). This suggests that the workforce is largely composed of individuals in stable family arrangements.

Most respondents possessed higher-level qualifications. HND/BSc holders constituted the largest group with 154 respondents (51.33%). This was followed by those with NCE/OND qualifications (89; 29.66%) and postgraduate degrees (44; 14.66%). Respondents with only a school certificate were few (13; 4.33%). These figures indicates that the organisation employs a predominantly well-educated workforce, with over two-thirds of participants holding at least a university degree.

As also indicated in Table 1, the largest group of respondents had served 6–10 years (112 respondents; 37.33%). Those with 1–5 years of service constituted 65 respondents (21.66%), while 16–20 years of service accounted for 58 respondents (19.33%). Respondents with 11–15 years were 43 (14.33%), and only 22 respondents (7.33%) had served for 21 years or more. This distribution suggests that most employees fall within the early-to-middle stages of their careers, contributing to a fairly experienced but not aging workforce.

Similarly, Table 1 shows that participants were drawn from various departments. The Marketing Department had the highest representation with 98 respondents (32.66%), followed by Operations with 64 respondents (21.33%) and Customer Services Management with 60 respondents (20%). Other departments included Financial Control (21; 7%), Human Resources Management (20; 6.66%), Corporate Communication (19; 6.33%), and Funds Transfer (18; 6%). This indicates that marketing and operational units form the largest segments of the organisation's workforce.

Overall, the demographic analysis shows that respondents are largely male, young, married, and well educated, with many having moderate work experience (6–10 years). The workforce is concentrated mainly in the Marketing, Operations, and Customer Services departments. These characteristics provide important context for interpreting findings from the broader study, as the views expressed stem largely from a youthful and academically qualified employee population with practical workplace experience.

Testing of Hypotheses: Tables below shows the model summary (showing how well the model explains the dependent variable), the anova (shows the regression model as statistically significant) and the coefficient (shows how each independent variable affects the dependent variable)

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.432 ^a	.186	.174	.16087

a. Predictors: (Constant), DIE, DIM, DII, DID

Source: Field survey 2025

Table 3. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.518	4	.380	14.669	.000 ^b
	Residual	6.625	256	.026		
	Total	8.143	260			

a. Dependent Variable: EP

b. Predictors: (Constant), DIE, DIM, DII, DID

Source: Field survey 2025

Table 4. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.698	.190		19.468	.000
	DII	.075	.027	.200	2.724	.007
	DID	-.005	.029	-.014	-.178	.859
	DIM	.148	.030	.324	4.952	.000
	DIE	-.010	.032	-.020	-.321	.748

a. Dependent Variable: EP

Source: Field survey 2025

Table 5. Coefficients: Showing the mediation significance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.123	.203		15.370	.000
	DII	.032	.027	.085	1.193	.234
	DID	-.053	.029	-.144	-1.852	.065
	DIM	.128	.028	.281	4.540	.000
	DIE	-.041	.031	-.080	-1.334	.184
	EE	.265	.045	.397	5.925	.000

a. Dependent Variable: EP

Source: Field survey 2025

Multiple regression analysis was conducted to examine the influence of the four dimensions of digital innovation on employee performance (EP) in Zenith Bank Nig Plc. The model summary (Table 2) shows the four predictors jointly explained approximately 18.6% of the variance in employee performance ($R^2 = .186$, $Adjusted R^2 = .174$). The correlation coefficient ($R = .432$) indicates a moderate positive relationship between digital innovation dimensions and employee performance. The standard error of the estimate (.16087) suggests that the model provides a reasonably good fit for the data. In Table 3, the overall regression model was statistically significant, $F = 14.67$, $p < .001$, implying that at least one of the digital innovation dimensions significantly predicts employee performance. This confirms that digital innovation, as a composite construct, has a meaningful impact on employees' performance outcomes. Table 4 presents the coefficients for each predictor. Among the four dimensions, Digital Innovation Initiation (DII) ($\beta = .200$, $t = 2.72$, $p = .007$) and Digital Innovation Implementation (DIM) ($\beta = .324$, $t = 4.95$, $p < .001$) were found to exert positive and significant effects on employee performance. In contrast, Digital Innovation Development (DID) ($\beta = -.014$, $t = -.18$, $p = .859$) and Digital Innovation Exploitation (DIE) ($\beta = -.020$, $t = -.32$, $p = .748$) showed no significant effects. Meanwhile, from table 5, the mediation analysis revealed a significant effect of Employee Engagement (EE) ($\beta = .397$, $t = 5.925$, $p = .000$), on the relationship between digital innovation and employee performance. This leads to rejecting hypotheses 1,3 and 5 while

accepting 2 and 4. These results suggest that improvements in digital innovation initiation and digital innovation implementation are the most salient predictors of higher employee performance within Zenith Bank Nig Plc. Conversely, digital innovation development and digital innovation exploitation, as operationalised in this model, did not significantly contribute to performance variance.

Discussion of Findings

The findings of this study reveals that digital innovation significantly influences employee performance within the Nigerian banking context, specifically at Zenith Bank Plc. The regression model demonstrated that digital innovation dimensions collectively explain approximately 18.6% of the variance in employee performance, confirming that the adoption and effective utilization of digital technologies constitute an important determinant of employees performance. This aligns with earlier empirical evidence that positions digital innovation as a critical enabler of efficiency and performance (Hanelt et al., 2021; Annisa et al., 2024). From the dimensions examined, Digital Innovation Implementation (DIM) and Digital Innovation in Initiation (DII) emerged as the strongest and statistically significant predictors of employee performance. These findings corroborate the performance expectancy construct of the UTAUT model (Venkatesh et al., 2003), which posits that employees' belief that digital tools will enhance their job performance strongly influences actual use and productivity. In contrast, Digital Innovation in Development (DID) and Digital Innovation in Exploitation (DIE) were found to have statistically insignificant effects on employee performance. This may indicate that while development-oriented innovations and engagement platforms exist, they may not yet be effectively aligned with employees' work processes or lack the training, motivation, or support structures necessary for optimal utilization.

From the UTAUT perspective, this reflects a gap in facilitating conditions and social influence two key factors that determine whether digital tools are fully adopted and internalized by employees. This outcome echoes findings from Neumann et al. (2021) and Adekanmbi and Ukpere (2023), who observed that technological innovations without adequate human and organisational integration often yield limited performance benefits. Overall, these findings contribute to the literature by reinforcing that in the context of the Fourth Industrial Revolution, employee performance is maximized not simply through the presence of advanced technologies, but through the strategic integration of digital innovation with human capability development and organizational support mechanisms. Therefore, banking institutions must prioritize not only technological upgrades but also employee training, engagement, and digital culture alignment to ensure sustainable performance outcomes in an increasingly digitalized financial environment.

5. Conclusion

This study examined the influence of digital innovation across four dimensions: initiation, development, implementation, and exploitation on employee performance within Zenith Bank Plc, Nigeria. The empirical results demonstrated that digital innovation initiation and digital innovation in implementation infrastructure significantly and positively affect employee performance, while digital innovation development and digital innovation exploitation exhibited no significant influence. Collectively, the four dimensions accounted for 18.6% of the variance in employee performance, indicating that while digital innovation is an important driver of employees' performance, its impact is mediated by the extent to which employees are engaged effectively adopt and utilize these technologies. From a theoretical standpoint, the findings provide further empirical validation of the Unified Theory of Acceptance and Use of Technology (UTAUT) in an emerging economy context. The results support the centrality of

performance expectancy and facilitating conditions as key determinants of the link between digital innovation and performance. The study extends UTAUT by demonstrating that the

pathway from digital innovation to employee performance is contingent upon the presence of supportive managerial systems and infrastructural resources.

Recommendations and Future Research Directions

Based on the findings of this study, several recommendations are proposed to strengthen the relationship between digital innovation and employee performance within the Nigerian banking industry. First, management should prioritize the strategic alignment of digital innovation initiatives with human resource development policies. Continuous capacity building programs, such as digital skills training, workshops, and certifications, are essential to enhance employees' digital competence and confidence in adopting new technologies. Second, banks should invest in robust digital infrastructure and supportive management systems that ensure ease of access, reliability, and usability of digital tools.

From a research perspective, future studies should adopt longitudinal and mixed-method approaches to capture the evolving nature of digital transformation and its sustained impact on employee behaviour and performance. Comparative studies across different banks, industries, and national contexts could provide deeper insights into how institutional, cultural, and infrastructural factors moderate the digital innovation performance relationship. Additionally, future research should examine the mediating and moderating roles of, organisational culture, and leadership style to provide a more holistic understanding of how digital innovation affects individual and organizational outcomes within the Fourth Industrial Revolution.

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Digital Microfinance Innovation and Financial Inclusion of Rural Entrepreneurs in North Central Nigeria

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Abstract

Rural entrepreneurs in developing economies continue to face severe exclusion from formal financial systems, a gap that stifles innovation, investment and long-term business sustainability. This study examines how digital microfinance innovations such as mobile money, agent banking, digital wallets and crowdfunding enhanced financial inclusion among rural entrepreneurs. Guided by Rogers' Diffusion of Innovation (DOI) theory, the study explores how perceived advantages and compatibility of these innovations accelerate adoption and inclusion outcomes. A cross sectional survey research design with quantitative approach was adopted. The study's population comprised registered rural entrepreneurs, from which a stratified random sampling technique was used to ensure sectoral representation. A total sample of 400 respondents was surveyed using structured questionnaires, and the data were analyzed through multiple regression to test the hypothesized relationships. The regression results revealed that mobile money and digital wallets with ($\beta = 0.28$, $p < 0.001$) and ($\beta = 0.25$, $p < 0.001$) respectively were the strongest drivers of inclusion, while agent banking ($\beta = 0.22$, $p = 0.002$) and crowdfunding ($\beta = 0.18$, $p = 0.001$) also exert significant but comparatively moderate effects. The overall model is robust, explaining 52% of the variance in financial inclusion ($R^2 = 0.52$, $p < 0.001$). The findings confirmed that innovations with clear relative advantage and lower complexity diffuse more rapidly, consistent with DOI theory. The study concludes that digital microfinance innovations are transformative in bridging rural financial gaps. It recommends scaling mobile money and digital wallet services, expanding agent banking networks, and establishing trust-building frameworks for crowdfunding to strengthen inclusive entrepreneurial ecosystems.

Keywords: Agent banking, Crowdfunding, Digital microfinance, Digital wallets, financial inclusion, Mobile money

1.0 Introduction

Financial inclusion has emerged as a critical lever for stimulating entrepreneurship, poverty reduction, and local economic growth, particularly in developing regions. The dependent variable in this study, financial inclusion of rural entrepreneurs, encapsulates the extent to which underserved populations have access to affordable, convenient and appropriate financial services. In Nigeria's North Central region, rural entrepreneurs, especially those engaged in agriculture, petty trading and small-scale manufacturing firms remain largely excluded from mainstream financial systems. Barriers such as geographic isolation, low financial literacy, stringent collateral requirements and high transaction costs have perpetuated this exclusion, limiting entrepreneurs' ability to access credit, savings, insurance and payment solutions necessary for business growth.

In response, the financial services sector has increasingly turned to digital microfinance innovations such as mobile money platforms, digital wallets, agent banking, blockchain-enabled microloans and AI-driven credit scoring models. These innovations aim to overcome

structural bottlenecks by reducing operational costs, broadening service outreach and tailoring credit delivery to low-income entrepreneurs. Studies on entrepreneurial finance (e.g., Rao *et al.*, 2024; Elf, 2025; Van der Sijde *et al.*, 2025) highlight how technology-driven financing mechanisms can transform the accessibility and sustainability of entrepreneurial ventures in emerging economies. Moreover, equity crowdfunding and fintech-enabled lending models (Correia *et al.*, 2024; Hoque *et al.*, 2024) underscore the potential of digital tools to democratize finance, bridging the gaps left by conventional banks and traditional microfinance institutions.

However, while digital microfinance has expanded rapidly across Sub-Saharan Africa, its outcomes remain uneven. Evidence from global literature points to challenges such as unreliable digital infrastructure, regulatory uncertainties, fraud risks and the digital divide among rural populations (Káčer *et al.*, 2025). In Nigeria, where mobile penetration is high but digital literacy remains patchy, rural entrepreneurs often face a paradox: the existence of innovative financial products does not necessarily translate into sustainable inclusion. This raises pressing questions about whether digital microfinance innovations genuinely improve financial access, utilization and long-term entrepreneurial survival in rural North Central Nigeria. The study aimed to test the effect of digital microfinance innovation on financial inclusion of rural entrepreneurs in north central Nigeria with the following specific objectives:

- i. To examine the effect of mobile money services on the financial inclusion of rural entrepreneurs in North Central Nigeria.
- ii. To assess the influence of agent banking on access and usage of financial services by rural entrepreneurs in North Central Nigeria.
- iii. To determine the impact of digital wallets on the affordability and convenience of financial services for rural entrepreneurs in North Central Nigeria.
- iv. To evaluate the effect of crowdfunding platforms on the financial inclusion and financing opportunities of rural entrepreneurs in North Central Nigeria.
- v. To determine the combined explanatory power of digital microfinance innovations on financial inclusion.

2.0. Literature Review:

The variables of interest to the study are conceptualized as below:

2.1 Digital Microfinance Innovation

Microfinance has long been positioned as a critical instrument for expanding financial inclusion in developing economies, particularly among the poor, women and rural entrepreneurs excluded from formal banking systems. Traditional MicroFinance Institutions (MFIs) provide small loans, savings, and insurance, but they suffer structural inefficiencies: high operating costs, limited branch networks, manual credit assessments and dependence on physical interaction (Elf, 2025).

Digital Microfinance Innovation (DMI) refers to the integration of digital technologies into microfinance products, processes, and delivery models to enhance efficiency, scalability and accessibility. It encompasses innovations in product design (digital credit, micro-insurance), delivery channels (mobile phones, agent networks), data analytics (AI-based credit scoring, blockchain identity), and platforms (crowdfunding, peer-to-peer lending). In short, it is the marriage of microfinance and fintech, re-engineering financial access for low-income and rural entrepreneurs (Rao *et al.*, 2024; Elf, 2025).

2.1.1 Mobile money services

Mobile money (USSD, SMS, smartphone apps) is the leading vehicle for extending transaction services to underbanked populations. Empirical and review studies highlight mobile money's capacity to deliver payments, small savings and microcredit flows cheaply and at scale (Hoque *et al.*, 2024; Correia *et al.*, 2024). Evidence shows improvements in transactional access and payment formalisation, but results for credit uptake and business growth are mixed and conditional on network reliability and agent liquidity (Káčer *et al.*, 2025; van der Sijde *et al.*, 2025). The implication for rural entrepreneurs is that mobile money reduces physical barriers to basic financial services, but alone it may not solve credit access or foster long-term financial behaviours without accompanying products (savings, insurance) and financial literacy support (Rao *et al.*, 2024).

2.1.2 Agent banking (branchless banking)

Agent banking deploys local agents to provide cash-in/cash-out, account opening, and basic credit services, bridging last-mile access where branches don't exist. Systematic reviews underscore agent banking's effectiveness in geographic outreach but note risks: agent insolvency, weak oversight, and uneven service quality (Lange, 2024; Manigart & Wright, 2024). Agent networks often determine the practical usability of mobile services in rural areas. Moreover, agent banking is a crucial distribution mechanism that operationalises digital services for rural entrepreneurs particularly those with low literacy or no smartphones but its performance depends on agent incentives and supervision (Berliner *et al.*, 2025).

2.1.3 Digital wallets & e-savings platforms

Digital wallets create virtual liquidity repositories that facilitate saving, small payments and often integration with loan products. Literature reports wallets as enablers of savings accumulation and internal transaction histories that can become alternative credit signals (Tomaselli *et al.*, 2025; Correia *et al.*, 2024). Still, wallet adoption hinges on perceived security, transaction costs, and interoperability with broader payment ecosystems. However, wallets can improve the *quality* of inclusion (regular use, recorded financial behaviour), not just access a critical factor for entrepreneurs seeking formal credit later.

2.1.4 Crowdfunding & P2P platforms

Crowdfunding platforms and P2P lending open up diverse funding channels beyond banks and MFIs. Reviews and recent empirical works show that equity and reward-based crowdfunding can mobilise capital and validate ideas, while P2P credit provides alternative debt (Correia *et al.*, 2024). However, evidence indicates platform bias (urban, tech-savvy entrepreneurs receive more funding), signaling problems of reach to rural micro-entrepreneurs (Elf, 2025). However, crowdfunding can be transformational for certain ventures but is not yet a reliable, scalable channel for remote rural micro-enterprises that lack digital presence or investor visibility.

2.1.5 Financial inclusion of rural entrepreneurs

Financial inclusion is broadly defined as the provision and accessibility of affordable, useful, and relevant financial products and services such as savings, credit, insurance and payment systems to all segments of society, particularly the underserved (Leach & Melicher, 2021; Da Rin & Hellmann, 2020). The entrepreneurial finance literature stresses moving beyond binary account-ownership metrics to usage and outcomes. It goes beyond mere access to accounts; it

emphasizes usage, quality, affordability and long-term impact on livelihoods. For rural entrepreneurs, financial inclusion is not just an economic metric but a lifeline. Entrepreneurs in rural economies, especially those engaged in agriculture, small-scale trading and cottage industries, often operate in environments where cash dominates, banks are distant and credit is informal and exploitative. Access to inclusive finance directly influences their ability to invest in business inputs, manage risks, expand operations and cushion shocks.

2.1.6 North Central Nigeria

North Central Nigeria comprises a mix of agrarian and small-trade economies, with large rural populations often underserved by formal banks. National-level fintech penetration in Nigeria is high in urban areas, but the rural digital divide network gaps, lower smartphone penetration, limited agent reach and lower financial literacy inhibits translation of fintech availability into effective inclusion (Káčer *et al.*, 2025; Mkalama *et al.*, 2025). The region's socio-economic heterogeneity, market seasonality (agriculture) and infrastructure constraints make it a demanding but high-impact context for testing digital microfinance effects.

2.2 Theoretical Anchorage

The study is anchored on the Diffusion of Innovation Theory (Rogers, 2003), which explains how new technologies and innovations are adopted within a social system over time. The theory identifies five key attributes that influence adoption: relative advantage, compatibility, complexity, trialability and observability. Applied to this study, digital microfinance innovations such as mobile money services, agent banking, digital wallets and crowdfunding represent financial innovations whose adoption among rural entrepreneurs depends on their perceived usefulness, cultural fit, ease of use, demonstrable results and affordability. This theory is suitable because it captures the behavioral and contextual dynamics of rural entrepreneurs in North Central Nigeria, where financial exclusion persists despite national financial inclusion strategies. Adoption of digital microfinance tools is not automatic; it is shaped by digital literacy, trust, infrastructure and socio-cultural acceptance. By grounding the study in the Diffusion of Innovation Theory, the research can explain why some entrepreneurs adopt and actively use digital finance while others remain excluded, thereby linking technological innovation to financial inclusion outcomes in a rural, underbanked context.

2.3 Gaps in extant literature

Although research on digital finance and financial inclusion has expanded in recent years, most studies in Nigeria and across sub-Saharan Africa have concentrated on national or urban contexts, with limited attention to rural entrepreneurs (Hoque *et al.*, 2024; Rao *et al.*, 2024). Much of the existing scholarship emphasizes access to digital platforms such as mobile money or agent banking, but fails to critically examine the dimensions of usage, quality and long-term impact on entrepreneurial outcomes (Káčer *et al.*, 2025). Furthermore, while evidence from East Africa shows that mobile money and digital wallets can significantly enhance inclusion (Lange, 2024; Mkalama *et al.*, 2025), empirical validation in the Nigerian rural context remains scarce. In North Central Nigeria, where infrastructural limitations, cultural reliance on informal finance, and low digital literacy persist, little is known about whether innovations like crowdfunding or agent banking genuinely empower rural entrepreneurs or simply replicate existing inequalities in a digital form (Tomaselli *et al.*, 2025; Elf, 2025). This leaves a critical research gap in assessing the real effect of digital microfinance innovation on financial inclusion within marginalized rural entrepreneurial ecosystems.

3.0 Methodology

The study employs a cross sectional survey research design with quantitative approach to investigate the effect of digital microfinance innovation on the financial inclusion of rural entrepreneurs in North Central Nigeria. The population consists of rural entrepreneurs engaged in small-scale trading, farming-related enterprises and other microbusinesses across Kogi, Niger, Benue, Nasarawa, Kwara, Plateau and FCT. A multistage sampling technique was applied: states and LGAs were purposively and randomly selected and entrepreneurs proportionately drawn to ensure fair representation. Using Yamane's (1967) formula, at a 95% confidence level and a 5% margin of error a minimum sample size of 370 was derived from an estimated population of 10,000 entrepreneurs, but 407 respondents was targeted to account for non-responses according to Rao *et al.* (2024) and 400 instruments were successfully retrieved and used for the study. Data were gathered through a structured questionnaire divided into sections on demographics, digital microfinance innovation (measured through mobile money, agent banking, digital wallets and crowdfunding), and financial inclusion (measured along access, usage, quality and impact). Items were rated on a five-point Likert scale to capture intensity of responses. Instrument validity was established through expert reviews and alignment with prior validated scales, while reliability was confirmed using a pilot study and Cronbach's alpha coefficient threshold of 0.70. Data was collected face-to-face by trained research assistants who administered the questionnaire in English and local languages, considering literacy limitations in rural areas. Ethical standards such as informed consent, confidentiality and voluntary participation was observed. The data was analyzed using SPSS (version 25) for descriptive statistics, correlations and multiple regression to test the hypothesized causal relationships and overall model fit. This approach provides robust, context-sensitive insights into how digital microfinance innovations contribute to the financial inclusion of rural entrepreneurs in Nigeria's North Central region.

4.0 Results and Discussion

4.1 Descriptive Analysis

Table 4.1: Demographic Characteristics of Respondents (N = 400)

Variable	Category	Frequency	Percentage (%)
Gender	Male	220	55.0
	Female	180	45.0
Age Group	18–30 years	140	35.0
	31–40 years	160	40.0
	41–50 years	70	17.5
	51 years and above	30	7.5
	No formal education	60	15.0
Education Level	Primary	100	25.0
	Secondary	140	35.0
	Tertiary	100	25.0
	Small trading	180	45.0
Business Type	Farming-related	150	37.5
	Other microbusiness	70	17.5
	Less than 5 years	210	52.5
Years in Business	5–10 years	130	32.5
	Above 10 years	60	15.0

Source: Researcher field survey, (2025)

Table 4.1 indicated a reasonable gender balance (55% male to 45% female). The age of respondents concentrated in 18–40 (75% combined). Education: large share with primary/secondary; 15% with no formal education. Business types dominated by small trading and farming-related enterprises; most are relatively young businesses (<5 years). Financial inclusion strategies adoption must be tuned by age, education and business type. Young entrepreneurs will adopt digital solutions faster, prioritize smartphone/light-UI solutions and SMS/USSD fall backs for older/less-literate groups.

Table 4.2: Descriptive Statistics of Constructs

Construct	Mean	SD	Min	Max	Cronbach's Alpha
Mobile Money	3.85	0.76	1	5	0.82
Agent Banking	3.72	0.81	1	5	0.79
Digital Wallets	3.68	0.84	1	5	0.83
Crowdfunding	3.40	0.90	1	5	0.77
Financial Access	3.90	0.70	1	5	0.85
Financial Usage	3.75	0.73	1	5	0.81
Financial Quality	3.62	0.80	1	5	0.84
Financial Impact	3.80	0.78	1	5	0.86

Source: Field survey (2025)

Table 4.2 revealed the Mean adoption/experience levels: Mobile Money (3.85) > Financial Access (3.90) > Digital Wallets (3.68) > Crowdfunding (3.40). All constructs show acceptable internal consistency ($\alpha \geq 0.77$), so scales are reliable. This means that Mobile money and financial access scores are high and users are already engaging with transactional digital services and perceive some increase in access. Crowdfunding has the lowest mean and the highest dispersion (SD 0.90), adoption is heterogeneous and likely constrained by trust, awareness, or infrastructure. High Cronbach's alpha across constructs means composite indices are dependable for further analysis (regression). There is need invest in “scale-up” of mobile money features that directly influence access and usage (payments, remittances, basic savings). Crowdfunding requires an ecosystem play (trust mechanisms, escrow, group endorsements) before expecting high take-up in rural settings.

4.2 Inferential Analyses

Table 4.3: Correlation Matrix

Variables	1	2	3	4	5
1. Mobile Money	1				
2. Agent Banking	0.58**	1			
3. Digital Wallets	0.55**	0.60**	1		
4. Crowdfunding	0.40**	0.45**	0.47**	1	
5. Financial Inclusion	0.62**	0.59**	0.64**	0.50**	1

Note: **p < 0.01

Table 4.3 showed a positive, significant correlations across all digital microfinance channels and with financial inclusion (e.g., Mobile Money ↔ Financial Inclusion: $r = 0.62^{**}$). The inter-predictor correlations are moderate to high (e.g., Agent Banking ↔ Digital Wallets: $r \approx 0.60$). This implies that channels are complementary: people who use one digital channel are likelier to use others, a co-adoption effect. The positive correlations with financial inclusion imply strong bivariate relationships, but correlations don't control for confounders.

Table 4.4: Multiple Regression Results (Predicting Financial Inclusion)

Predictor Variable	Beta (β)	Std. Error	t-value	Sig. (p)
Mobile Money	0.28	0.06	4.67	0.000***
Agent Banking	0.22	0.07	3.14	0.002**
Digital Wallets	0.25	0.06	4.12	0.000***
Crowdfunding	0.18	0.05	3.60	0.001**

Model Summary

$R^2 = 0.52$, Adj. $R^2 = 0.51$ $F = 107.3$ ($p < 0.001$)

Note: a. Predictors and standardized betas: Mobile Money ($\beta = 0.28^{***}$), Digital Wallets ($\beta = 0.25^{***}$), Agent Banking ($\beta = 0.22^{**}$), Crowdfunding ($\beta = 0.18^{**}$).

b. Model $R^2 = 0.52$ (Adj. $R^2 = 0.51$), $F(4,395) = 107.3$, $p < 0.001$.

Collectively, the four digital innovations explain 52% of the variance in financial inclusion — that's large for social science studies and indicates these instruments are central determinants in the sample.

4.3 Discussion of results

Objective 1: To examine the effect of mobile money on financial inclusion of rural entrepreneurs.

Mobile money exerts the strongest effect on financial inclusion ($\beta = 0.28$, $t = 4.67$, $p < .001$), demonstrating that it significantly enhances rural entrepreneurs' access, usage, quality and overall impact of financial services. This indicates that mobile money is the leading driver of financial inclusion among the digital innovations considered. Policymakers and microfinance institutions must expand mobile money infrastructure, interoperability, and agent onboarding while ensuring consumer protection to build trust. For entrepreneurs, increased reliance on mobile money enhances business liquidity, savings, and cashless transactions. In relations to Rogers' Diffusion of Innovation theory, mobile money represents a clear relative advantage over cash-based systems, as it reduces transaction costs, increases speed, and enhances accessibility. Its compatibility with rural entrepreneurs' daily financial needs accelerates adoption, while its high observability (through peer usage) further drives diffusion. Da Rin and Hellmann (2020) emphasized the critical role of low-friction payment systems in enabling entrepreneurial finance. Similarly, Rao *et al.*, (2024) highlighted mobile finance as central to the evolution of entrepreneurial finance. Van der Sijde *et al.*, (2025) further confirmed that digital platforms such as mobile money improve SME sustainability in emerging economies. Mobile money is the most potent lever for rural financial inclusion, aligning with DOI's prediction that innovations offering clear relative advantage and compatibility diffuse the fastest.

Objective 2: To assess the role of agent banking in driving rural financial inclusion.

Agent banking has a positive and significant effect ($\beta = 0.22$, $t = 3.14$, $p = .002$), showing that physical agent networks remain essential for rural financial inclusion, especially where literacy and infrastructure constraints exist. Scaling agent networks with sufficient liquidity, training and incentives will increase adoption of digital financial services, particularly for rural populations that require trust and face-to-face interactions. It relation to DOI theory, Agent banking reduces complexity and increases trialability of digital finance by providing human

intermediaries to guide rural users. DOI theory posits that interpersonal channels are critical during the persuasion stage of adoption, and agents play this exact role. Elf (2025) stresses the importance of sustainable entrepreneurial finance ecosystems that rely on intermediaries, while Káčer *et al.*, (2025) demonstrate that such intermediated finance channels are crucial for firm survival during crises. Rao *et al.* (2024) also show that institutional delivery channels strongly influence adoption and continued use of financial innovations. Agent banking is indispensable in bridging digital gaps, consistent with DOI's assertion that interpersonal networks accelerate diffusion when complexity and trust barriers exist.

Objective 3: To evaluate the effect of digital wallets on financial inclusion.

Digital wallets significantly impact financial inclusion ($\beta = 0.25$, $t = 4.12$, $p < .001$), nearly rivaling mobile money. This suggests wallets extend beyond payments to include savings, micro-credit and record-keeping, thus deepening financial usage and quality for rural entrepreneurs. Building interoperable digital wallets with features like savings buckets, merchant payment options and bookkeeping tools will enhance entrepreneurial resilience and financial health. In relation to DOI theory, Digital wallets score high on relative advantage and compatibility by integrating multiple functions into one platform. Their modular features enhance trialability, while visible benefits in business transactions strengthen observability, accelerating diffusion. Correia *et al.*, (2024) find that platform-based financial choices encourage concentrated and deeper engagement, while van der Sijde *et al.* (2025) highlight how such digital services improve SME sustainability. Rao *et al.* (2024) further link digital platforms to long-term entrepreneurial finance trends. Digital wallets are a near-equal driver to mobile money, diffusing quickly due to their compatibility and bundled value proposition as predicted by DOI theory.

Objective 4: To investigate the contribution of crowdfunding to rural financial inclusion.

Crowdfunding has the smallest but still significant effect ($\beta = 0.18$, $t = 3.60$, $p = .001$), meaning it contributes positively but is not yet as transformative as mobile money or wallets. It remains a niche instrument, effective mainly in project-based or community-driven financing. Crowdfunding should be developed gradually with emphasis on building platform trust, transparency and community endorsement. For rural entrepreneurs, it can unlock larger lump-sum financing when traditional credit is inaccessible. However, crowdfunding faces higher complexity and lower compatibility in rural contexts compared to mobile money. Adoption depends heavily on observability of successful campaigns and trust signals, aligning with DOI's prediction that innovations with low trialability diffuse more slowly. Berliner *et al.*, (2025) and Tomaselli *et al.*, (2025) show that crowdfunding adoption hinges on signaling and reputation. Hoque *et al.*, (2024) provide evidence that crowdfunding's role in innovation finance is context-dependent, while Mkalama *et al.* (2025) highlight the importance of early credibility for campaign outcomes. Crowdfunding is an emerging but slower-diffusing innovation, requiring strong trust-building and signaling mechanisms for broader adoption in rural contexts.

Objective 5: To determine the combined explanatory power of digital microfinance innovations on financial inclusion.

The overall model explains 52% of the variance in financial inclusion ($R^2 = 0.52$, Adj. $R^2 = 0.51$, $F = 107.3$, $p < .001$), a substantial effect size in social sciences. This underscores that the four innovations collectively form a powerful ecosystem for enhancing rural financial inclusion. A single innovation cannot achieve optimal inclusion; instead, a synergistic strategy

combining mobile money, agent banking, digital wallets, and crowdfunding is required for maximum impact. DOI emphasizes that adoption accelerates when innovations are complementary, reinforcing one another's relative advantage, compatibility, and observability. Here, the ecosystem effect aligns perfectly with Rogers' view of innovation clusters diffusing faster than isolated products. Rao *et al.* (2024) and Manigart & Wright (2024) highlight the need for integrated approaches in entrepreneurial finance research. Elf (2025) stresses the value of ecosystems, while van der Sijde *et al.* (2025) empirically demonstrate how multiple innovations working together sustain SME finance in emerging economies. The combined strength of digital microfinance innovations confirms DOI's premise that innovation clusters diffuse more effectively, making integration the strategic pathway for deep rural financial inclusion.

5.0 Conclusion and Recommendations

The outcome and implications of the study is synthesized below

5.1 Conclusion

This study demonstrates that digital microfinance innovations significantly enhance rural financial inclusion, with mobile money and digital wallets emerging as the most influential tools, while agent banking and crowdfunding also provide meaningful contributions. Anchored in Diffusion of Innovation theory, the findings affirm that innovations with clear relative advantage, compatibility, and reduced complexity diffuse more rapidly among rural entrepreneurs. The results provide compelling evidence that digital innovations are no longer peripheral financial tools but central enablers of entrepreneurial growth, sustainability, and inclusion. Thus, rural financial inclusion is not merely a function of accessibility but of strategically diffusing and scaling the right innovations across stakeholders.

5.2 Recommendations

- i. Entrepreneurs should actively adopt mobile money platforms as their primary transactional and savings tool, leveraging its ubiquity and reliability to reduce cash dependency and strengthen financial resilience.
- ii. Banks and microfinance institutions should scale agent banking networks into underserved rural areas, ensuring proper training, liquidity management, and digital infrastructure to enhance trust and efficiency.
- iii. Government and regulators should support interoperability policies for digital wallets, ensuring seamless integration across providers while safeguarding users through data protection and consumer protection frameworks.
- iv. Crowdfunding platforms and investors should create localized, trust-based models that align with cultural norms of solidarity finance, while ensuring transparency and post-funding support to rural entrepreneurs.
- v. Development agencies and NGOs should invest in financial literacy programs, digital training, and awareness campaigns that demystify digital finance tools, particularly for women and marginalized groups.

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Ethical Leadership and Employee Well-Being in Nigerian Tertiary Institutions: Evidence from Ekiti State

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Abstract

Ethical leadership plays a vital role in advancing employee well-being, especially within tertiary institutions where staff morale, motivation, and psychological health are influenced by leadership practices. This research explores the influence of ethical leadership on employee well-being in selected public tertiary institutions in Ekiti State, Nigeria. The main purpose is to determine how ethical leadership characterised by fairness, transparency, and integrity affects the psychological and emotional well-being of academic and non-academic staff. A descriptive cross-sectional survey design was adopted; the population comprised 5,647 employees across four institutions, and a sample size of 286 was drawn using stratified random sampling. Data were collected via structured questionnaires, verified through expert assessment and pilot evaluation (Cronbach's Alpha = 0.84), and analysed using descriptive statistics and simple linear regression. The findings reveal that ethical leadership considerably enhances employee well-being ($\beta = 0.781$, $p < 0.001$), with 52.4% of the variance in well-being outcomes explained by leadership behaviour ($R^2 = 0.524$). The study concludes that ethical leadership is essential for fostering trust, motivation, and psychological safety in higher education. Recommendations include institutionalising ethical leadership training, incorporating ethical standards into leadership appraisals, and strengthening staff support systems to promote long-term well-being and institutional performance.

Keywords: Ethical leadership, employee well-being, tertiary institutions, organisational behavior.

1. Introduction

In recent years, the concept of employee well-being has gained increasing prominence within higher education, where staff are confronted with rising performance expectations, limited resources, and intensifying emotional and psychological demands (Elufioye et al., 2024). These pressures have drawn scholarly attention to organisational practices that can foster healthier and more supportive work environments. Among these practices, ethical leadership has become a key influence on employee well-being (Jia et al., 2022).

Ethical leadership, characterised by integrity, fairness, transparency, and accountability, helps to create a workplace culture built on trust, inclusiveness, and psychological safety (Abay & Mengistu, 2023). Research from various countries affirms the positive role of ethical leadership in strengthening employee psychological and emotional well-being. For instance, in the United States, Haidar et al. (2023) discovered that ethical leadership greatly reduced emotional exhaustion and increased job engagement among healthcare workers. Similarly, Rivers et al. (2021) reported that ethical leadership in U.K. student unions enhanced employee well-being

by promoting fairness and trust. In Canada, Smith et al. (2022) found that ethical leadership behaviours contributed to lower psychological distress and greater overall wellness among hospital staff.

Further evidence from Europe supports the notion that ethical leadership reduces workplace stressors such as incivility and burnout by fostering role clarity and transparent communication (De Hoogh & Den Hartog, 2020; Zagenczyk et al., 2021). In Austria, ethical leadership practices among healthcare professionals were linked to reduced emotional fatigue and greater psychological safety. Likewise, Dey et al. (2022) observed that university employees under ethical leadership experienced reduced stress and an enhanced sense of belonging due to fair decision-making and inclusive communication.

Despite the robust global literature, research on how ethical leadership influences employee well-being in African higher education remains scarce. In the Nigerian context, especially in Ekiti State, tertiary institutions continue to face challenges related to poor leadership, inadequate staff welfare, and declining morale. These institutions are frequently affected by non-transparent governance, political interference, and insufficient accountability, all of which undermine employee trust and emotional stability (Katircioglu et al., 2022). Research by Akinwale and Amah (2024) in Nigerian universities showed that ethical leadership enhanced institutional trust, reduced conflicts, and improved staff morale through participatory governance.

In Ekiti State, these challenges are particularly visible. Many tertiary institutions struggle with underfunding, inconsistent salaries, weak leadership structures, and a widespread lack of recognition and encouragement for staff (Adeoye et al., 2023). Staff members frequently report low morale and psychological strain due to inadequate welfare provisions and unresponsive leadership. Institutions that fail to adopt ethical leadership practices often face high staff attrition, lower engagement, and reduced productivity factors that compromise organisational effectiveness (Burhan et al., 2023; Li et al., 2022).

This study seeks to assess the influence of ethical leadership on employee well-being in tertiary institutions in Ekiti State. By investigating this relationship, the study aims to generate empirical insights that can guide the development of value-driven leadership practices, foster supportive institutional cultures, and strengthen organisational performance within Nigeria's higher education sector.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Ethical Leadership

Ethical leadership can be described as the practice of encouraging morally sound behaviour through personal example, thoughtful decision-making, and ethically guided relationships (Brown et al., 2005). Leaders who embrace this style are marked by qualities such as responsibility, honesty, fairness, and genuine care for the welfare of others. In higher education, ethical leadership typically manifests through open governance, consistent treatment of academic and non-academic staff, and a strong institutional commitment to upholding moral and professional standards (Dinc et al., 2014).

Given the collaborative and intellectually autonomous nature of academic environments, ethical leadership plays an essential role in cultivating an atmosphere of honesty and mutual trust. Leaders not only shape formal policies but also influence day-to-day behaviours and institutional values through ethical role modelling (Nguyen et al., 2021). However, while a significant body of research links leadership to performance outcomes, there is still a limited number of studies directly exploring its impact on employee well-being.

2.1.2 Employee Well-being

Employee well-being refers to the psychological, emotional, and at times physical condition of individuals within the workplace. It is often shaped by factors including job satisfaction, recognition, independence, organisational assistance, and a supportive work setting. Within higher education systems, staff well-being is closely tied to job security, leadership style, resource availability, and institutional responsiveness (Kaffashpoor et al., 2020).

Institutions that prioritise staff well-being typically benefit from enhanced performance outcomes and a greater sense of organisational belonging among employees (Irfan et al., 2022). In contrast, environments characterised by managerial neglect, weak leadership, and poor support structures tend to contribute to stress, low morale, absenteeism, and burnout. Within Nigerian tertiary institutions, these challenges are further exacerbated by systemic issues such as inadequate funding and excessive workloads, reinforcing the need for ethical and empathetic leadership practices.

2.1.3 Linking Ethical Leadership and Employee Well-Being

An expanding range of scholarly evidence indicates that ethical leadership is positively linked to employee well-being. Leaders guided by ethical principles often help to reduce work-related stress and contribute to employees' psychological security, emotional stability, and satisfaction in their jobs (Shinwari et al., 2024; El-Gazar et al., 2021). Such leaders promote a work atmosphere where people feel appreciated, respected, and meaningfully involved. For example, Irfan et al. (2022) reported that among nurses, ethical leadership contributed to greater emotional wellness and higher engagement at work, with organisational trust serving as a mediating factor. Similarly, research by Jandaghian-Bidgoli et al. (2023) indicated that ethical leadership in Iranian healthcare settings reduced stress and improved staff satisfaction. While these findings offer strong theoretical support, their primary focus on healthcare contexts limits their generalisability to academic institutions. In tertiary institution, particularly in Nigerian public institutions, employees often work with considerable autonomy and emotional investment in their roles. In such settings, ethical leadership tends to function less as directive oversight and more as a facilitator of fair, respectful, and inclusive organisational climates. Practices such as transparent communication, equitable evaluation, and recognition of individual contributions are essential for supporting employee well-being. Nonetheless, empirical studies examining this link in Nigerian higher education remain limited, indicating a significant gap in the existing research base.

2.2 Theoretical Framework

This study is based on two major theoretical foundations that clarify how ethical leadership relates to employee well-being: Social Exchange Theory (SET) and Ethical Leadership Theory. These frameworks offer complementary insights, merging relational dynamics with moral leadership practices to explain how ethical behaviour among leaders shapes staff outcomes within tertiary institutions.

Social Exchange Theory, first proposed by Blau (1964), posits that social behaviour results from a reciprocal process in which individuals aim to maximise benefits and reduce costs. In organisational contexts, SET suggests that when leaders demonstrate fairness, honesty, and concern for their subordinates, employees tend to respond through constructive workplace actions such as increased commitment, trust, and psychological well-being (Cropanzano & Mitchell, 2005).

Within higher education settings, ethical leadership is frequently reflected through respectful treatment, open communication, and fair decision-making. These behaviours cultivate an atmosphere of trust and emotional safety, improving resilience and morale among staff (Gould-Williams & Davies, 2005). Employees who view their leaders as ethically consistent are more inclined to feel appreciated and, in return, display loyalty, engagement, and extra-role effort.

Ethical Leadership Theory, developed by Brown, Treviño, and Harrison (2005), defines ethical leadership as demonstrating and encouraging morally appropriate conduct through personal actions, interpersonal relationships, and structured reinforcement systems. Leaders serve as ethical exemplars as well as facilitators who articulate moral standards and reward integrity-based behaviour within the organisation.

In tertiary institutions, ethical leadership holds particular importance due to complex interpersonal relations and morally charged decision-making processes. When academic leaders display honesty, fairness, and accountability, they promote institutional justice and psychological clarity. This reduces uncertainty, alleviates stress, and encourages emotional stability and overall well-being among staff (Kalshoven et al., 2011). Furthermore, consistent ethical leadership has been found to strengthen motivation, satisfaction, and institutional commitment (Den Hartog et al., 2012).

Ethical Leadership Theory provides the conceptual anchor for this research, presenting a structured framework for analysing how ethically guided leadership influences employee well-being within tertiary education. The theory highlights the leader's role in modelling values such as integrity, fairness, and openness qualities that encourage trust, emotional safety, and a supportive institutional culture. In Nigerian higher education, where persistent issues such as poor welfare and weak governance prevail, ethical leadership serves as a stabilising force that enhances satisfaction, morale, and resilience. Through its emphasis on moral conduct and values-based decision-making, the theory offers an analytical lens for evaluating how leadership behaviour impacts the emotional and psychological health of both academic and administrative staff.

2.3 Empirical Review

Dust et al. (2024) investigated how ethical leadership influences employee performance, identifying psychological empowerment and emotional exhaustion as the main mediating factors. Using a moderated mediation model and survey data from U.S. professionals, the study revealed that ethical leadership boosted performance through increased empowerment, though this effect diminished when emotional exhaustion was high. The research highlighted psychological processes as essential to leadership effectiveness but was constrained by self-reported data and a homogeneous sample.

Ayad et al. (2024) explored the relationship between ethical leadership, productivity, and well-being in Egypt's tourism industry, employing SEM to analyse responses from 515 employees. The study found that ethical leadership had a positive effect on both outcomes, with well-being acting as a key mediating factor. The authors stressed the importance of ethical leadership in promoting job satisfaction and recommended further studies in other industries to uncover additional mediators and moderators.

Egwainiovo et al. (2023) examined how ethical leadership relates to employee performance in Nigeria's tourism industry using survey data from 256 participants. The findings demonstrated that ethical leadership significantly improved contextual performance and encouraged citizenship behaviours but did not significantly affect task or adaptive performance. The authors proposed continued investigation into performance categories and suggested capacity-building initiatives to strengthen task-based outcomes.

Asif et al. (2023) analysed the impact of ethical leadership on employee innovation in China's service industry, focusing on job crafting as a mediator and self-leadership as a moderating variable. Using SEM and bootstrapped testing on data from 370 employees, the researchers found that ethical leadership encouraged innovation via job crafting, with the relationship enhanced by higher self-leadership. They advocated for broader studies across sectors and cultural settings to improve generalisability.

3.0 Methodology

3.1 Research Design

A descriptive quantitative survey design was employed to explore the link between ethical leadership and employee well-being in tertiary institutions. This design enabled the gathering of numerical data from a defined group at one period, allowing for an empirical evaluation of how ethical leadership behaviours correspond with employees' emotional and psychological states in the academic workplace.

3.2 Area of the Study

The research took place in Ekiti State, Nigeria, concentrating on four public tertiary institutions. These are Ekiti State University, Ado-Ekiti; Federal University, Oye-Ekiti; Federal Polytechnic, Ado-Ekiti; and Ekiti State Polytechnic, Isan-Ekiti.

3.3 Population of the Study

The study population comprised 5,647 academic and non-teaching staff drawn from the four selected public tertiary institutions in Ekiti State, Nigeria. This composition ensured diversity and represented a broad mix of leadership approaches, management systems, and workplace settings pertinent to the focus on ethical leadership.

3.4 Sample Size and Sampling Technique

A total sample of 374 participants was calculated using Taro Yamane's formula, with a 0.05 margin of error:

$$n = \frac{N}{1+N(e)^2}$$

Thus:

$$n = \frac{5647}{1 + 5647(0.05)^2}$$

$$= 374$$

A proportionate stratified random sampling method was applied to guarantee balanced representation across institutions and staff levels. The distribution of respondents is shown below:

Institution	Population	Sample Size
Ekiti State University, Ado Ekiti	2,082	138
Federal University, Oye Ekiti	1,997	132
Federal Polytechnic, Ado Ekiti	1,328	88
Ekiti State Polytechnic, Isan Ekiti	240	16

3.4 Research Instrument

A well-structured questionnaire was designed to collect data on ethical leadership and employee well-being. The tool consisted of closed-ended questions arranged on a five-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5). Two established scales formed its foundation: Ethical Leadership was measured using the Ethical Leadership Scale

(ELS) by Neubert and Dyck (2021), which evaluates perceptions of leader integrity, fairness, and accountability. Employee Well-Being was measured using the Warwick–Edinburgh Mental Well-Being Scale (WEMWBS) by Stewart-Brown et al. (2021), which assesses emotional, psychological, and mental health aspects. To encourage participation and ensure inclusivity, both digital and printed versions of the questionnaire were used.

3.5 Validity and Reliability of the Research Instrument

The reliability and validity of the instrument were ensured through rigorous procedures. Internal consistency was examined using a pilot test with 30 respondents from similar institutions, producing a Cronbach’s alpha value of 0.84, which is above the acceptable benchmark of 0.70 (Nunnally & Bernstein, 1994), indicating strong reliability. Content validity was verified through expert assessment by three scholars in leadership and organisational psychology to ensure item relevance and goal alignment. Construct validity was established using exploratory factor analysis, which showed appropriate loading of items under expected constructs. Face validity was confirmed through pre-testing with academic staff who assessed the clarity and contextual suitability of the questionnaire.

3.6 Model Specification

A basic regression model was formulated to determine how ethical leadership predicts employee well-being:

$$EW = \beta_0 + \beta_1(EL) + \varepsilon$$

Where:

EW=Employee Well-Being, EL = Ethical Leadership, β_0 = Constant, β_1 = Regression coefficient, and ε = Error term.

3.7 Method of Data Analysis

The collected data were processed and analysed using IBM SPSS Statistics (Version 26). Descriptive tools such as means and standard deviations were used to summarise participants’ demographic data and survey responses. Inferential statistics were employed to evaluate the relationship between ethical leadership and employee well-being. Specifically, Pearson’s correlation analysis examined the strength and direction of their association, while simple linear regression tested the hypothesis and measured how well ethical leadership predicted well-being. A 5% significance level ($p < .05$) was applied to all statistical analyses.

4.0 Results and Discussion

This section presents the descriptive analysis used to evaluate how respondents perceived ethical leadership and its influence on employee well-being in selected tertiary institutions across Ekiti State, Nigeria.

4.1 Descriptive Analysis

The analysis summarises the mean values and standard deviations (SD) for ten survey statements assessing ethical leadership and employee well-being, based on feedback from 286 participants.

S/N	Item	Mean	SD
1	Ethical leadership in my institution enhances my satisfaction with my job	3.90	0.383
2	My leaders demonstrate fairness in decision-making	4.07	0.234
3	The ethical values of my leaders make me feel satisfied in my role	3.67	1.114

S/N	Item	Mean	SD
4	Ethical leadership practices make me feel supported in my work	4.22	0.360
5	I am more motivated in my job due to the ethical standards upheld by my leaders	4.23	0.408
6	Ethical leadership positively impacts my well-being at work	4.26	0.447
7	I feel valued and respected due to the ethical behaviour of my leaders	4.27	0.325
8	My leaders' ethical practices improve my overall job satisfaction	4.17	0.393
9	Ethical leadership practices have contributed to a positive work environment	4.18	0.318
10	My leaders act with integrity, positively affecting my well-being and motivation	4.16	0.360

Source: Field Survey (2025)

The outcomes show consistently high averages across all items, suggesting that participants largely believe ethical leadership has a positive effect on their well-being. Items 6–9, each above 4.15, highlight strong agreement that ethical leadership fosters support, satisfaction, and motivation in the workplace. The small SDs, especially for items concerning fairness, integrity, and support, indicate close agreement among respondents.

4.2 Regression Results

To test how ethical leadership influences employee well-being, a simple regression model was applied. Ethical leadership served as the predictor variable, while employee well-being represented the dependent variable.

Variable	Coefficient (B)	Std. Error	t	Sig. (p)
Constant	1.214	0.175	6.951	0.000
Ethical Leadership	0.781	0.044	17.665	0.000

Model Summary

Statistic	Value
R	0.724
R ²	0.524
Adjusted R ²	0.522
F	312.045
Sig. (ANOVA)	0.000

Dependent Variable: Employee Well-Being

Source: Authors' Field Survey (2025)

The correlation ($R = 0.724$) reflects a strong positive link between ethical leadership and employee well-being. The coefficient of determination ($R^2 = 0.524$) indicates that ethical leadership explains 52.4% of the variance in employee well-being. The $t = 17.665$ and $p = 0.000$ confirm a statistically significant relationship at $p < .05$. The regression coefficient ($B = 0.781$) implies that each one-unit increase in ethical leadership results in a 0.781-unit improvement in well-being.

4.3 Discussion of Findings

This research explored how ethical leadership shapes employee well-being in selected tertiary institutions across Ekiti State, Nigeria. Regression analysis identified a strong, statistically significant connection ($R = 0.724$; $R^2 = 0.524$), revealing that ethical leadership accounts for 52.4% of differences in well-being levels. This finding suggests that leadership practices rooted in ethical values significantly influence employees' psychological states. High means for items such as “*Ethical leadership positively impacts my well-being at work*” ($M = 4.26$) and “*I feel valued and respected due to the ethical behaviour of my leaders*” ($M = 4.27$) affirm this view. These results are consistent with earlier studies highlighting the mental-health benefits of ethical leadership. Heuss et al. (2023) found that ethical communication and principled actions by leaders improved employee well-being. Dinc et al. (2014) noted that ethical leadership enhances job satisfaction and organisational commitment, both tied to well-being. Similarly, Samad et al. (2022) showed that ethical and transformational leadership styles reduce turnover and create emotionally supportive environments, while Akinbode et al. (2024) demonstrated that ethical leadership improves well-being by encouraging employee voice and satisfaction. Within Nigeria's tertiary institutions often challenged by limited funding, poor governance, and weak staff welfare ethical leadership acts as a stabilising force, strengthening motivation, resilience, and institutional effectiveness.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study examined how ethical leadership affects employee well-being in selected tertiary institutions within Ekiti State, Nigeria. The analysis revealed a clear, positive association between the two variables, highlighting the importance of transparent, fair, and integrity-driven leadership in boosting morale, motivation, and psychological strength. Ethical leaders promote trust, job satisfaction, and supportive work environments factors that jointly enhance individual productivity and long-term institutional performance, particularly in contexts of limited resources and governance challenges.

5.2 Recommendations

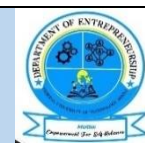
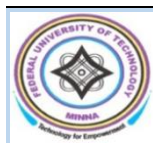
In view of the findings, tertiary institutions in Ekiti State and similar settings should embed ethical leadership values in their management structures. Investing in training and professional development that emphasises accountability, fairness, transparency, and inclusiveness is essential. Leadership assessments should include ethical-behaviour indicators to reinforce these standards throughout the organisation. Cultivating ethical leadership at every level will not only elevate employee well-being but also fortify institutional integrity, engagement, and sustainability.

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Adoption and Use of Social Media Influencers for the Promotion of Face-Mask Campaigns during COVID-19 Pandemic in South-West, Nigeria

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Abstract

The use of face masks during COVID-19 was widely promoted on the conventional media of communication such as radio, television and newspaper. The use of social media for face mask campaigns was largely neglected during COVID-19. However, studies are unclear about how social media influencers affect the intention of their followers to embrace the use of face masks during COVID-19 pandemic. This study investigated the adoption and use of social media influencers for the promotion of face-mask campaigns during covid-19 pandemic in south-western Nigeria. The study adopts a mixed research method with the aid of structured questionnaire and in-depth interview to collect data from the respondents. Findings showed that socio-economic status is a major factor in the adoption of face masks during COVID-19 pandemic. Findings equally showed that credibility of the social media influencers informed their followers' adoption of face mask campaigns during COVID-19 pandemic and findings showed that barriers inherent in the adoption of masks among people are the religious, cultural beliefs and poor attitude to health issues. Thus, it is recommended that Local Government Areas deemed to be closer to the people should take the issues of social investments and empowerments very seriously. An association of social media influencers and a regulatory body must be established to regulate their online activities of the social media influencers in our society. Also, enlightenment programmes must be initiated by online and offline media to educate people about the embracement of health campaigns initiated on social media. In spite of the seeming distrust of social media messages, some of the anchors on social media still enjoy some level of credibility.

Keywords: Social Media, Influencers, Face Mask Campaigns, COVID-19, Pandemic

1.0 Introduction

Social media influencers are also known as internet celebrities. Social media has presented a new health promotional strategy where health workers, policy makers and governments form alliance with social media influencers to effect certain health behavioural or attitudinal changes (Guinez-Cabrera et al., 2020). Social media influencers are the opinion leaders of modern society, especially among millennials. They influence their followers in so many ways (Castro, 2023). Using social media influencers has become part of health promotion strategies to reach target audience in order to persuade them to embrace certain health behavioural or attitudinal change in most societies of developing nations. Social media influencers initiate and maintain a set of communication skills for building and managing trust between themselves and their followers (Castro, 2023). Social media influencers are young people who have achieved enormous followership, popularity, and influence due to their constant online presence on

global social media platforms such as TikTok, Facebook, YouTube, Instagram and Twitter (Castro, 2023). Social media influencers are capable to influence the attitudes, opinions, views, behaviour, and perceptions of their massive followers (Castro, 2023). Health promotion messages spread by social media influencers reach both the intended and unintended target prospects on social media. At the turn of the millennium, the health sectors across the globe have witnessed the rise in the use of social media influencers to promote health messages across the world (Cox and Paoli, 2023). Social media influencers are able to partner health professionals and policy makers to reach young members of the public because of the pervasive nature of social media (Alam et al., 2024). The perceived credibility and trust of social media influencers by their followers determine the adoption or rejection of health-related messages propagated by the SMIs. Compared to health promotional strategies on conventional media of mass communication, social media influencers are more reliable and effective in influencing the attitudes and behaviour of target audience for which health campaigns are meant (Liu and Zheng, 2024).

Although, people can choose to wear or not wear face mask during COVID-19 pandemic, studies have shown that face masks, to a large extent, has curtailed the spread of COVID-19 pandemic (Yin and Lee, 2024). Post-pandemic era has even witnessed the surge in the use of face masks to prevent respiratory diseases among health-conscious people. Available information on the adoption and use of face masks as influenced by social media influencers is lacking in South West, Nigeria. Although, social media influencers affect the behaviour and attitude of their followers towards a certain action, studies are unclear about how social media influencers affect the intention of their followers to embrace the use of face masks during COVID-19 pandemic (Roldan-Gallego et al., 2023). The modern health education campaigns have witnessed the use of social media influencers in collaboration with the mainstream media to enlighten young people about certain health issues such as COVID-19, HIV/AIDS, Ebola among others. In spite of the declining in the issues of coronavirus, airports, public places and many government facilities still require the use of face masks (Zhang et al., 2024).

The adoption of social media influencers to promote the use of face-masks during pandemics has not caught the attention, and therefore, remain understudied. Literature is very scanty about the adoption of SMIs as a means of promoting the use of face-masks during COVID-19 pandemics. This calls for empirical and systematic investigations.

Objectives of the Study

The objectives of the study are to:

1. understand ways by which social media influencers affect intention to embrace the use of face masks among people in South West;
2. know the factors that account for the adoption of face masks during COVID-19 pandemic in South West;
3. know how social media celebrities' personality traits influence the adoption of face masks campaigns among people in South West,
4. ascertain ways in which online followers of social media influencers emulate their behaviours; and
5. ascertain the barriers that exist in the adoption of social media influencers for the promotion of face masks during COVID-19 pandemic in South West.

2.0 Literature Review

Face mask is a personal protective mechanism against the spread of the virus from the infected persons to healthy individuals. The use of face masks as a barrier to infection of coronavirus is still very important in spite of the reduction in the menace of the disease globally.

2.1 Conceptual Review

COVID-19 Pandemics

COVID-19 has continued to ravage the world in spite of the availability of vaccines, social distance and the use of face masks to end the pandemic and keep the lives of the citizens (Mokeddem et al., 2024). To prevent the spread of coronavirus, the World Health Organisation (WHO) suggested the use of face masks to curtail the spread of the virus (Zhang et al., 2024). COVID-19 has resulted in the death of 6.9 million people globally and 772 Coronavirus worldwide (Zhang et al., 2024). The estimated users of face masks to prevent the spread of COVID-19 in Africa are about 7 million people, while they were about 2.2 million users during COVID-19 in Asia (Amin et al., 2024). People were forced to wear face masks during COVID-19 pandemic in South-Western Nigeria to prevent the spread of the virus. One of ways to prevent the spread of coronavirus in the crowded areas is the use of face masks. Face masks are inexpensive but are effective in the prevention of the spread of coronavirus (Tomina et al., 2024). Respiratory droplets such as coughs, sneezes, talks are expelled from mouths, and noses. Respiratory droplets are a route for the transmission of contagious diseases. However, face masks serve as a barrier that impedes the contagion of COVID-19 virus in the process of inhaling and exhaling (Goncalves and Weon, 2024). The improper and long use of face masks can reduce their effectiveness against coronavirus. Regular replacement of face masks is very important, but challenging in poor homes and communities (Kim et al., 2024). Social media influencers lead many online subjects or citizens, and can affect their health behaviour.

Social Media Influencers and Face Mask Campaigns

A contemporary issue in the public health sector is the potential of social media influencers to effect certain health behavioural change among people (Powell and Pring, 2024). There is an increased level of health recommendations and advisories offered by social media influencers on different social media platforms (Pfender and Bleakley, 2024). Social media influencers are good endorsers of the use of face-masks during COVID-19 pandemics (Yildirim, 2021). Social media influencers are divided into five types: idols, lifestylers, artists, activists and experts. Idols are highly popular social media influencers and their main focus is on themselves. Lifestylers are social media influencers who hold discussions about lifestyles such as leisure activities, beauty, health, tourism and cooking. Artists, as social media influencers, use their artistic knowledge to create artifacts. Activists, as social media influencers, present their interpretations of diverse issue bordering on social justice, feminism, human rights among others. Experts, as social media influencers, hold certain skills of a particular field and demonstrate their knowledge to enlighten others on social media (Cho et al., 2022). The important roles of social media influencers became more evident during COVID-19 pandemic. Social media influencers can affect how people perceive health issues by sharing videos, posts and other forms of content on social media platforms. The importance of social relationships and interactions for people's well-being, especially during restriction of movement cannot be far to seek (Levesque et al., 2023). Social media influencers filled in the vacuum of physical interactions during COVID-19 pandemic.

2.2 Theoretical Framework

The study is anchored on social learning theory. Social learning theory assumes that individuals learn by way of observing others and modelling their behaviours (Mangal et al., 2024). The theory is propounded by Bandura in 1977. The main assumptions of the theory are that individuals are inclined to learn and adopt the behaviours and attitudes of their role models by emulating their behaviours, dresses and even manner of speaking. Role models, in this context, are the social media influencers and celebrities, who, because they command a large followership, influence the behaviour, attitudes and thoughts of their followers. Surfers of internet and users of social media are persuaded to embrace the use of face-masks to prevent the spread of the contagious coronavirus through modelling inspirational behaviour (Awaale, 2024). As social learning theory assumes, imitative conduct is learnt and adopted through the observation of significant role models such as social media influencers and internet celebrities (Tashiha, 2024). social learning theory is helpful; in the explanations and understanding several imitative behaviours such as dressing like one's social media influencers, plaiting one's hair like that of one's social media role models and even talking like one's social media preferred celebrities (Tasbiha, 2024).

Social learning theory is relevant to this study in diverse ways. The use and the online talks about face-masks by social media influencers and celebrities influenced their followers to embrace the use of face masks. While COVID-19 lasted, many social media influencers encouraged and talked their followers into adopting the use of face masks to curtail the spread of the contagious coronavirus. While many followers adopted the use of face masks because their social media influencers were using it, others were persuaded before they started its use.

2.3 Empirical Review

Kim and Kim (2022), examined the relationships between social media influencers' attributes and perceived social responsibilities of the e-influencers among Consumers in USA. The study obtained and analysed data from 388 social media users in the United States through Amazon's Mechanical Turk with multivariate analyses to test the hypothesized associations among the variables in this research work. The findings showed that perceived friendship was most importantly affected by language similarity, as well as self-disclosure, but it did not have a significant effect on psychological well-being of the people. Also, perceived friendship was majorly impacted by psychological well-being and loyalty, and psychological well-being was apparently impacted by loyalty. The gap identified was a lopsidedness of data collected from the social media influencers and data collected from the consumers in this study.

Essa *et al.* (2021) conducted a study on face masks, the use of respirators, social distancing and personal hygiene in the course of the coronavirus pandemics in Iraq. The authors found that certified face masks and respirators, their compositions and filtration mechanisms should be made known to prevent confusion and misinformation about coronavirus pandemics. The gap inherent in the study is that no targeted segment of human population was mention. Also, the use of media of communication for enlightenment campaigns about coronavirus was missing.

Cheng *et al.* (2020) examined the effect of community-wide mask usage to control coronavirus disease 2019 (COVID-19) in Hong Kong Special Administrative Region. Interview was used to collect data from patients presenting with respiratory symptoms at outpatient clinics or hospital wards were screened for COVID-19 per protocol. The findings indicates that incidence of COVID-19 in Honk Kong was significantly lower in Hong Kong than in Spain, Italy and the UK. The gaps identified was that Africa was not included in the study.

3.0 Materials and Methods

The study adopts a mixed research method with the aid of structured questionnaire and in-depth interview to collect data from the respondents. Survey method is popularly used to test and examine the opinions, attitudes, behaviour, views and attitudes of a group of individuals on a subject-matter of investigation. Survey design, as Ali et al., (2022) averred, is best used to gain information about a large number of people and measure public attitudes and behaviour in a large population. In-depth interview attempts to foster knowledge about individual experiences and views on an issue under investigation (DiCicco-Bloom and Crabtree, 2006).

Sampling Techniques

The South-Western geo-political zone of Nigeria has six different states: Oyo, Osun, Ogun, Lagos, Ekiti and Ondo States. Each of the six states has urban-urban, rural-urban and rural-rural areas. Thus, a multi-stage sampling was used to select samples for the study. A multi-stage sampling was adopted to divide the south-west geo-political zone into six states. A multi-stage sampling allows researchers to collect samples from the clusters until the selection of random sample of subjects is accomplished.

Using a purposive sampling, the state capital of each of the six states was selected for the study. A purposive sampling is used because of its features that are relevant to the study. The state capital of each of the six states was selected because it is home to most social media influencers in south-western Nigeria. Thus, Ibadan in Oyo State, Abeokuta in Ogun State, Ado-Ekiti in Ekiti State, Osogbo in Osun State, Ikeja in Lagos State, Akure in Ondo State were selected. The six state capitals were chosen because social media influencers in those state capitals had knowledge of face-mask campaigns and promotion during COVID-19 pandemic in south-western Nigeria. with the use of purposive sampling, researchers further selected areas that have the concentration of widely exposed and enlightened individuals who are able to express their thoughts, opinions, beliefs, views and knowledge about the use of social media influencers for the face masks campaigns during COVID-19 pandemic in south-western Nigeria. As a result, Ikeja was selected in Lagos, Agbowo was selected in Ibadan, Nelson Mandela Freedom Park was selected in Osogbo, Adebayo Area was selected in Ado-Ekiti, Asero Area was selected in Abeokuta and Alagbaka Area was selected in Akure metropolis. In-depth interview was used to harvest the opinions and views of the social media influencers on their use for face mask campaigns during COVID-19 pandemic in the south-western Nigeria. Since it is hardly possible to meet social media influencers face-to-face for the in-depth interview session, convenience sampling was used to select the in-depth interview participants. Since it is impossible to interview all the social media influencers in the six capitals of the south west, two most prominent social media influencers were selected in each of the states of the south west. They were selected on the basis of their knowledge about campaigns for the use of face masks during COVID-19 pandemic. Consequently, one Lagos-based TikTok influencer and one Lagos-based Facebook influencer were selected in Lagos State, one Ibadan-based TikTok influencer and one Ibadan-based Facebook influencer were selected in Oyo State, one Osun-based TikTok influencer and one Osun-based Facebook influencer were selected in Osun State, one Akure-based TikTok influencer and one Akure-based Facebook influencer were selected in Ondo State, one Ado-Ekiti-based TikTok influencer and one Ado-Ekiti-based Facebook influencer were selected in Ekiti State, while one Abeokuta-based TikTok influencer and one Abeokuta-based Facebook influencer were selected in Ogun State. Through in-depth interview guides, structured interviews were forwarded to the personal emails and Whatsapp platforms of the selected social media influencers.

2006 Projected Population of the State Capitals in the South-West of Nigeria

States	Projected Populations of their State Capitals	Sample Size
Ekiti (Ado-Ekiti)	308,621	
Osun (Osogbo)	156,694	
Ondo (Akure)	360,268	
Ogun (Abeokuta)	449,088	
Lagos (Ikeja L.G.A)	313,196	
Ibadan (Ibadan North East L.G.A)	374,772	
Total	1,960,639	Approximately 400

Source: 2006 Population Census

For the in-depth interviews, twelve social media influencers were selected in all the six state capitals in the south west. According to 2006 National Census, the projected population of six state capitals in the South-West geo-political zone of Nigeria stands at 1,960,639. However, for the survey method, using Taro Yamane sample size selection technique, 400 respondents were approximately arrived at. Thus, 400 respondents were selected to fill the copies of the questionnaire. Two social media influencers were selected in each of the states in the south west. On the basis of the differentials in the population of the selected state capitals and the demographic characteristics of the respondents, all of the respondents were purposively selected in various state capitals of the South West geo-political zone of Nigeria. Thus, 80 respondents were selected in Ikeja, Lagos State, 65 respondents were selected in Ibadan Oyo State, 65 respondents were selected in Osogbo, Osun State, 60 respondents were selected in Akure, Ondo State, 60 respondents were selected in Abeokuta, Ogun State, while 60 respondents were selected in Ado-Ekiti, Ekiti State. Out the 400 copies of the questionnaire administered in the six state capitals, 394 copies of the questionnaire were returned and found useful. The respondents in the respective states were selected on the basis of the population of each of the state capitals in the south west. Data collected were analysed using frequency and simple percentage. Data collected through the in-depth interviews were analysed using explanation building and equally analysed thematically in sync with objectives of this study.

Ethical Considerations

The in-depth interview session maintained a high sense of ethical standard and confidentiality because the identities of social media influencers who participated in the in-depth interview session were never disclosed.

4.0 Results and Discussions**Quantitative Data Analysis and Interpretation****Table 1: Knowledge of factors that account for the adoption of face masks**

Options	Frequency	Percentage
Socio-Economic Status	171	43.4%
Educational Status	98	24.9%

History of Allergic Diseases	40	10.2%
COVID-19 Vaccination Status	85	21.5%
Total	394	100%

Source: Researchers' Fieldwork, 2025

Table 1 shows that 171 respondents representing 43.4% stated that socio-economic status accounted for their adoption of face masks during COVID-19 pandemic, 98 respondents representing 24.9% affirmed that educational status accounted for their adoption of face masks during COVID-19 pandemic, 40 respondents representing 10.2% averred that history of allergic diseases accounted for their adoption of face masks during COVID-19 pandemic, while 85 respondents representing 21.5% maintained that their COVID-19 vaccination status accounted for their adoption of face masks during COVID-19 pandemic.

Table 2: Understanding of how Social Media Influencers' Personality Traits Influence the Adoption of Face Masks Campaigns

Options	Frequency	Percentage
Affability to the Audience	9	2.3%
Credibility of the Social Media Influencers	251	63.7%
Quality Content Creation	44	11.2%
Appearance of the Social Media Influencers	90	22.8%
Total	394	100%

Source: Researchers' Fieldwork, 2025

Table 2 shows that 9 respondents representing 2.3% averred that affability to the audience informed their adoption of social media influencers' face mask campaigns during COVID-19 pandemic, 251 respondents representing 63.7% affirmed that credibility of the social media influencers informed their adoption of face mask campaigns during COVID-19 pandemic, 44 respondents representing 11.2% stated that quality content creation by social media influencers informed their adoption of face mask campaigns during COVID-19 pandemic, while 90 respondents representing 22.8% maintained that online appearance of social media influencers informed their adoption of face mask campaigns during COVID-19 pandemic.

4.1 In-Depth Interview Reports

Qualitative Data Analysis and Interpretations

Theme 1: Ways Social Media Influencers Affect Intention to Embrace the Use of Face Masks

Data from the in-depth interview showed ways by which social media affect intention of the respondents to embrace COVID-19 during pandemic. The discussions revealed that social media influencers are regarded as innovators by their online followers. Providing more insights about a social media influencer based in Lagos State said:

Many of our online followers regard us as innovators that create new ideas for their enlightenment and education. Although, many social media influencers are opinion leaders in

different areas and each can only be an innovator on a particular subject-matter. Like me, I treat issues about health and many women love to listen to me when I discuss issues that border on women and children's health. However, in the COVID-19, my dresses and other discussions online usually bordered on the prevention of the disease. As a matter of fact, I advocate and recommend the use of face masks to people during the time. I usually enlightened my followers that they can sew their face masks themselves at home because I understood that some people may not be able to afford face masks, especially the one that are expensive. Many of my online followership during my programme also asked questions regarding different kinds of face masks that people use and the convenience in using them. They ask questions mostly in the comment section, and I replied at my convenience because not all messages you can attend to during the programme.

Another in-depth interview participant, who is a social media influencer in Ibadan, said:

Enlightenment discussions whenever I resumed my online programmes have actually made many of my online followers to embrace the use of face masks. As a matter of fact, many of them also commented on the advantages and benefits of the face masks during my live programmes. They usually did this in the comment section. Some of them are nurses, medical doctors and other health workers who also dropped messages that could benefit our online followers in the comment section. Most of the online followers prefer to even source their information from our platform because they believe that unlike radio, television, newspaper, they can express their view regarding the subject-matter of discussion unlike what obtains on radio, television, newspapers and other mass media.

Theme 2: Ways Online Followers of Social Media Influencers Emulate their Behaviours

Data from the in-depth interview showed barriers in the adoption of social media influencers for the promotion of the face masks campaigns during COVID-19 pandemic. The discussions revealed that online followers do not only emulate dress sense of social media influencers because of the credibility attached to the programme, but also embrace enlightenment discussion we make available online. Providing more insights about ways online followers of social media influencers emulate their behaviours, a social media influencer based in Osogbo, Osun State, said:

We got to know that our enlightenment discussions online about COVID-19 pandemic really had impacts on our numerous online followers through their comments and postings, especially after the programme. And the beauty of online programme we do is that all my online followers could always have access to our programmes whenever they come online unlike the messages of other electronic media such as radio and television which are transient. Many of our followers online post the videos of different kinds of face masks their family members used during COVID-19 to prevent the transmission of the disease. In fact, at times, we used to allow phone-in section where our online followers would discuss the strengths and weaknesses of different face masks. Health workers among the callers usually gave a brief lecture about the importance and benefits of face masks for the enlightenment of other online followers.

Another in-depth interview participant, who is a social media influencer in Abeokuta, Ogun State, said:

Most of our online followers are youths. And you know that many of the youths like to behave the way their role models behave. Therefore, most of our female online followers dress the way we did including the use of face masks. Some of them even pass complimentary remarks about my dresses in the comment section. However, due to the fact that government at that time was making the use of face masks compulsory, especially in crowded places, we had no choice but

to also repeatedly urge our online followers to make use of the face masks, especially when they were going to markets, supermarkets, malls and other places that have a concentration of people.

Theme 3: Barriers in the Adoption of Face Masks among people

Data from the in-depth interview showed barriers in the adoption of social media influencers for the promotion of the face masks campaigns during COVID-19 pandemic. The discussions revealed that barriers inherent in the adoption of masks among people are the religious, cultural beliefs and poor attitude health issues. Providing more insights about the barriers inherent in the adoption of face masks among people, a social media influencer based in Akure, Ondo State, said:

As important as the use of face masks was during COVID-19 pandemic, some online commenters maintained that COVID-19 pandemic was never real. Some of our online commenters never believed in the existence of the communicable disease. Some of them usually preached against the use of face masks. Some of the even talked about the use of local medicinal herbs for the cure of COVID-19 in lieu of use preventive mechanism like face masks. Some commenters even said the disease is not peculiar to African continent. They usually claimed that we have hot climate and that they cannot be affected by the communicable disease. Besides, some men seemed not help in the spread of caution messages we made available on our online programmes. Some male adherents of a religious sect never allowed their wives and children to use the face masks.

Another in-depth interview participant, who is a social media influencer in Ado-Ekiti, Ekiti State, said:

Barriers to the use of face masks among people in Ado-Ekiti here are varied. Many of Ekiti towns and villages, apart from those in the state capital here, never get exposed to our online messages because of the agrarian and rural nature of this state. Few individuals who are resident in the state capital had enlightenment messages about the issue of face masks use during COVID-19 pandemic. Other issues that impede the use of face masks among our numerous online followers are the unreasonable religious beliefs among some people. Many of our religious followers do not seem to take precautions about the COVID-19 pandemic, instead, they tended to heap blames on unforeseen evil forces. Besides, some of the online commenters usually prescribed some herbal medicines for the cure of the disease in place of taking to the recommended means of preventing and curing the communicable disease.

5.1 Discussions

Findings showed that socio-economic status is a major factor in the adoption of face masks during COVID-19 pandemic. The findings are in sync with the position of Liu and Zheng (2024) who found that the threats of hunger, poverty and other socio-economic realities have hindered people of developing countries like Nigeria to abandon the prevention of the menace of COVID-19 pandemic to looking for ways to sustain their family members.

Findings showed that credibility of the social media influencers informed their adoption of face mask campaigns during COVID-19 pandemic. The findings are in sync with the position of Liu and Zheng (2024) who found that perceived credibility and trust of social media influencers by their followers determine the adoption or rejection of health-related messages propagated by the SMIs. Compared to health promotional strategies on conventional media of mass communication, social media influencers are more reliable and effective in influencing the attitudes and behaviour of target audience for which health campaigns are meant.

Findings showed that social media influencers are regarded as innovators by their online followers. The findings agree with the position of Johnson (2021) who found that social media influencers have become agents of change on health issues in the developing nations of the world. He further maintained social media have capability to mobilise the young and the old to embrace certain health behaviours.

Findings showed that online followers do not only emulate dress sense of social media influencers because of the credibility attached to their online programme, but also embrace enlightenment discussions we make available online. The findings agree with the position of Aw and Chuah (2021) who found that unprecedented interactivity of social media has enabled the social media influencers to develop close relationships with their online followers. As Aw and Chuah (2021) found, social media influencers do not only influence the behaviour of their online followers but also their followers dress sense, including the use of face masks, especially during COVID-19 pandemic.

Findings showed that barriers inherent in the adoption of masks among people are the religious, cultural beliefs and poor attitude health issues. The findings agree with the position of Littlejohn et al., (2021) who found that cultural and religious barriers are hinderances to the pervasive use of face masks among people during COVID-19 pandemic in South-Western Nigeria. Littlejohn et al., (2021) also note that cultural barriers impose obstacles to a more productive engagement between the social media influencers and their online followers.

5.2 Conclusion and Recommendations

Socio-economic status is a major factor that affects the use of face masks during COVID-19 pandemic. Not many online followers are actually financially empowered to obtain face masks to prevent the spread of COVID-19 pandemic. Developing nations like Nigeria have a lot to do regarding the social empowerment of the downtrodden in developing societies to attain development. Development is not about building bridges and constructing roads, but it is about taking people out penury and make them to be gainfully engaged to earn decent livelihoods. Thus, local government areas deemed to be closer to the people should take the issues of social investments and empowerments very seriously.

The perceived credibility of the social media influencers informed their adoption of face mask campaigns during COVID-19 pandemic. Credibility is an important issue in the operations of online and offline media. Thus, an association of social media influencers and a regulatory body must be established to regulate their online activities of the social media influencers in our society.

Social media influencers are regarded as innovators by their online followers. Since social media influencers command enormous respect among people, especially the youths, governments at all levels must use them to propagate messages about the prevention of COVID-19 disease in their various states and at local government levels.

Online followers do not only emulate dress sense of social media influencers because of the credibility attached to their online programme, but also embrace enlightenment discussions we make available online. Social media influencers are very influential set of people and they create either positive or negative impressions about many issues. Therefore, their online appearance must give credibility to issues they intend to discuss online.

Barriers inherent in the adoption of masks among people are the religious, cultural beliefs and poor attitude health issues. Enlightenment programmes must be mounted by online and offline media to educate people about the embracement of health campaigns mounted on social media.

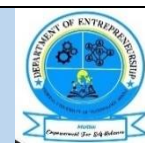
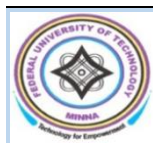
In spite of the seeming distrust of social media messages, some of the anchors on social media still enjoy some level of credibility.

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Artificial Intelligence and New Venture Creation in Nigeria

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Abstract

Artificial Intelligence (AI) is reshaping the entrepreneurial landscape globally, offering transformative tools for innovation, efficiency, and scalability. In Nigeria, AI adoption is emerging as a strategic driver for productivity, competitiveness, and market expansion, particularly in fintech, agritech, healthcare, and e-commerce. This study examines the necessity of exploring the relationship between AI into new venture creation in Nigeria, highlighting its potential to stimulate innovation, enhance decision making and promote sustainable business development. Understanding how AI can be applied to Nigerian startups is crucial for addressing pressing socio-economic challenges such as unemployment, low productivity and limited access to market intelligence. Furthermore, the study emphasizes the importance of building digital competencies among entrepreneurs, strengthening institutional frameworks, and creating supportive policies for technology-driven ventures. This study adopts a secondary research methodology, relying on existing literature and empirical studies to analyze the impact of artificial intelligence on new venture creation. Data were obtained from other journals, reports and academic databases. Drawing on conceptual and empirical literature to explore applications, sector-specific use cases, and adoption challenges. Findings reveal that AI enables startups to leverage predictive analytics, natural language processing, and intelligent automation to improve decision-making, personalize services, and reduce operational inefficiencies. However, barriers such as inadequate infrastructure, limited technical skills, high costs, and regulatory uncertainty constrain adoption. The paper recommends targeted policy interventions, capacity-building programs, and public-private partnerships to unlock AI's full potential in the Nigerian entrepreneurial ecosystem.

Keywords: Artificial Intelligence, New Venture Creation, Entrepreneurship, Innovation, Nigerian Startups

1.0 Introduction

The emergence of Artificial Intelligence (AI) is redefining the dynamics of entrepreneurship globally, offering transformative tools for innovation, efficiency and scalability in new venture creation. The Nigerian government launched initiatives like the National Artificial Intelligence Strategy (NAIS) to harness AI for economic growth, social inclusion and technological leadership. Artificial Intelligence is being recognized as a catalyst for overcoming traditional business constraints such as limited access to finance, infrastructure gaps and market inefficiencies Iwu and Osarumwense (2022). Artificial Intelligence technologies, including machine learning, natural language processing and intelligent automation are being integrated into startups in diverse sectors such as agriculture, healthcare, fintech and logistics, enabling data driven decision making, customer personalization and operational efficiency (Adegbite, and Machethe, 2020).

Nigeria's entrepreneurial ecosystem has witnessed a surge in digital innovation, partly driven by the country's increasing mobile penetration and internet connectivity. As new ventures strive

to remain competitive and sustainable in a fast evolving digital economy, AI offers novel pathways to develop products optimize services and respond to market demands with agility Oteh and Idemudia, (2021). However, the adoption of AI in new venture creation is not without challenges. Issues such as inadequate digital infrastructure, insufficient technical skills, regulatory ambiguity and ethical concerns surrounding data privacy which continue to impede the widespread implementation of AI solutions across the country Eneizan, Obadiaru, and Wahab, (2020). Despite these challenges, the potential of AI to revolutionize entrepreneurship in Nigeria remains significant. As government agencies, private sector actors and academic institution begin to prioritize digital transformation, there is an increasing need to explore how AI can be easily harnessed to foster innovation and growth in new ventures. This paper investigates the role of AI in enhancing entrepreneurial development in Nigeria, with a focus on its applications, benefits, challenges and implications for future policy and practice.

2.0 Literature Review

The integration of Artificial Intelligence (AI) into entrepreneurship has attracted growing research attention, particularly regarding its impacts on new venture creation especially in developing economies like Nigeria. The relevant literature is reviewed hereunder.

2.1 Conceptual Review

The conceptual review proceeds to synthesize key conceptual relationships and proposes a framework for understanding how AI can act as an enabler of entrepreneurial development in emerging economies, with special focus on Nigeria's socio-economic context.

2.1.1 Artificial Intelligence (AI)

According to the National Artificial Intelligence Strategy (NAIS, 2024), AI is regarded as a multi-purpose technology capable of transforming production, economic growth and public service delivery with a focus on human-centered, ethical design and social inclusion. Artificial intelligence is defined as the system that can interpret external data (such as agricultural, medical, financial), learn patterns and make decisions to accomplish goals efficiently.

The rapid advancement of Artificial Intelligence (AI) is transforming how new ventures are conceived, launched and scaled across the globe. AI technologies such as machine learning, predictive analytics and natural language processing enable entrepreneurs to recognize opportunities, improve decision-making and innovate business models more efficiently than ever before. In Nigeria AI is emerging as a key driver of digital entrepreneurship and economic diversification, offering solutions to persistent challenges in productivity, access to markets and business efficiency.

AI automates labour-intensive tasks-fraud detection in fintech, diagnostics in healthcare, or agritech advisory, enhancing productivity and access. According to Kaplan and Haenlein (2019) AI is a system's ability to correctly interpret external data, to learn from such data and to use those leanings to achieve specific goals and tasks through flexible adaptation. Nigeria is projected to rank among the top AI adopting economies in Africa, with AI potentially contributing up to \$15 billion to GDP by 2030 in local sectors like fintech, agriculture and healthcare. AI is seen as a strategic lever to accelerate inclusive growth and digital leadership in Nigeria.

2.1.2 New Venture Creation

New venture creation is the process of identifying a business opportunity, mobilizing resources and launching a new business enterprise. It involves opportunity recognition, planning,

acquiring financial and human capital and managing the startup. New venture creation within the Nigerian context, is understood as the process by which individuals initiate and develop new enterprises to exploit business opportunities in the Nigerian economy. (Onuma, 2016; Ihugba, Odii, and Njoku 2013) There are key aspects of new venture creation in Nigeria like the entrepreneurial environment where Nigeria has large youthful population and a growing digital economy, making it a fertile ground for new venture creation. However, entrepreneurs face challenges such as poor infrastructure, limited access to finance, unstable electricity supply and bureaucratic regulatory processes (Obaji and Olugu, 2014). Government programmes aimed at supporting new ventures include; Small and Medium Enterprise Development Agency of Nigeria (SMEDAN), National Economic Sustainability Plan (NESP) and Bank of Industry (BOI).

2.1.3 Artificial intelligence as a catalyst for Innovation in New Ventures

Artificial Intelligence (AI) is becoming a transformative force in the Nigerian entrepreneurial ecosystem, serving as a catalyst for innovation and competitiveness in new venture creation. As Nigerian startups confront systemic challenges such as limited access to finance, infrastructure deficits, and a fast changing market environment, AI provides tools and techniques that drive innovation, enhance operational efficiency and improve customer engagement (Iwu, and Osarumwense, 2022).

In Nigeria, AI is enabling entrepreneurs to build smarter data driven businesses across key sectors such as agriculture, Fintech, e-commerce and healthcare. Digital intelligence enables small business owners to predict market behavior and consumer patterns, which in turn enhances strategic decision making. For example, agritech startups use AI powered platforms to provide farmers with real-time weather updates, crop disease predictions and yield optimization strategies. Similarly, fintech startups leverage machine learning algorithms to detect fraud, assess creditworthiness and personalize financial services, thereby enhancing access to digital financial inclusion (Oteh and Idemudia, 2021). AI fosters innovation by reducing the time and cost involved in product development. Through AI powered simulation and modeling, entrepreneurs can rapidly prototype, test and refine products in virtual environments before going to market. According to Ademola and Abimbola (2020), early stage Nigerian startups using AI tools were more agile in pivoting business models in response to changing market demands. This is particularly beneficial in Nigeria's high risk startup environment, where cost efficiency is crucial for survival. Adegbite and Machethe (2020) noted that AI allows entrepreneurs to innovate without the need for extensive Research and Development budgets, thereby democratizing access to cutting edge innovation tools.

Furthermore, AI supports strategic decision making by providing predictive insights based on real time data. Startups can anticipate consumer behavior, market trends and operational risks, enabling them to adapt quickly and stay competitive. In a volatile Nigerian market, this level of responsiveness is critical for new ventures seeking to establish and grow their presence. However, despite these potentials, several barriers hinder the full utilization of AI in new ventures in Nigeria. These include a lack of skilled AI professionals, limited digital infrastructure and high costs of AI integration. Regulatory gaps and data privacy concerns also pose challenges for AI driven entrepreneurship (Eneizan, Obadiaru, and Wahab, 2020). Addressing these issues through targeted investment in AI education, supportive innovation policies and public private partnerships is essential to foster an enabling environment.

2.1.4 Sectorial Applications of Artificial Intelligence in Nigeria

AI is shaping new ventures across multiple sectors in Nigeria. In the Agricultural sector (agritech) AI driven farming tools are helping smallholders optimize planting and harvesting

times. According to Nairametrics (2021), startups like Thrive Agric offers agronomy advisory services, pre and post-harvest storage, and logistics support to small holder farmers, potentially utilizing technology like imagery learning. Drone technology and machine learning algorithms are helping farmers monitor farm health and optimize resource use. According to CTA Spore article (2019), startups like Zenvus use AI to collect and analyze soil data for precision farming. AI is also used for pest and disease detection and soil health monitoring, improving yields and supporting food security.

In the Healthcare, the first phase of AI driven vaccination intervention optimizer (ADVISER) has been piloted to Oyo state targeting low income families and leveraging data from HelpMum's vaccination tracking system to optimize interventions. Machine learning recommendation systems are emerging to help Nigerians compare and select health insurance plans based on affordability and coverage. AI tools are also assisting diagnostics, patient triage and administrative support via virtual assistants and medical imaging analysis, although at a relatively early stage.

In the financial sector, Nigerian have widely adopted AI powered chatbots, enhancing customer support, transaction queries and routine services via platforms like WhatsApp and Telegram. AI systems monitor transactions in real time, detect suspicious activity and flag potential fraud, also machine learning models are used to assess credit worthiness and customer risk profiles. Olufemi and Salawu (2021) emphasize that AI significantly reduces fraud risk by enabling banks and fintechs to monitor vast amounts of transaction data instantaneously. AI enables startups to develop credit scoring models based on non-traditional data. AI also facilitates digital micro lending platforms targeting the unbanked and underbanked population. AI is used by investment startups to provide robo-advisory services, predictive analytics which help investors identify trends and manage risks. According to Okonkwo and Fagbohun (2022), Nigerian fintech startups are increasingly leveraging AI to democratize access to wealth management tools. AI is enabling fintech startups that serve informal economies, it's also a venture that develops financial literacy bots or automated tax tools.

AI lowers entry barriers for new ventures by reducing manual workload, enhancing regulatory compliance and enabling real time decision making.

In the transportation sector, AI is used in intelligent traffic management routine planning. Ojo and Adetunji (2020) highlight the role of AI powered traffic management systems piloted in Lagos to reduce congestion and travel time in urban centers. AI is also used in logistics optimization that enhances last mile delivery efficiency by optimizing dispatch routes, reducing delivery time and minimizing fuel consumption. AI can also be used in licensing plate recognition and cargo scheduling, and also improving efficiency in urban and rural settings. Pilot applications for smart city elements such as automated waste collection routing and predictive policing are under exploration. According to Iwu and Osarumwense (2022), the use of AI in these sectors enables better decision making, reduces operational friction and enhances the overall entrepreneurial ecosystem in Nigeria.

In the Security and Surveillance sector, AI in security and surveillance has become increasingly important in Nigeria, given the country's challenges with crime, terrorism and infrastructural vulnerabilities. As digital technologies evolve, AI driven startups are emerging to address safety concerns using advanced surveillance tools, facial recognition systems, predictive policing and threat detection algorithms. AI powered systems are now used in facial recognition for identifying suspects at banks and airport. They are also used in behavioral analytics to detect unusual activity patterns in public places. Ojo and Adetunji (2020) noted that AI enabled surveillance could significantly improve Nigeria's ability to predict and respond to security

threats, particularly in urban areas like Lagos, Abuja and Port Harcourt. Several Nigerian startups are leveraging AI in security services like Versa Intelligent, Dragnet Solutions and Aicrowd.ng, these ventures aim to reduce manual surveillance cost, increase response times and support proactive crime prevention strategies. According to Akinbami and Olowookere (2021), startups operating in the AI security intersection have received growing interest from banks, logistics firms, and state governments seeking to enhance protection infrastructure. While security remains largely under government control, there is growing private sector participation in public-private surveillance projects in Lagos state, Smart city development initiatives involving AI-enhanced monitoring systems, collaboration with tech hubs and incubators to fund AI driven security solutions. Okonkwo and Fagbohun (2022) argued that for AI security startups to scale, policy support and data sharing partnerships with public agencies are essential. AI startups in Nigeria can create smart home and estate surveillance tools for gated communities. It can also develop AI driven panic alert and emergency response apps, design fraud detection models for online and mobile banking security

Table 1.0: Sectorial Application of Artificial Intelligence

Sector	AI Applications	Example Startups	Benefits	Key Challenges
Agriculture	Crop disease detection, precision farming, yield prediction	Thrive Agric, Zenvus	Higher yields, reduced losses	Connectivity, training gaps
Healthcare	Predictive diagnosis, vaccination optimization	ADVISER, HelpMum	Faster diagnosis, targeted interventions	Data availability, ethics
Fintech	Fraud detection, credit scoring, robo-advisory	PiggyVest, Carbon	Financial inclusion, risk reduction	Data privacy, regulation
Transport & Logistics	Traffic optimization, route planning	MAX.ng, Kobo360	Reduced congestion, cost efficiency	Infrastructure limits
Security	Facial recognition, threat detection	Versa Intelligent, Dragnet	Crime prevention, faster response	Public trust, data sharing

Source: Researchers' Compilation

2.1.5 Challenges Facing AI Adoption in Nigerian Startups

Despite the growing relevance of AI, there are significant challenges faced in adopting artificial intelligence in Nigeria. Unreliable electricity and internet connectivity in rural and semi urban areas make it hard to deploy AI tools that depend on continuous power and real time data exchange, many areas lack modern data centers or cloud infrastructure needed to compute intensive AI workload. AI thrives on large high quality datasets which are often unavailable or fragmented in Nigeria. Obielumani and Adebayo (2022) argue that the absence of centralized, digitized and clean datasets hampers the development of effective AI models. Okonkwo and Fagbohun (2022) identified poor internet infrastructure as a major challenge affecting small and medium-sized enterprises (SMEs) and startups in Nigeria. Their study found that unreliable

internet connectivity disrupted AI driven services, especially in logistics, e-commerce and health tech ventures.

One of the most critical barriers of AI adoption in new venture creation in Nigeria is the high cost of tools, infrastructure and services. Many startups and early stage entrepreneurs operate on tight budgets and lack the capital required to invest in advanced technologies. Akinbami and Olowookere (2021) observed that while awareness of AI among tech startups is relatively high, only 45% of startups surveyed had adopted AI and most of them were limited to basic applications. The major limiting factor identified was cost, both of software licenses and the infrastructure needed to support AI systems.

There is a clear deficit of trained AI professionals locally, especially in data science, machine learning, model engineering and infrastructure optimization, also many AI trained Nigerian professionals emigrate, worsening the talent gap, AI systems require significant investment in software, hardware and training, which many startups cannot afford due to limited capital (Onyeaghala and Osasere 2020,). Olufemi and Salawu (2021) emphasized that many entrepreneurs do not possess the required knowledge to implement AI, and there is a lack of accessible, affordable training programs, this skills gap hinders startups from fully leveraging AI for opportunity identification or product development.

Many startup founders lack awareness of AI's practical applications and some misconceptions that AI is only suitable for large technology companies, they view AI as a luxury reserved for multinationals or tech giants, rather than a tool that can be scaled for small and medium enterprises (SMES). Okonkwo and Fagbohun (2022) noted that the perception of AI being "too complex" or "unaffordable" discourages adoption even when open-source or AI tools exist. Most Nigerian startups outside the ICT sector do not possess in house technical expertise to understand or implement AI, as a result they depend heavily on external consultants which is expensive. They also limit their innovation to manual or semi-automated solutions. According to Oladipo and Udechukwu (2023), awareness campaigns and education on AI benefits are minimal, limiting adoption, they also stated that startups in sectors like agriculture, retail and logistics often perceive AI as "too advanced" or "irrelevant" due to poor exposure to digital tools in general.

Change resistance, fear of job loss and unfamiliarity with new technologies make organizations hesitant to adopt AI tools. Many Nigerian workers, particularly in traditional industries believe that AI will replace human labor especially in sectors like customer service, finance, logistics and retail. This fear often extends to small business owners and startup founders, discouraging them from exploring AI based solutions. Oladipo and Udechukwu (2023) emphasized that AI adoption in Nigeria is constrained by the perception that automation will lead to mass unemployment, creating resistance among employees and even investors wary of public backlash. Adebisi et al. (2020) argue that internal resistance to digital transformation is a key barrier, particularly in traditional sectors like agriculture and retail.

Another critical barrier to the effective deployment of Artificial intelligence (AI) in Nigeria's startup ecosystem is the lack of a clear regulatory and policy uncertainty which creates ambiguity around data use, intellectual property, privacy, liability and ethical issues. Akinbami and Olowookere (2021) identified regulatory uncertainty as one of the top systemic challenges limiting AI adoption among Nigerian tech startups. They noted that the lack of government policy direction and legal clarity discourages AI experimentation and expansion, particularly for startups attempting to scale or attract foreign investment. Technology is evolving rapidly, but Nigeria's regulatory institutions have been slow to adapt. While some digital economy policies exist, they do not directly address AI ethics and governance, AI based automation and

employment displacement, the role of AI in national innovation systems. This leaves startups operating in a legal grey area, often forced to self-regulate or follow international standards that may not align with local realities.

2.1.6 Strategies on How to Curb These Challenges

AI holds transformative potential for entrepreneurship in Nigeria, but adoption has been slow due to systemic, infrastructure and socio-cultural barriers. The following strategies, backed by recent research, can help mitigate these challenges and foster a thriving AI driven startup ecosystem.

To overcome the barrier of limited AI knowledge and fear of job displacement, there must be widespread investment in technical and non-technical AI training, integration of AI curricula in tertiary institutions, Digital skill development for youth and entrepreneurs. Olufemi and Salawu (2021) emphasized the importance of building AI related human capital through accessible education to encourage AI entrepreneurship. All startups need affordable and reliable infrastructure like access to high speed internet and cloud computing platforms, Renewable energy support to mitigate power instability, AI-as-a-Service (AlaaS) models to reduce cost barriers. Akinbami and Olowookere (2021) recommend public-private partnerships to invest in scalable infrastructure tailored to tech startups. Nigeria needs clear, supportive policies for ethical and inclusive AI deployment in order to establish a national AI strategy aligned with startup needs, implement data protection and governance laws, Incentivize ethical AI use through tax breaks or grants. Oladipo and Udechukwu (2023) argue that a clear AI policy roadmap would enhance investor confidence and reduce uncertainty for founders.

One of the most pressing challenges for AI driven entrepreneurship in Nigeria is lack of affordable and reliable infrastructure. AI technologies require stable electricity for running machines and servers, High-speed internet for cloud computing and data exchange, Data centers and computing power to process AI models. Without these, new ventures face high operating cost, Delays in model deployment, Limited experimentation and innovation. Akinbami and Olowookere (2021) found that over 60% of Nigerian tech startups face delays in AI deployment due to erratic electricity and high internet costs. To support AI and entrepreneurship, Nigeria must invest in reliable electricity supply, especially for innovation cluster and tech hubs, Broadband Infrastructure to expand high speed internet access, Local data centers to reduce reliance on foreign servers and lower latency, Affordable cloud computing and AI platforms, subsidized for startups. Olufemi and Salawu (2021) argue that infrastructure bottlenecks are a primary constraint on AI opportunity recognition and venture scaling in Nigeria. Governments and private sector actors should collaborate to build tech parks with 24/7 power and broadband, Extend fibre-optic networks to underserved regions, Support telecom and ICT investments in rural areas. Oladipo and Udechukwu (2023) recommend incentivizing infrastructure providers to develop AI ready environments, especially in innovation driven cities like Lagos, Abuja and Port Harcourt.

For AI to serve as a catalyst for entrepreneurship, innovation and inclusive economic growth, Nigeria needs structured policy direction, clear ethical guidelines and supportive regulations to stimulate investor and startup confidence. Nigeria's startup ecosystem operates in a context of regulatory uncertainty. Oladipo and Udechukwu (2023) emphasize that the lack of an AI policy in Nigeria has discouraged serious investment and cross- sector AI adoption, especially among tech entrepreneurs and SMEs. A functional AI policy should include national AI strategy with sectorial focus, Data protection and privacy regulations, AI ethics and accountability guidelines, Support for AI research, Funding and incentives for AI based ventures and infrastructure. According to Olufemi and Salawu (2021) , a well-structured AI policy would

empower startups to experiment with confidence, knowing there is legal and regulatory clarity. UNESCO (2021) recommends that African countries implement national AI policies to prevent regulatory gaps that may harm innovation or lead to misuse of emerging technologies.

AI startup development involves Data collection and model training, Hiring skilled professionals, Compliance with data privacy and ethical standards. Without adequate funding, startups struggle to develop prototypes or minimum viable products (MVPs), Cannot afford infrastructure and technical tools, and Face early-stage failure despite innovative ideas. Akinbami and Olowookere (2021) noted that over 70% of AI focused tech startups in Lagos and Abuja cited “lack of funding” as their top challenge. To make a meaningful impact, Nigeria could implement seed grants for AI research. The seed grant can be implemented by establishing a national AI research fund managed by agencies like the Federal Ministry of Communications, Innovation and Digital Economy (FMCIDE) and the National Information Technology Development Agency (NITDA). Public-private partnerships (PPPs) can strengthen seed grant programs through co-funding and mentorship.

A conceptual Framework linking AI and new venture creation in Nigeria may involve inputs, processes, outputs and outcomes

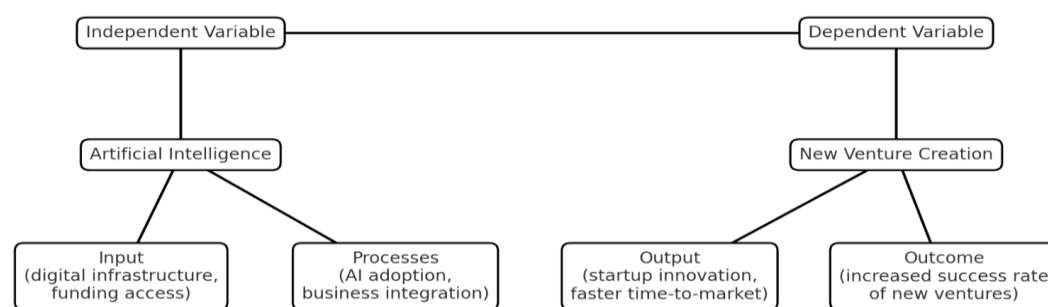


Fig 2.1

Source: Researchers' Conception (2025)

With government Support (e.g., NITDA's AI policy draft), increased private investment and growing tech communities, the future is promising for AI driven entrepreneurship in Nigeria. Educational institutions and incubators must also play a key role in training talent and supporting AI based startups.

2.2 Review of Relevant Theories

Several fundamental theoretical frameworks provide a comprehensive understanding of the investigation of Artificial Intelligence and New Venture Creation, especially within developing economies like Nigeria. Various theories from technology adoption, innovation and entrepreneurship have been applied to explain the dynamics of AI adoption and entrepreneurial behavior.

2.2.1 Technology Acceptance Model Theory

Technology Acceptance Model (TAM) was developed by Fred Davis (1986; 1989) to explain how users accept and use technology. It focuses on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived usefulness is the degree to which a person believes that using

a technology will improve their job or performance, while Perceived ease of use is the degree to which a person believes that using a technology will be free of effort. These two factors influence the attitude toward using the technology, which then affects the intention to use and ultimately the actual use of that technology.

In the context of new ventures in Nigeria, this theory provides a useful framework for understanding how entrepreneurs and startups decide to integrate AI into their business processes or create AI based ventures. In terms of perceived usefulness, entrepreneurs adopt AI tools when they perceive them as beneficial for improving decision making, enhancing customer experience and reducing operational costs. According to Oluwafemi and Adegbola (2023), Nigerian startups that perceive AI as a source of competitive advantage are more likely to embed it into their innovation strategies, leading to new venture creation in sectors like logistics, finance and education. Using the Perceived ease of use approach, Many entrepreneurs face technical and financial barriers to AI adoption. However, when AI systems are made simpler through low -code tools or cloud-based AI services, entrepreneurs find them more accessible. Ease of use influences whether small business owners and startups will apply AI to solve problems or develop new ventures. In Nigeria, entrepreneurs who hold positive attitudes toward AI, seeing it as an enabler rather than a job threat are more likely to establish AI driven businesses.

2.2.2 Resource-Based View Theory

The Resource Based View Theory (RBV), originally developed by Wernerfelt (1984) and later expanded by Barney (1991), is a strategic management theory that explains how firms achieve and sustain competitive advantage through the acquisition, development and deployment of valuable internal resources. RBV proposes that a firm's resources must be valuable, rare, inimitable and non –substitutable.

This theory helps explain how AI-related capabilities, knowledge, and data assets can serve as strategic resources that give startups in Nigeria a sustainable competitive advantage. AI technologies such as machine learning algorithms, data analytics and predictive models are increasingly viewed as valuable and rare organizational resources. For Nigerian entrepreneurs, leveraging AI enables better decision making and forecasting, it also improves customer engagement through personalization, and also enables greater operational efficiency and cost reduction. According to Obiye (2025), AI capabilities act as strategic assets that differentiate Nigerian startups in sectors such as fintech, agritech and healthtech. For instance, AI powered credit scoring systems used by fintech startups like Fair Money enhance loan accessibility and risk management, creating a competitive edge in the financial sector.

Resource based theory explains why Nigerian startups that effectively acquire, develop and utilize AI resources outperform others. It highlights that AI data and algorithms are valuable assets, thus, the successful creation and scaling of new ventures in Nigeria increasingly depend on how entrepreneurs manage and exploit these AI-based strategic resources.

2.2.3 Dynamic Capabilities Theory

The Dynamic Capabilities Theory (DCT), developed by Teece, Pisano and Shuen (1997), builds upon the Resource –Based View by emphasizing a firm's ability to adapt, integrate and reconfigure internal and external competencies in response to rapidly changing environments. Dynamic capabilities consist of identifying and assessing new opportunities and technological trends, it also mobilizes resources to capture value from those opportunities.

In Nigeria's fast changing technological and business environment, DCT helps explain how entrepreneurs use AI to sense opportunities, seize innovation potential and transform their operations to create and sustain new ventures. Once opportunities are identified, entrepreneurs must seize them by developing products, services and business models that exploit AI's potential.

Dynamic capabilities theory enables Nigerian entrepreneurs to adapt quickly to technological and market changes driven by AI. Startups that develop the capability to sense shifts in customer preferences or emerging AI trends are better positioned to innovate and survive in volatile environments. Through AI Nigerian ventures can redesign their business structures adopting digital-first, data-driven and customer-centric approaches.

2.3 Empirical Review

Several studies sought to investigate the interdependence between artificial intelligence and new venture creation. This section provides a review of the empirical literature on the relationships between artificial intelligence and new venture creation in Nigeria.

Ojo and Adetunji (2020) explored the sectorial application of Artificial Intelligence (AI) in Nigerian new ventures, with a focus on agritech and healthtech startups. The study aimed to examine how AI technologies are being adopted in these critical sectors and how this adoption influence innovation, service delivery and startup scalability. The researchers used a qualitative case study analysis and used detailed interviews with founders and technical leads, field observation and company reports. The study applied the Technology Organization Environment (TOE) framework to analyze AI adoption factors. Based on the findings on this study in agritech, AI was used for precision farming, including soil quality analysis, crop disease detection via image recognition and weather forecasting. It was found out that startups using AI reported 30% improvement in crop yield and reduced losses that occur as a result of activities that occur after crops are harvested from the field through better decision-making. Also based on findings in healthtech AI applications included predictive diagnosis and remote health monitoring, also startups using AI in diagnostics experienced faster turnaround in diagnosis, enabling quicker treatment. These ventures also attracted more grant funding and international partnerships due to the scalable nature of AI-driven models. The researchers concluded that AI is a catalyst for innovation in sector-specific new ventures in Nigeria. Startups that leveraged AI tools were more productive, responsive and attractive to funders. However, achieving nationwide impact requires investment in data infrastructure, supportive policy and AI education.

Olaide, Mande and Adegbola (2023) carried out a research on Artificial Intelligence and entrepreneurship. The aim of the research was to examine the impact of Artificial Intelligence (AI) and blockchain on entrepreneurship performance and success in Nigeria (case: Kassy Blockchain and Technology Agency). The key variables used were AI (independent), Blockchain (independent), Entrepreneurship performance/success (dependent). The sample setting used was employees of a technology agency in Lagos; 70 questionnaires administered, 60 usable responses (purposive sampling). Descriptive statistics and ordinary least squares (OLS) regression to test hypothesis. The study finds there is a positive and statistically significant relationship between the joint use of AI and Blockchain technology and entrepreneurship performance and success in Nigeria.

Godwin (2025) carried out a research on Artificial Intelligence with the aim to examine the effect of Artificial Intelligence (AI) power on entrepreneurial success among SMEs in Eket, Akwa Ibom State, Nigeria. Specifically, it sought to evaluate how AI rarity (the uniqueness and competitiveness of AI tools used by firms) affects entrepreneurial success; and assess how AI

utilization efficiency (how effectively SMEs apply AI in business Operations) influences entrepreneurial success. AI rarity and AI utilization efficiency were used as independent variables while entrepreneurial success was used as the dependent variable. A descriptive survey research design was used with a population of registered small and medium enterprises (SMEs) operating in Eket local government area, Akwa Ibom State, and a sample size of 120 SMEs surveyed via structured questionnaire. The sampling technique used for this research is a stratified random sampling, to ensure representation from trade, services and manufacturing sectors. Multiple regression analysis was used to test the hypotheses on the effect of AI variables on entrepreneurial success. The empirical findings from this research showed that AI rarity had a positive and significant effect on entrepreneurial success, also AI utilization efficiency also had a positive and significant effect. The model explained approximately 58% of the variance in entrepreneurial success. The author concludes that AI enhances productivity, market competitiveness and operational innovation among SMEs in Eket.

Discussion of Findings

The literature reveals that Artificial Intelligence (AI) plays a growing catalytic role in new venture creation in Nigeria, driving innovation, improving efficiency and enabling data-driven decision-making across sectors. Several studies highlight Artificial Intelligence as a strategy that brings about new and improved ideas for the creation of new ventures (Iwu and Osarumwense 2022; Ademola and Adebayo 2019, Adegbite and Machethe 2020). AI technologies enable entrepreneurs to identify new market opportunities through data analytics, predictive modeling and consumer behavior insights. According to Godwin (2025), AI enhances productivity, market competitiveness and operational innovation. In Nigeria context AI is a catalyst for innovation in sector-specific new ventures in Nigeria. Startups that leveraged AI tools were more productive, responsive and attractive to funders (Ojo and Adetunji, 2020).

5.0 Conclusion and Recommendations

5.1 Conclusion

Artificial Intelligence (AI) is rapidly transforming the landscape of entrepreneurship and new venture creation in Nigeria. Its applications across sectors, ranging from finance and agriculture to healthcare and transportation have created unprecedented opportunities for innovation, efficiency and market expansion. Despite the enormous potential, AI adoption among Nigerian startups faces several critical challenges. These include limited digital infrastructure, high cost of AI tools, lack of skilled talent, low public awareness and regulatory uncertainty. However, the tide is shifting as both public and private sector and stakeholders begin to recognize the strategic value of AI in economic development.

Government support through initiatives such as the National Artificial Intelligence Strategy (as proposed in NITDA's roadmap), improved access to affordable cloud infrastructure, targeted innovation grants and the promotion of AI education and digital literacy which are necessary steps to foster an enabling environment for AI driven entrepreneurship. Olufemi and Salawu (2021) emphasize, "AI has the capacity to serve as a powerful enabler for innovation and competitiveness in emerging markets like Nigeria, provided the ecosystem is intentionally nurtured".

Similarly, Okonkwo and Fagbohun (2022) argue that AI adoption in SMEs and startups will define the next generation of business growth and productivity in Nigeria if structural barriers are addressed.

In conclusion, AI is not just a technological trend but a strategic tool for entrepreneurial transformation in Nigeria. With proper investment in infrastructure, talent and policy frameworks, AI will catalyze a new wave of innovative ventures capable of solving some of Nigeria's most pressing socio-economic challenges.

5.2 Recommendations

Startups need affordable, reliable connectivity and compute to develop, test and scale AI services, because of this needs investment should be made on reliable digital infrastructure (broadband, power, cloud credits). A clear national AI strategy and regulatory sandbox should be established and operationalize because a national strategy clarifies priorities (skills, ethics, industry focus) and sandboxes let fintech, healthtech and agritech ventures test models under monitored rules, building investor confidence while protecting citizens. Data governance and data sharing frameworks (with privacy safeguards) should be created and accessible because high quality, interoperable datasets are essential for AI model performance. Practical AI skills and entrepreneurship capacity building (short courses, apprenticeships, bootcamps) should be scaled. Fast track retraining, university industry apprenticeships and non-degree bootcamps focused on applied machine learning, machine learning operations, and product design will grow talent for startups.

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Assessment of Women Owned Enterprises Performance through Microfinance Credit in Erifun Area of Ado Ekiti, Ekiti State, Nigeria

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Abstract

Micro finance credit plays a vital and significant role in the performance, survival as well as growth of enterprises. It is concerned with the provision of fund to the marginalized segments of the economies such as women. A large number of women in Erifun derived their sources of livelihood from micro and small enterprises (MSEs). However, lack of access to fund from the conventional institutions posed a huge constraints on their growth and performance. Assessment of women owned enterprises performance through microfinance credit in Erifun area of Ado Ekiti, Ekiti state, Nigeria was examined. The study employed a descriptive research design. The population were women owned enterprises in Erifun area of Ado Ekiti while a sample of 96 respondents was determined using Cockran's sample size formula. Data were collected through a structured questionnaire and analyzed using descriptive and inferential statistics. The study revealed that usage of microfinance credit has a positive and significant effect on the performance of women owned enterprises and that level of awareness of microfinance credit has significant influence on performance among women owned enterprises. It was concluded that women owned enterprises that utilize micro finance credit will experience upper enterprises performance. It was recommended that women owned enterprises in Erifun area of Ado Ekiti should embrace the use of microfinance credit to enhance their enterprises performance as well as sustainability. Also, public education and awareness on the aids and usage of microfinance credit should be augmented among women owned enterprises to enhance better performance of their enterprises.

Keywords: Micro Finance Credit, Women Owned Enterprises, Performance, Erifun and Ekiti State.

1.0 Introduction

Micro finance credit has materialized as a significant strategy for poverty reduction, especially in disadvantaged populations such as women. It involves extending small credit to individuals outside the reach of traditional banks, enabling them to pursue business or livelihood opportunities (Nkamnebe and Oladipo, 2024; Dhungana and Ranabhat, 2022). Micro finance credit is the provision of loans in smaller amounts to small entrepreneurs meant to boost their business operations and it is vital for rural women micro and small entrepreneurs (Lubabatu *et al.*, 2024; Dhungana and Ranabhat, 2022). Women-owned enterprises are an essential component of Nigeria's informal and formal economies, significantly contributing to employment generation, household welfare, poverty reduction as well as economic development (Kasumu *et al.*, 2024). These women owned enterprises in micro and small enterprises often face significant barriers such as limited access to credit, lack of collateral and high interest rate among others (Adetiloye *et al.*, 2020). Micro finance credit not only facilitates their economic activities but also has the potential to enhance business performance.

The outcomes on the data in the study by Amran and Mwasiagi (2019) confirmed and established that access to funds, savings mobilization, and financial competence are strong

determinants of small-scale enterprise performance. Moreover, Lubabatu *et al.*, (2024) study found that the more women businesses are using micro-credit the more their development. Mboto *et al.*, (2023) emphasized that Micro finance credit as a form of financial service is offered by microfinance institutions (MFIs) to support entrepreneurs and small enterprises. Yet, the Nigerian financial sector has experienced systemic instability, largely due to inadequate capitalization and governance failures, leaving low-income groups excluded from credit facilities. Dhungana and Ranabhat (2022) highlighted that microfinance intervention have brought remarkable improvements in micro-business and enterprise development through access to microcredit. They noted that microcredit has boosted investment, enhanced revenue and profits, and contributed to business expansion as well as job creation. The effective use of micro finance credit is essential for ensuring the growth, success, and long-term sustainability of microcredit enterprises. Furthermore Sahu, *et al.* (2024) emphasized that financial assistance provided through microcredit schemes has been recognized as vital in promoting entrepreneurship and empowering individuals, particularly women and that micro finance credit has contributed to enhancing women's livelihoods by fostering economic, psychological, and social empowerment. Nevertheless, challenges such as limited access to affordable loans, insufficient capital, lack of small-scale financing, and stringent collateral demands hinder the growth and sustainability of these small enterprises in semi- urban community.

Erinfun is one of the semi- urban community in Ado local government area of Ekiti state where migrants from Benue state reside. It is home to a growing number of women engaging in small scale enterprises which includes food vending, petty trading, tailoring, agribusiness among others. Despite their growing presence and economic potential, women-owned enterprises in Erinfun area of Ado Ekiti continue to face persistent challenges, particularly in accessing formal financial services necessary for start-up, operation, business sustainability, growth and expansion. In response, various financial and policy instruments have been introduced at state and federal levels, including the provision of microfinance credit. In spite of these efforts, evidence shows that this issue has not been successfully addressed. Moreso, there remains a research gap in evaluating the performance of women owned enterprises, particularly in localized contexts like Erifun. This research makes several significant contributions to the literature on micro credit (MC). Firstly, the research targeted women enterprises who were underprivileged in their financial services as well as lacking comprehensive studies in Ekiti State. Second, the study investigated the level of awareness and how access and usage of micro finance credit influences performance of women owned enterprise in the area and how they correlate with one another. It is hereby hypothesized that, there is no significant influence in the level of awareness and usage of microfinance credit and women owned enterprises in the study area. Understanding how access to micro finance credit influence the sustainability and profitability of women-owned enterprises is critical for designing effective gender-inclusive policies and development programs. Therefore, this study sought to assess Erifun women owned enterprises performance through micro finance credit in Ado Ekiti, Ekiti State, Nigeria. By grounding the study in the Erifun context, this research contributes to the broader discourse on gender, rural enterprise development, and financial inclusion in Nigeria. It seeks to generate actionable insights that can inform policy, programming, and practice aimed at fostering women owed enterprise growth not only in Erifun but across other similar semi-urban communities in the country. The remainder of the study is as follows: there is the literature reviews, empirical reviews, methodology of the study, results and discussions and finally conclusion as well as recommendations.

2.0 Literature Review

2.1 Conceptual Review

Under this section, relevant literature were reviewed on the major constructs of the study to provide conceptual clarification for the study.

2.1.1 Microfinance Credit

Microfinance services serve as a tool for expanding economic involvement to comprise marginal groups (Ude, 2024). Globally, microcredit is essential in driving economic and social development in the twenty-first century. Microcredit has been described as a small institutional loan provided without collateral, aimed at promoting self-employment and income generation, and access to it has been noted to empower women by enabling them to become entrepreneurs (Dhungana and Ranabhat, 2022). According to Fabian, (2023) microcredit is the provision of small loans along with financial and social services to low-income individuals in rural, semi-urban, and urban areas with the aim of improving their living standards. It is usually granted without collateral, either to individuals or groups, to support business start-ups or expansion. In addition to small loans, microcredit also encompasses other financial services such as savings options, cash advances, and insurance targeted at poor entrepreneurs who are typically excluded from formal credit systems due to lack of collateral or credit history. Microcredits are the important engine that helps such uneducated entrepreneurs who are not qualified for conventional banking credits (Lubabatu et al., 2024). Mbotto et al., (2024) reported that Microcredit is widely regarded as a major innovation in poverty alleviation, offering small loans to individuals who are often excluded from conventional financial institutions. The core idea is that access to financial resources empowers low income individuals to undertake productive ventures, which in turn boosts their income and enhances their overall livelihoods. Since women's entrepreneurship plays a vital role in the economic growth of every nation, access to financial services becomes an essential element in supporting such enterprises (Anoke, 2023). However, the effectiveness of microfinance credit depends largely on the level of awareness and usage by women owned enterprises. According to Sajan (2021) awareness means knowledge of a situation and the ability of people to see things with more clearness and considerate. In the context of this study awareness refers to the extent to which women owned enterprises have knowledge about the existence of microfinance credit. Without adequate awareness, women may remain uninformed, thereby limiting their participation in accessing microfinance credit to enhance the performance of their enterprises. Conversely, usage involves the extent to which women owned enterprises apply for, access, and utilize microfinance credit in their business operations. Thus, the effectiveness of microfinance credit depend on the awareness as well as the usage to enhance the performance and sustainability of women owned enterprises.

2.1.2 Women Owned Enterprises

In developed and developing economies, women-owned enterprises are undoubtedly among the major drivers of economic growth. It has been recognized as making a substantial contribution to job creation and overall economic prosperity across various sectors through innovation (Anoke, 2023). It has been recognized by The Master card Index of Women Entrepreneurs 2021 that women entrepreneurs accounted for 37% global GDP. Investment in

women entrepreneurs is an investment in future economic growth. According to Muhammed *et al.* (2025) women entrepreneurs are crucial to global economic growth and social

development, as their involvement in business promotes job creation, stimulates innovation, and enhances the quality of life within communities. Nonetheless, women entrepreneurs encounter several obstacles such as limited access to funding and inadequate financial literacy which constrain their performance and reduce their economic contributions, especially in developing countries. Therefore, making business finance available for the growth and development of women-owned enterprises is essential to enhancing women's socio-economic status and supporting their income-generating activities (Wombo *et al.*, 2020).

2.1.3 Business Performance

The term performance refers to how MSEs conclude to achieve a goal. Business performance is defined as the amount to which a specific business task is completed in contrast to the ultimate output at the end of the business term (Bozic, 2023). Performance of MSEs can be measured through financial, mixed and non-financial indicators such as profitability, employment rates in SMEs, SMEs growth and level of sales, customer retention among others (Agaba and Mugarura, 2023). According to Sulaimon *et al.* (2020) performance is associated with the overall success of an enterprises. The study of Hadji *et al.* (2020) assess business performance through metrics such as increased sales, employee satisfaction, profitability and market growth. According to Olu-Alonge (2025) performance is a key indicator of success and that organization's performance determines whether its goal is achieved or fall short.

2.2 Theoretical Issues

This research draws on several theoretical frameworks, including the Market Failure Theory, the Credit Constraint Theory, and the Microfinance Theory of Change. The Market Failure Theory suggests that the inability of formal financial markets to cater to the needs of marginalized groups has resulted in the emergence and adoption of Microfinance Institutions (MFIs), which bridge the gap by offering microcredit and related financial services to disadvantaged populations (Kumari, 2020). The Credit Constraint Theory highlights that many enterprises encounter considerable obstacles in securing access to traditional financial services, thereby restricting their growth potential (Al-Maamari *et al.*, 2025). In addition, the Microfinance Theory of Change (ToC) emphasizes that access to financial resources, complemented with capacity-building support, empowers entrepreneurs to expand their ventures, boost productivity, and enhance profitability (Musah, 2025). These theoretical perspectives provide the foundation for this study by linking microcredit to the performance of women-owned enterprises within the research context.

2.3 Empirical Evidence

Empirical review of the study is done by recognizing similarities as well as differences transversely the various economies studied by prior researchers. Factors influencing women enterprises performance have been empirically examined by many authors, especially in the developed economies. Semeon and Bishnoi (2021) investigated the impact of microcredit on the performance of micro and small enterprises (MSEs). Using a survey research design, they randomly selected 340 MSEs, while average sales volume measured performance. The t-test results revealed significant differences in sales, total assets, employment, and net profit among MSEs that accessed microcredit loans. Pushpanathan and Swarnika (2021) studied the impact of microfinance services on the performance of microenterprises in the Pilimathalawa region of Sri Lanka. Data were collected from a sample of 100 micro-entrepreneurs via questionnaire. Correlation, regression and factor analysis were conducted. The results showed that microcredit, micro-savings, and micro-training exert strong positive effects on the performance

of the microenterprises. Shafique and Khan (2020) in their study titled the impact of micro credit financing on the socio-economic status of small agriculturists in Pakistan. Cluster sampling approach was employed. Questionnaire was administered to a sample of 693 rural small scale farmers. Data were analyzed using anova, sem, kmu. The results indicated the microcredit financing played a positive role in enhancing the socio-economic status of smallholder farmers after accessing the loans.

A study by Renabhat and Dhungana (2021) explored how micro-credit influences the growth of small and micro-enterprises in Kaski district, Nepal. Descriptive and analytical approaches were adopted. A total of 170 participants were purposively selected for the study. The findings revealed that access to micro-credit motivated clients to engage in micro-business ventures and enterprise development activities. Ayanle *et al.* (2022), in their work The Role of Microcredit and Micro savings for Raising Microfinance Sustainability in Somalia, examined the contribution of microcredit and micro saving to the sustainability of microfinance, using Amal Bank as a case study. Data analysis was conducted with SPSS and Excel, with results presented in tables. The study established a positive relationship between microcredit, micro saving and the sustainability of microfinance. Furthermore, the findings indicated that expanding access to microcredit and micro saving for low-income populations not only strengthens microfinance sustainability but also creates employment opportunities. Longe (2023), assessed the effects of Microcredit on Micro, Small and Medium Enterprises Performance in Tanzania. A descriptive research design was applied and data were analyzed using a quantitative approach. The results demonstrated a statistically significant relationship between access to initial capital and the performance of MSMEs.

Mboto *et al.* (2023), investigated the effect of Microcredit Finance on Women Empowerment in Cross River State. A survey design was adopted, with data primarily collected through questionnaires. Data were analyzed using the ordinary least squares regression technique. The results showed that microcredit finance had a significant positive effect on women's empowerment in Cross River State. Mohammed *et al.* (2023), in their study Impacts of Microfinance Credit on the Performance of Small and Medium Enterprises in Yobe State. An ex-post facto research design was applied and data were analyzed using regression techniques. The study focused on 300 registered entrepreneurs. The results indicated that microfinance credit exerts a positive influence on the performance of SMEs in Yobe State. Udobi-Owoloja *et al.* (2020) assessed Microfinance Banks' Credit and the Performance of Micro, Small and Medium Scale Enterprises in Lagos State, Nigeria. The research adopted a cross-sectional survey design. Data were analyzed using descriptive statistics and Pearson chi-square tests. The findings indicated that credit obtained from MFBs not only had a positive relationship with the productivity of MSMEs but also played a significant role in their expansion and overall growth. In a similar line of inquiry, Adebisi *et al.* (2024), studied the impact of microcredit on poverty reduction in Nigeria. Secondary data covering the period from 2003 to 2022 were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin. The study employed an ex-post facto design. Data were analyzed using regression analysis with ordinary least squares on the time series. The analysis indicates that microcredit and interest rates significantly reduce poverty and enhance living standards across Nigeria. Consequently, the review shows that sales, total assets, employment, net profit and poverty reduction are the criteria used to measure performance by most researchers. However, a search in the literature on this study indicates that only scanty empirical research using the disadvantaged groups such as women and semi urban community can be found in Nigeria. The empirical literature reveals that micro finance credit plays an essential role in the financing of disadvantaged enterprises but its efficiency depends on the level of awareness as well as the usage by women owned enterprises which were not captured by the review. Therefore, the study contributes to the literature by exploring

how micro finance credit influence the performance of women enterprises in the study area with concentration on level of awareness as well as usage.

3.0 Methodology

This study adopted a descriptive survey research design. The target population comprised women who either owned or managed Micro and small enterprises (MSEs) in Erifun Area of Ado Ekiti in Ekiti State, Nigeria. Since the population for the study is unknown, the sample size is determined using Cockran's sample size formula. $n_0 = Z^2 \cdot \sigma^2 / e^2$, Where: n_0 = The initial sample size, Z = Z-score (1.96^2 for 95% confidence level), σ = estimated standard deviation of the population (for this study it is 10) and e = desired margin of error (2). $1.96^2 \cdot 10^2 / 2^2 = 3.8416 \times 100 / 4 = 384.14 / 4 = 96.04 = 96$. The sample of the study consisted of ninety six respondents. Purposive random sampling was employed in the selection. Specifically, the reason for choosing these location is because they have an existing high level of entrepreneurial development activities. Data were gathered through structured questionnaire. A research instrument seeking to elicit information on assessment of women owned enterprises performance through microfinance credit in Erifun area of Ado Ekiti, Ekiti - State, Nigeria was administered to 96 respondents on a five points rating Likert scale thus: Strongly Agreed (SA), Agreed (A), Moderately Agreed (MA), Strongly Disagreed (SA), Disagreed (D), The items were scrutinized in terms of relevance, language coverage of the scope of the study and suitability. Reliability of the instrument was established using Cronbach's Alpha, which produced a coefficient of 0.83, indicating strong internal consistency. The collected data were analyzed using quantitative techniques, specifically mean and standard deviation. Hypotheses were tested through regression analysis at a 0.05 level of significance

4.0 Results and Discussion

Question 1: What is the level of awareness of microfinance credit among women owned enterprises in the study area?

The low level of awareness of microfinance credit among women owned enterprises was measured by calculating the difference between the mean score and the standard deviation. ($15.54 - 3.59 = 11.95$). The moderate level of awareness of microfinance credit among women owned enterprises was measured through the computed mean score of responses on awareness of microfinance credit among women owned enterprises in the study area (15.54) while high level of awareness of microfinance credit among women owned enterprises was determined by adding the mean score and the standard deviation score of the responses on awareness of microfinance credit among women owned enterprises ($15.54 + 3.59 = 19.13$). Therefore, the low level of awareness of microfinance credit among on women owned enterprises starts from 5.00 to 11.95; the moderate level of awareness of microfinance credit among women owned enterprises starts from 11.96 to 15.55 and the high level of awareness of microfinance credit among women owned enterprises is from 15.56-25.00. The level of awareness of microfinance credit among women owned enterprises in the study area is presented in Table 1:

Table 1: Level of awareness of microfinance credit among women owned enterprises in the study area

Level of awareness	Frequency	Percentage
Low (5.00-11.95)	25	26
Moderate (11.96-15.55)	49	51
High (15.56-25.00)	22	23

Total

96

100.00

Table 1 presents the level of awareness of microfinance credit among women owned enterprises in the study area. The result shows that out of 96 women owned enterprises sampled, 25 representing 26 percent had low level of awareness microfinance credit among women owned enterprises while 49 (51%) showed a moderate level of awareness. In comparison, 22 (23%) indicated a high level of awareness. These results suggest that, overall, the awareness of microfinance credit among women owned enterprises is moderate.

Question 2: To what extent does the usage of microfinance credit influence the performance of women owned enterprises in the study area?

The result on extent to which the usage of microfinance credit influence performance of women owned enterprises is shown in Table 2:

Table 2: Extent to which the usage of microfinance credit influence performance of women owned enterprises

S/N	Microfinance credit	SA	A	MA	D	SD	MEAN	STDEV.
1	I have accessed microfinance credit for my enterprises	31 (32.3)	25 (26.0)	19 (19.8)	12 (12.5)	9 (9.4)	3.36	1.310
2	I have received microfinance credit for my business growth and expansion	27 (28.0)	18 (19.0)	20 (21.0)	11 (11.0)	20 (21.0)	3.21	1.291
3	Microfinance credit has influenced my business networking opportunities	26 (27.0)	18 (18.0)	21 (20.0)	15 (15.0)	16 (16.0)	3.23	1.217
4	Microfinance credit has supported the diversification of enterprises services offered to my customers.	29 (30.2)	25 (26.0)	20 (20.8)	13 (13.5)	9 (9.3)	3.54	1.285
5	Microfinance credit has helped in my planning for long term business sustainability	33 (34.3)	23 (23.0)	23 (23.0)	10 (11.4)	7 (7.2)	3.67	1.239

Criterion mean = 3.00

Table 2 presents the extent to which the usage of microfinance credit influence the performance of women owned enterprises in the study area. Using the mean benchmark cut-off of 3.00 for the rating scale, all the items had mean scores above the cut-off point. This implies that the extent to which the usage of microfinance credit influence the performance of women owned enterprises in the study area is positive.

Hypothesis 1: There is no significant influence between level of awareness of microfinance credit and women owned enterprises in the study area.

The hypothesis was tested using Simple Linear Regression at a 0.05 significance level, and the outcome is shown in Table 3:

Table 3 Linear Regression showing the level of awareness of microfinance credit among women owned enterprises

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta (β)		
(Constant)	30.247	.681		44.395	.000
Level of entrepreneurial financing	.192	.036	.233	5.329	.000

Multiple R= 0.233, Multiple R²= 0.054, Adjusted R²= 0.052, F_{1,496} = 28.398

Table 3 shows that level of awareness of microfinance credit has significant influence on Performance among women owned enterprises in the study area (F_{1,496} = 28.398, p<0.05). Leading to the rejection of the null hypothesis. The results in the table indicate a significant positive correlation level of awareness of microfinance credit and performance of women owned enterprises (R=0.233, p<0.05).

Hypothesis 2: There is no significant influence between usage of microfinance credit and performance of women owned enterprises in the study area.

The hypothesis was analyzed through Simple Linear Regression at a significance level of 0.05, and the results are summarized in Table 4:

Table 4 Linear Regression showing the usage of microfinance credit and performance of women owned enterprises in the study area

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta (β)		
(Constant)	31.217	.300		104.031	.000
Microfinance credit	.316	.020	.588	16.185	.000

Multiple R= 0.588, Multiple R²= 0.346, Adjusted R²= 0.344, F_{1,496} = 261.968

Table 4 shows that Usage of microfinance credit has significant effect on the performance of women owned enterprises in the study area (F_{1,496} = 261.968, p<0.05). The null hypothesis could not be retained, as the findings reveal a significant positive correlation between microfinance credit and the performance of women-owned enterprises. (R=0.588, p<0.05). This implies microfinance credit is a factor that can exert influence on non-financial performance of women owned enterprises.

The analysis demonstrated that the level of awareness of microfinance credit among women owned enterprises is moderate. Contrary to these findings, Shah and Patel (2022) revealed that the awareness level about microfinance credit is low. Similarly, Shelkh (2021) indicated a minimal level of awareness.

The findings showed a positive correlation between usage of microfinance credit and performance of women owned enterprises. The finding is in agreement with the opinion of Shafique & Khan (2020), who reported that microcredit financing played an important role in improving the socio-economic conditions of small-scale farmers in Pakistan. Also, Sajan (2021) revealed that utilization of microfinance generated income for various purposes.

The finding however affirmed that level of awareness of microfinance credit had a positive and significant influence on women owned enterprises in the study area (F_{1,496} = 28.398, R=0.233, p<0.05), leading to the rejection of the null hypothesis. In line with this finding Sajan (2021) revealed that the borrower were well aware of the benefits of microfinance credit. Kawimbe (2024) also affirmed that microfinance is particularly suitable for small business enterprises because it provides the working capital necessary for sustainability. Also, Ndidi, Magnus, Jude and Ononye (2022) discovered that provision of micro-credits and easy access to micro-credits have favourable impacts on poverty alleviation. The implications of this finding is that microfinance credit should be emphasized as key strategies for improving enterprises outcomes.

In addition, the study revealed a strong positive association between the use of microfinance credit and performance of women owned enterprises (F_{1,496} = 261.968, R=0.588, p<0.05), with

the null hypothesis again rejected. In line with the finding, Goel (2024) revealed that microfinance services create employment opportunities and foster improved economic conditions. In a similar direction, Obadeyi et al. (2020) emphasized its strong relationship with the growth of micro and small enterprises. Supporting this, Semeon and Bishnoi (2021) demonstrated significant differences in sales, total assets, employment, and net profit among MSEs that accessed microcredit loans compared to those that did not. Moreover, Al-Maamari et al. (2025) found that microcredit significantly contributes to women's employment creation and boosts revenue among microenterprises operating in the informal sector. Similarly, Ranabhat and Dhungana (2021) showed that microcredit has a positive relationship with initial investment, revenue generation, business expansion, employment creation, and profit enhancement. Collectively, these studies reinforce the central role of microfinance credit as a catalyst for enterprise growth, empowerment, and broader socio-economic development.

5.0 Conclusion and Recommendations

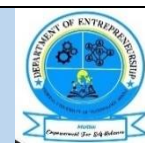
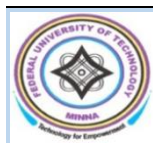
The paper investigates microfinance credit and performance of women owned enterprises in Erinfun area of Ado Ekiti. Theoretical as well as empirical reviews were employed to support this study. Both descriptive and regression analysis were used for the study. The study concluded that the extent to which the usage of microfinance credit influence the performance of women owned enterprises in the study area is positive and that level of awareness of microfinance credit among women owned enterprises is moderate among Erinfun women owned enterprises. Furthermore, the findings demonstrated that both the utilization and the level of awareness of microfinance credit exert a positive and significant effect on the performance of women-owned enterprises in the study area. It has been revealed that usage and level of awareness of microfinance credit is crucial for maintaining a higher performance of women owned enterprises. On this note, the study recommended that women owned enterprises in Erinfun area of Ado Ekiti should embrace the use of microfinance credit to enhance their enterprises performance as well as sustainability. The study further recommended that public education and awareness on the benefits and usage of microfinance credit should be increased among women owned enterprises to enhance better performance.

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Assessment of Post-Harvest Loss Reduction Strategies in Agricultural Project Management in Minna, Niger State

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Abstract

Post-harvest food loss remains one of the most pressing challenges facing agriculture in developing countries, particularly Nigeria, where it undermines food security, reduces farmers' income, and weakens the agricultural value chain. This study investigated the key factors contributing to post-harvest losses and also, assessed the effectiveness of post-harvest management strategies among agricultural stakeholders in Minna and its surrounding communities. A quantitative research design was employed, adopting a descriptive survey approach. Questionnaire was administered to 300 Smallholder farmers, extension officers, agronomists, produce marketers, and agribusiness operators, through stratified random sampling. Data collected was analyzed with means scores and ranking. Findings revealed that inadequate storage facilities, financial constraints for infrastructure upgrades, and poor transportation infrastructure with (MIS = 4.08), (MIS = 3.76), (MIS = 3.65) respectively were the most critical factors contributing to post-harvest losses. Other factors such as poor handling practices, pest and disease outbreaks, and insufficient market access were also having moderate effect. Regarding management strategies, improved storage systems, collaboration with agricultural project managers and the use of preservatives and packaging materials with (MIS = 4.17), (MIS = 4.00), (MIS = 3.92) respectively were ranked as the most effective interventions. The study concludes that post-harvest losses in Minna are largely driven by infrastructural and financial deficiencies, while the most effective strategies for addressing these challenges are practical, infrastructure-based solutions and stronger project coordination mechanisms. It recommends expanding training in post-harvest handling, and developing policy frameworks that improve access to finance and markets.

Keywords: Agricultural Project Management, Food Security, Post-Harvest Loss, Reduction Strategies.

1.0 Introduction

Post-harvest loss presents a considerable challenge for rural communities in sub-Saharan Africa (SSA) and other developing regions, attributable to constrained resources and inadequate institutions, including agricultural extension services, which impede rural households from adopting vital technologies such as post-harvest management practices, enhanced storage, and crop processing (Amadu and McNamara, 2024). Postharvest food loss and waste refers to the reduction in the amount or quality of the edible portion of food intended for human consumption at any stage of the food supply chain or postharvest system (Bappah and Adejoh 2024). The principal cause of food loss is the malfunction of the food production and supply system or its institutional and policy framework (Muroyiwa *et al.*, 2020). This may result from administrative and technological constraints, including inadequate storage facilities, cold chain systems, correct food handling protocols, infrastructural deficiencies, packaging issues, or ineffective marketing methods (Urugo *et al.*, 2024). Conversely, food waste refers to the elimination of food from the supply chain that remains suitable for human consumption (Debebe, 2022). This withdrawal occurs either voluntarily or subsequent to the food being spoilt or expired (Tria *et al.*, 2020).

Food is an essential need for life and a fundamental factor in human subsistence. In developing nations such as Nigeria, the majority, if not all, of the sustenance eaten by smallholder farmers in rural regions is sourced from their own farms. The perennial shortage of food may be exacerbated by post-harvest losses, thus resulting in food insecurity. Nigeria has fertile territory suitable for cultivating many food crops; nevertheless, a significant portion of these crops is often compromised by insect infestations, rodents, and microbes (Onwude *et al.*, 2020). Food losses also transpire during the harvesting, handling, processing, marketing, packing, and storage of agricultural goods. A study on post-harvest food losses in certain Nigerian communities indicated that 20–30% of total grain production, 30–50% of root and tuber crops, and a significant proportion of fruits and vegetables are lost, particularly during storage (Osabohien, 2024).

Furthermore, reports indicate that Nigeria's post-harvest losses have escalated to over \$9 billion per year, approximating 50% of food production (Ogundele, 2022). Fruits and vegetables suffer over 50% loss, often occurring on the field post-harvest, as well as during transit, storage, and at markets. The Federal Ministry of Agriculture and Rural Development of Nigeria reported that in 2015, the demand for tomatoes was estimated at 2.2 million tonnes, while the actual harvest amounted to 1.5 million tonnes, resulting in a supply of only 800,000 tonnes and a total shortfall of 700,000 tonnes (Oketola, 2016). It has been stated that in underdeveloped nations, 90% of waste arises from food losses throughout the value chain. It adversely affects impoverished farmers by resulting in lost revenue, while simultaneously impacting disadvantaged consumers by diminishing food supply, elevating costs, and lowering nutritional quality. Post-harvest losses (PHL) profoundly impact food security, economic stability, and sustainable agricultural advancement. These losses transpire at several phases, including harvesting, storage, processing, and distribution.

Mitigating post-harvest losses (PHL) via efficient agricultural project management may substantially increase food supply, elevate farmers' earnings, and diminish waste (Galford *et al.*, 2020; Balana *et al.*, 2022; Obi-Egbedi and Ifoga, 2023; Khan *et al.*, 2024). Effective project management techniques, including value chain integration, infrastructure development, and capacity building, are essential for mitigating post-harvest inefficiencies and facilitating market access (Affognon *et al.*, 2015; Sheahan and Barrett, 2017). Kikulwe *et al.* (2018) assert that enhancing farmer cooperatives and implementing organised training programs in post-harvest management markedly boosts farmers' productivity and income levels. The use of digital technology and intelligent agricultural practices has been shown to enhance operational efficiency, reduce food waste, and increase farmers' profitability (World Bank, 2021; Food and Agriculture Organization, 2022)). Effective monitoring, assessment, and adaptive management strategies guarantee that treatments retain their relevance and efficacy over time (Abebe and Bekele, 2022). Therefore, comprehensive agricultural project management frameworks are crucial for minimising waste and promoting resilient food systems and rural economic growth. This study intends to investigate strategic interventions in agricultural project management to minimise post-harvest losses and promote food security, given the interaction between agricultural project management and post-harvest loss reduction measures.

The specific objectives include:

- i. To examine the key factors contributing to post-harvest losses; and
- ii. To assess the effectiveness of various post-harvest management strategies.

2.0 Literature Review

2.1 Conceptual Review

The major concepts of the study are reviewed as follows:

2.1.1 Concept of Post-Harvest Losses

The Food and Agricultural Organisation defines the post-harvest system as the process of transporting a product from the point of harvest to the point of consumption, aiming for minimal loss, optimal efficiency, and optimum returns for all parties involved (Spurgeon, 2008). The word "system" refers to a dynamic aggregation of logically interrelated functions or activities within a certain domain of activity. Thus, when examining the agro-food chain in its entirety, harvesting may be seen as the apex between the pre-harvest and post-harvest phases, spanning from harvesting to consumption.

The post-harvest system comprises a series of activities and operations categorised into two groups: technical activities (harvesting, field drying, threshing, cleaning, additional drying, storage, processing) and economic activities (transporting, marketing, quality control, information and communication, administration and management) (Food and Agriculture Organization, 2024). Post-harvest Food Loss (PHL) is defined as quantifiable qualitative and quantitative food loss along the supply chain, commencing at the point of harvest and continuing until consumption or other end uses (Hodges *et al.*, 2011).

2.1.2 Key factors contributing to post-harvest losses;

Postharvest losses exhibit significant variability between commodities, production regions, and seasonal periods. During the postharvest chain, product losses may arise from several factors, including inadequate handling or biodeterioration caused by microbes, insects, rodents, or birds. A significant issue in industrialised nations is that a substantial portion of produced food is not consumed but rather disposed away, due to factors such as being left uneaten on plates or beyond its expiration date. Conversely, the inability to use accessible food in Less Developed Countries (LDCs) is not a documented issue; rather, the inferior food left in marketplaces at day's end serves as nourishment for the impoverished. The challenge in LDCs is the ineffectiveness of postharvest agricultural systems, resulting non the wastage of food that might otherwise be consumed, sold, or exchanged to enhance lifestyles (Hodges *et al.*, 2011). Postharvest loss is influenced by both internal and external causes.

2.1.3 Effectiveness of various post-harvest management strategies

Post-harvest management has existed for decades; however, since 2008, there has been a resurgence of interest in agricultural investment, positioning post-harvest management methods in the centre of discussions on agricultural sector growth (Kiaya, 2014). In September 2015, the United Nations (UN) announced an ambitious objective to halve global food waste and significantly diminish food loss by 2030, coinciding with the Sustainable Development Goals (SDGs) agenda, alongside a resurgence of interest in agricultural investment (Sheahan and Barrert, 2017). This aligns significantly with the worldwide objective of guaranteeing food security for the expanding population while simultaneously assuring sustainable food production for consumption. Notwithstanding substantial expenditures in enhanced climate-smart agricultural and animal production methods, a critical and overlooked contributor to food insecurity remains post-harvest losses resulting from inadequate post-harvest management.

Clearly, a primary method of enhancing food security is via the mitigation of these losses (Affognon *et al.*, 2015). A food self-sufficient and food insecure nation such as Lesotho must adopt a realistic strategy to tackle the issues arising from post-harvest losses. Enhancing

farmers' welfare by increasing yields of major crops in Lesotho will be ineffective if a significant percentage of the harvested crops is lost due to inadequate handling, processing, marketing practices, and storage technologies (Abass *et al.*, 2014). Postharvest Loss (PHL) refers to any degradation in quality or quantity that transpires from the moment of harvesting until it reaches the customer (Grolleaud, 2002). The postharvest sector encompasses all stages in the value chain, from field production to the food served on a plate for consumption. Postharvest operations include harvesting, handling, storage, processing, packing, transportation, and marketing of agricultural goods. Postharvest management influences food quality and safety, market competitiveness, and producer profitability. In several poor nations, postharvest management of food is significantly inadequate (Tadesse *et al.*, 2018).

2.2 Theoretical Review

Stakeholders Theory (ST)

Companies are positioned at the core of an association of stakeholders by the supply chain formation rationale, which is based on stakeholder management. A company's stakeholders, according to Freeman (1994), are any group of people who can positively or negatively impact the company, such as its regulators, workers, suppliers, customers, investors, competitors, local communities where the company operates, and so forth (Touboullic and Walker, 2015). Jensen and Meckling (1976) refer to a firm as a "nexus of contracts" between itself and its stakeholders in this regard. Jones (1995) asserts that those agreements are composed of both formal written contracts and unwritten agreements that are mostly based on expectations. The company's top managers are its primary contract marketers since they quickly or obliquely concur with stakeholders. The notion that businesses should organize stakeholder interests is one recurrent subject in the literature on stakeholders (Busse *et al.*, 2017). According to Camilleri (2017), this viewpoint is based solely on the notion that organisations are by nature cooperative systems. Because they are cooperative by nature, organisations are likely to create coalitions with stakeholders to achieve common goals (Wu and Axelrod, 1995). These coalitions are referred to as strategic networks, networks, and constellations, among other terms (Jones *et al.*, 1997). These cooperative relationships may be an effective means of harmonizing stakeholder goals and can assist a corporation in lowering environmental uncertainty (Kraatz, 1998).

The Stakeholder Theory (ST), introduced by Freeman (2010), emphasizes the importance of engaging all relevant stakeholders in decision-making to achieve organizational success. In agricultural project management, the application of ST in post-harvest loss (PHL) reduction highlights the necessity of collaborative efforts between farmers, policymakers, agribusinesses, financial institutions, and consumers. Each stakeholder plays a critical role in minimizing food losses and improving food security. Farmers, as primary producers, benefit from capacity-building programs that enhance their knowledge of post-harvest handling, storage, and value addition techniques, ultimately reducing waste. Government agencies and policymakers contribute by developing regulations, policies, and incentives that encourage investment in post-harvest infrastructure, such as warehouses, cold storage facilities, and improved transportation networks (Muroyiwa, *et al.*, 2020).

Beyond governmental efforts, agribusiness firms and food processors have a vested interest in reducing losses along the supply chain. Companies that invest in efficient logistics, processing technologies, and market linkages help ensure that agricultural produce is not wasted before reaching consumers. Additionally, financial institutions and investors play a crucial role in providing funding for post-harvest loss mitigation strategies, including access to credit for smallholder farmers to invest in better storage facilities and handling equipment (Nnaemeka, 2024). Consumers also contribute to reducing food losses by advocating for sustainable

consumption practices, demanding better food preservation techniques, and supporting initiatives that promote food security.

The collaborative approach advocated by Stakeholder Theory ensures that post-harvest loss reduction efforts are holistic, inclusive, and sustainable. By aligning the interests of different stakeholders, agricultural project managers can create mutually beneficial solutions that address inefficiencies in the supply chain. For example, public-private partnerships (PPPs) have proven effective in many regions by bringing together government bodies, private investors, and farmers' cooperatives to develop post-harvest processing hubs and improved market access (Mohammadiatedresi, 2018). Ultimately, the successful application of Stakeholder Theory in agricultural project management fosters greater accountability, resource sharing, and long-term sustainability, leading to significant reductions in post-harvest food losses.

2.3 Empirical Review

Muroyiwa *et al.* (2020) in their study investigated the extent of integration of post-harvest management in agricultural policy in Lesotho and strategies to minimise post-harvest losses. Purposive sampling was utilised in order to select a sample of twenty-five respondents on which interviews were conducted. Thematic analysis was used to identify a set of overarching themes that can be used to describe the policy environment and strategies to reduce post-harvest losses. The findings suggests that there is absence of a direct policy to guide post-harvest management activities in Lesotho, it is only referred to indirectly in other policies with the exception of dairy products sector which has a direct post-harvest management policy. Strategies to curb post-harvest losses were also identified. The study concludes that there is need for a direct policy to address post-harvest management in Lesotho.

Also, Olakiumide (2021) comprehensively explores the causes, impacts, and potential solutions related to post-harvest losses in the African context. The causes encompass a range of factors, including inadequate infrastructure, poor handling practices, limited technology access, and socioeconomic challenges. Consequently, post-harvest losses have dire implications for both food security and economic prosperity, impacting stakeholders along the agricultural value chain. Modern post-harvest technologies, coupled with effective pest management practices, can extend the shelf life and quality of harvested crops. Policymakers, researchers, farmers, and the private sector must collaborate to implement these solutions. By addressing post-harvest losses, Africa can move towards achieving sustainable development goals related to hunger eradication, economic growth, and improved livelihoods. Ultimately, this paper emphasises that addressing post-harvest losses is not only a technical challenge but a moral imperative. By reducing losses, African nations can enhance food security, empower local economies, and contribute to a more sustainable and equitable global food system. This paper calls for collective action to combat post-harvest losses and create a brighter future for the continent and beyond.

In the study of Balana *et al.* (2022) for which they were of the view that Postharvest loss is a major challenge in food production and supply chains in developing countries like Nigeria. This leads to significant falls in livelihood outcomes such as reduced household income and food insecurity. Using primary data from perishable agricultural commodity dealers in Nigeria and endogenous switching econometric modelling, they investigate factors determining postharvest technology (PHT) adoption, the impacts of PHT adoption on net returns and its implication on livelihood outcomes. We found that adoption of PHT significantly increases net returns and thus improves livelihoods. The counterfactual impact analysis indicates that value chain actors who adopted PHT would have earned 7% lower net returns had they not used the

technology. Conversely, non-adopters would have increased their net returns by 5% had they adopted the technology. However, heterogeneous treatment effects were observed due to heterogeneities among the adopters. Results further indicate that the position of value chain actors along the perishable supply chain, income level, product seasonality, sales frequency, and technology affordability positively influence adoption decisions. The high cost of technology is found to be the major barrier to technology adoption. We suggest targeted interventions to enhance access to PHT for reducing food losses, reducing food insecurity, and improving livelihoods for agricultural actors along perishable value chains.

Furthermore, Bappah and Adejoh (2024), in their study, opined that post-harvest losses present a formidable obstacle to food security in North-West Nigeria, a region heavily reliant on agriculture. Inadequate infrastructure, limited market access, substandard storage facilities, and inefficient processing methods contribute to significant losses, compromising food availability and stability. Using the Resource-Based View (RBV), the paper employs qualitative methods. It examines the root causes and extent of post-harvest losses, revealing that they constitute 30-40% of annual food production, primarily occurring during harvesting, storage, and transportation. Challenges such as unreliable electricity, insufficient infrastructure, and security issues worsen the situation. To tackle this issue, the paper proposes investment in robust post-harvest infrastructure, including upgraded storage facilities with proper cooling and pest control, enhanced transportation networks, and improved market access. Additionally, farmer education initiatives on advanced post-harvest practices and value addition are recommended to strengthen food security in the region.

Urugo *et al.* (2024) examine Ethiopia's potential in agro-processing, aligning with existing agricultural policies. Techniques such as drying, canning, freezing, and packaging can optimise agricultural potential and minimise losses. Despite challenges such as inadequate infrastructure and limited financial resources, Ethiopia can leverage its market-orientated approach to establish integrated agro-processing systems. A holistic approach is necessary, requiring the Ethiopian government to develop an integrated policy framework with incentives for investment and technology adoption. Improving infrastructure, enforcing quality standards, and strengthening market linkages are essential. Climate-smart practices and information technologies can enhance long-term viability. Collaborative efforts can drive sustainable development and prosperity through agro-processing in Ethiopia.

3.0 Methodology

This study adopted using a descriptive survey approach to investigate post-harvest challenges and management practices among agricultural stakeholders in Minna and its surrounding communities. The choice of survey research was informed by its suitability for capturing opinions, behaviours, and practices across a broad population, thereby aligning with the study objectives of examining factors contributing to post-harvest losses and assessing the effectiveness of post-harvest management strategies. The target population comprised agricultural stakeholders actively involved in post-harvest activities, including smallholder farmers, extension officers, produce marketers, and agribusiness operators. Based on data obtained from the Niger State Ministry of Agriculture and Rural Development and farmers' cooperatives, the estimated population size was 1,200 stakeholders. A sample size of 300 was determined using Yamane's (1967) formula at a 5% margin of error. To ensure proportional representation, stratified sampling was adopted, with each stakeholder group treated as a stratum. Within each group, simple random sampling was employed to select participants, thereby improving representativeness and reducing bias.

A structured questionnaire served as the primary instrument for data collection. The questionnaire was divided into sections to capture demographic information, factors contributing to post-harvest losses, and the effectiveness of management strategies. Responses were measured using a 5-point Likert scale, which enabled respondents to indicate the extent of their agreement with various statements. Three trained research assistants supported the distribution of the questionnaires to improve response rates and data quality. The reliability of the instrument was confirmed through Cronbach's Alpha, with coefficients above the acceptable 0.7 threshold, ensuring internal consistency. The validity of the instrument was ensured through expert review, where specialists in agricultural economics and post-harvest management assessed the questionnaire items for clarity, relevance, and alignment with the study objectives. Their feedback helped refine the instrument, thereby establishing its content validity.

The data analysis was conducted using both descriptive and inferential statistics. For Objective One, frequencies, percentages, means, and standard deviations were used to summarise stakeholders' opinions on factors contributing to post-harvest losses. For Objective Two, the Relative Importance Index (RII) method was employed to rank the effectiveness of different post-harvest management strategies. This approach provided a systematic means of identifying the most critical factors influencing losses as well as the most effective strategies for improving agricultural outcomes in the study area.

4.0 Result and Discussion

Table 1 presents the demographic characteristics of the respondents, with a focus on their professional backgrounds.

Table 1: Profession

Profession	Frequency	Percent
Farmer	81	30.0
Agricultural Project Manager	24	8.9
Extension Officer	54	20.0
Agronomist	45	16.7
Researcher	24	8.9
Others (Please specify)	42	15.6
Total	270	100.0

Source: Author's field work (2025)

4.1 Results on key factors contributing to post-harvest losses

Table 2 reveals ten (10) key factors contributing to post-harvest losses, as identified by the respondents.

Table 2: key factors contributing to post-harvest losses

Code	Key factors contributing to post-harvest losses	MIS	Rank	Decision
B1	Inadequate storage facilities	4.08	1 st	High
B10	Financial constraints for infrastructure upgrades	3.76	2 nd	High
B2	Poor transportation infrastructure	3.65	3 rd	High
B3	Poor handling practices (during harvest)	3.44	4 th	Moderate
B9	Inadequate knowledge on proper post-harvest handling	3.33	5 th	Moderate
B6	Pest and disease outbreaks	3.32	6 th	Moderate
B4	Lack of modern post-harvest technology	3.26	7 th	Moderate
B8	Poor supply chain logistics	3.13	8 th	Moderate
B5	Climate change (e.g., unpredictable weather)	3.13	8 th	Moderate
B7	Insufficient access to market	3.04	10 th	Moderate
<i>Average MIS</i>		<i>3.41</i>		<i>Moderate</i>

Source: Author's field work (2025)

Among these, three were rated as highly important, while the remaining seven were considered moderately important, with Mean Importance Scores (MIS) ranging from 4.08 to 3.04. The most significant factor was inadequate storage facilities (MIS = 4.08; ranked 1st), reflecting a widespread lack of proper storage infrastructure across the agricultural value chain. This was followed by financial constraints for infrastructure upgrades (MIS = 3.76; ranked 2nd), and poor transportation infrastructure (MIS = 3.65; ranked 3rd), both of which point to systemic issues limiting the movement and preservation of agricultural produce. Conversely, the least important factors contributing to post-harvest losses were poor supply chain logistics and climate change (e.g., unpredictable weather), both with an MIS of 3.13 and ranked 8th, as well as insufficient access to market, which was ranked 10th with an MIS of 3.04. The overall average MIS of 3.41 suggests that, while not all factors were seen as critical, the majority were acknowledged as having a moderate level of influence on post-harvest losses. This implies that strategic interventions should prioritize infrastructural improvements particularly in storage and transportation and financial support mechanisms, as these are perceived to have the greatest impact. Addressing these top-ranked issues may significantly reduce post-harvest losses and enhance food security across the agricultural sector.

4.2 Results on Effectiveness of Various Post-Harvest Management Strategies

Table 3 presents ten (10) post-harvest management strategies evaluated by the respondents in terms of their effectiveness.

Table 3: Effectiveness of Various Post-Harvest Management Strategies

Code	Effectiveness of various post-harvest management strategies	MIS	Rank	Decision
C1	Improved storage systems (e.g., silos, cold storage)	4.17	1 st	Effective
C9	Collaboration with agricultural project managers for better coordination	4.00	2 nd	Effective
C4	Use of preservatives and packaging materials	3.92	3 rd	Effective
C2	Use of better transportation methods (e.g., refrigeration)	3.91	4 th	Effective
C7	Integration of modern technology in storage and processing	3.88	5 th	Effective
C3	Training on proper post-harvest handling techniques	3.88	5 th	Effective
C10	Policy interventions to support farmers	3.85	7 th	Effective
C6	Adoption of mechanized harvesting tools	3.82	8 th	Effective
C1	Improved access to market information	3.72	9 th	Effective
C8	Post-harvest loss monitoring systems	3.62	10 th	Effective
Average MIS		3.88		Moderate

Source: Author's field work (2025)

All the strategies were rated as effective, with Mean Importance Scores (MIS) ranging from 4.17 to 3.62. The most effective strategy identified was improved storage systems (e.g., silos, cold storage), with an MIS of 4.17 (ranked 1st), reflecting the critical role of proper storage in preserving produce quality. This was followed by collaboration with agricultural project managers for better coordination (MIS = 4.00; ranked 2nd), and the use of preservatives and packaging materials (MIS = 3.92; ranked 3rd), both of which contribute to extending the shelf life and marketability of agricultural products. On the other hand, the least effective strategies were improved access to market information (MIS = 3.72; ranked 9th) and post-harvest loss monitoring systems (MIS = 3.62; ranked 10th), suggesting these areas may require further refinement or better implementation to increase their impact. The overall average MIS of 3.88 indicates a strong perception of the general effectiveness of the evaluated strategies. This implies that practical, infrastructure-based and coordination-focused interventions are viewed as more impactful by stakeholders, and should therefore be prioritized in future agricultural project planning and post-harvest loss reduction efforts.

4.3 Discussion of findings

For the first objective, which examined the key factors contributing to post-harvest losses, the results showed that inadequate storage facilities, financial constraints for infrastructure upgrades, and poor transportation infrastructure were the most critical challenges. These findings align with existing literature, particularly the works of Kader (2005) and Oketola (2016), who emphasized that lack of storage systems and bad roads significantly increase the rate of food spoilage. Similarly, Balana *et al.* (2022) emphasized that without access to credit

and financing, farmers are unable to invest in improved facilities, leading to continued inefficiencies in post-harvest handling. While other factors such as poor handling practices, pest and disease outbreaks, and lack of modern technologies were also noted, they were considered moderately important. This suggests that while technical knowledge and equipment are relevant, systemic infrastructural and financial issues are more pressing from the stakeholders' perspectives.

Regarding the second objective, which assessed the effectiveness of various post-harvest management strategies, the most highly rated strategies were improved storage systems, collaboration with agricultural project managers, and the use of preservatives and packaging materials. These strategies directly address the challenges highlighted in the first objective and support the arguments made by Affognon *et al.* (2015) and Abass *et al.* (2014), who noted that proper storage, coordination, and packaging are vital for reducing spoilage and maintaining produce quality. Training on post-harvest techniques, the integration of technology, and mechanized harvesting were also found to be effective, consistent with the findings of Kiaya (2014) and Sheahan and Barrett (2017). Interestingly, strategies like improved access to market information and post-harvest loss monitoring systems were rated lower, which may indicate limited awareness or underdevelopment of these practices in the study area.

5.0 Conclusion and Recommendation

This study assessed the factors contributing to post-harvest losses and the effectiveness of post-harvest management strategies in Minna, Nigeria. The findings highlighted that the most significant contributors to post-harvest losses are inadequate storage facilities, lack of financial resources for infrastructure development, and poor transportation networks. These challenges are consistent with the systemic infrastructural and economic limitations observed in many developing countries. Other factors such as poor handling practices, pest outbreaks, and limited technological adoption, though relevant, were perceived as secondary compared to infrastructural and financial barriers. On the other hand, strategies such as improved storage systems, effective collaboration with agricultural project managers, and the use of preservatives and packaging were identified as the most effective in reducing post-harvest losses. These results demonstrate that practical, infrastructure-oriented, and coordination-based interventions have greater potential to yield immediate and sustainable improvements. However, strategies such as post-harvest monitoring and market information access, though less impactful according to stakeholders, should not be overlooked, as they may become more critical with greater awareness and integration into agricultural systems.

Overall, the study establishes that post-harvest losses in Minna can be significantly reduced through targeted infrastructural investments, financial support, and improved management strategies, thereby enhancing food security and contributing to rural economic development.

5.1 Recommendations

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

- i. Policymakers and development partners should prioritize investment in modern storage facilities such as silos and cold storage systems to reduce losses during storage and marketing.
- ii. Credit schemes, subsidies, and cooperative financing models should be established to enable farmers and agribusiness operators to invest in improved post-harvest infrastructure and technologies.

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Analysis of the Mobility Culture of the Peri-Urban Residents in Minna, Niger State, Nigeria

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Abstract

Rapid urbanization has created extensive peri-urban zones that blur traditional urban-rural boundaries, presenting unique transportation challenges that require nuanced understanding of resident mobility patterns and underlying socio-cultural factors. This study aims at examining the mobility culture of peri-urban residents in Minna, Niger State, Nigeria, with focus on, amongst others, exploration of cultural and social dimensions of transportation behaviour in the peri-urban areas of Minna. A household survey of 825 residents across fourteen peri-urban neighbourhoods employed systematic sampling to investigate transportation mode preferences, trip patterns, travel costs, and socio-demographic influences. The research utilized descriptive and inferential statistical approaches, including cross-tabulations and correlation analysis to examine relationships between variables. The study reveals a predominantly middle-class population with 54.1% holding tertiary education, challenging conventional assumptions about peri-urban demographics. Transportation patterns demonstrate sophisticated multi-modal approaches, with personal vehicles accounting for 38.7% of work trips, commercial transport serving 34.6%, and walking comprising 18.1%. Significantly, 56.0% of residents commute outside their neighbourhoods for employment, generating substantial transportation demands and costs. Monthly incomes show 66.1% earning below 70,000 naira, yet 12.6% spend above 300 naira daily on transportation, creating affordability challenges that exceed international benchmarks. Also, the study classifies critical infrastructure deficits affecting 77.4% of residents who rely on motorized transport, while revealing important cultural dimensions including religious travel patterns affecting 41.4% of households. Gender disparities in mobility access emerged as a significant concern requiring targeted policy intervention. It therefore recommends integrated multi-modal transportation corridors, income-based affordability programmes, gender-responsive services, and metropolitan transportation governance spanning multiple jurisdictions.

Keywords: Peri-urban mobility, transportation culture, informal transport, Nigeria, urban planning.

1. Introduction

The phenomenon of rapid urbanization in developing countries has fundamentally transformed the spatial organization of cities, leading to the emergence of peri-urban zones that blur the traditional boundaries between urban and rural landscapes (Cobbinah *et al.*, 2015). These transitional spaces, characterized by mixed land uses, varied population densities, and diverse socio-economic activities, present unique challenges for transportation planning and mobility provision (Tacoli, 2006). The complexity of peri-urban environments necessitates a nuanced understanding of resident mobility cultures, which encompass not only transportation mode preferences but also the underlying socio-cultural factors that influence travel behaviour and spatial interaction patterns.

Nigeria, as Africa's most populous nation, exemplifies the challenges associated with rapid urban expansion and the consequent development of extensive peri-urban areas around major

cities (Olujimi, 2011). Minna, the capital of Niger State, represents a typical medium-sized Nigerian city experiencing significant spatial expansion beyond its traditional boundaries. With a population exceeding 300,000 and growing at approximately 3.2% annually, Minna has witnessed substantial development in its periphery, creating diverse peri-urban communities that serve as residential areas for workers commuting to the urban core (Idowu *et al.*, 2020).

The mobility patterns of peri-urban residents in developing countries like Nigeria are shaped by complex interactions between infrastructure availability, economic constraints, cultural preferences, and institutional frameworks (Olajide *et al.*, 2018). Unlike their urban counterparts who may have access to formal public transport systems, peri-urban residents often rely on informal transportation networks that have evolved organically to serve their specific needs. Understanding these mobility cultures is crucial for developing appropriate transportation policies that can enhance accessibility, reduce travel costs, and improve the quality of life for peri-urban populations.

This study addresses a significant gap in the literature by providing empirical evidence on the mobility culture of peri-urban residents in Minna, Niger State. While previous research has examined urban transportation patterns in major Nigerian cities such as Lagos and Abuja (Osoba, 2012; Oni and Okanlawon, 2006), limited attention has been paid to the unique mobility characteristics of peri-urban areas in medium-sized cities, with Minna inclusive. The research contributes to the growing body of knowledge on peri-urban studies in Africa while providing practical insights for transportation planning in similar contexts. The aim of this study is to analyse the mobility culture of peri-urban residents in Minna, with specific objectives focusing on identifying predominant transportation modes, examining the factors influencing mode choice decisions, assessing satisfaction levels with current mobility options, and exploring the cultural and social dimensions of transportation behaviour. The remainder of this paper is structured as follows: Section 1 is the introduction, Section 2 presents a comprehensive review of relevant literature on peri-urban mobility, transportation patterns, and socio-cultural factors influencing mobility choices. Section 3 outlines the research methodology, including the survey design, sampling approach, and analytical techniques employed. Section 4 presents and discusses the research findings, covering socio-demographic characteristics, mobility patterns, transportation expenditures, and travel behaviours. Section 5 examines the planning implications of the findings, while Section 6 concludes the study with key recommendations for policy intervention and future research directions.

2.0 Literature Review

2.1 Conceptualizing Peri-Urban Mobility

Peri-urban mobility encompasses the complex patterns of movement and transportation choices that characterize life in the transitional zones between urban and rural areas (Simon *et al.*, 2012). These spaces, often referred to as the urban-rural interface, present unique mobility challenges due to their hybrid nature, combining elements of both urban and rural transportation systems while often lacking the infrastructure advantages of either (Iaquinta and Drescher, 2000). The investigation by Idowu *et al.* (2023) and Pauleit *et al.* (2005) emphasizes that peri-urban areas are characterized by rapid land-use change, diverse economic activities, and heterogeneous population compositions, all of which contribute to complex mobility patterns that differ significantly from those observed in established urban or rural contexts.

The mobility culture concept, as developed by transportation geographers, refers to the embedded practices, preferences, and meanings associated with movement and transportation in specific social and spatial contexts (Sheller and Urry, 2006). In peri-urban environments, mobility cultures are particularly dynamic, reflecting the transitional nature of these spaces and

the diverse backgrounds of their residents. Studies by Naess (2006) and Schwanen and Lucas (2011) focus how mobility cultures are shaped by factors including residential history, socio-economic status, cultural background, and access to transportation infrastructure.

2.2 Transportation Patterns in Nigerian Peri-Urban Areas

Nigeria's urban transportation system as admitted by Oyesiku (2002) is characterized by the dominance of informal transport modes, particularly in peri-urban areas where formal public transport services are often inadequate or non-existent. Consequently, Usman (2014) and Hamzat (2016) in their studies acknowledged the prevalence of motorcycle taxis (okada), tricycles (keke NAPEP), and minibuses (danfo) as primary modes of public transport in Nigerian cities, with these modes being particularly important in serving peri-urban communities. The flexibility and door-to-door service capabilities of these informal transport modes make them particularly attractive to peri-urban residents who often face first-and-last-mile connectivity challenges.

Otuoze (2021) and Ojekunle (2016) also commented on the socio-economic factors influencing transportation mode choice in Nigerian cities, highlighting the importance of income levels, trip purpose, and distance in determining modal preferences. Their research indicates that lower-income households, which constitute a significant proportion of peri-urban populations, are more likely to rely on informal public transport due to its affordability and accessibility compared to private vehicle ownership or formal public transport services.

2.3 Infrastructure and Mobility Challenges in Peri-Urban Areas

The infrastructure deficits characteristics of peri-urban areas in developing countries create significant challenges for mobility and accessibility (Webster and Muller, 2000). Research by Satterthwaite *et al.* (2010) emphasizes that peri-urban areas often experience inadequate road infrastructure, poor drainage systems, and limited street lighting, all of which impact transportation safety and efficiency. These infrastructure limitations have profound implications for transportation mode choice and travel behaviour, often favouring modes that can navigate poor road conditions, such as motorcycles and tricycles.

Studies specific to the Nigerian context, including work by Aluko *et al.* (2024), Agbigbe (2016) and Banister and Marshall (2000), highlight how infrastructure deficits in peri-urban areas contribute to longer travel times, higher transportation costs, and reduced accessibility to essential services such as healthcare, education, and employment opportunities. The lack of coordinated infrastructure development in these rapidly growing areas often results in transportation networks that develop organically without formal planning, leading to inefficient spatial connectivity and increased travel burdens for residents.

2.4 Socio-Cultural Factors in Transportation Choice

The influence of socio-cultural factors on transportation behaviour in developing countries has gained increasing attention in recent transportation research (Nahiduzzaman *et al.* 2021; Tucho, 2022). Conversely, Huang and Freudendal-Pedersen (2025) and Nwabueze (2024) in separate studies emphasize the importance of understanding local cultural contexts, social networks, and community structures in shaping mobility patterns. In the Nigerian context, research by Ahijo (2022) among others highlights how extended family networks, communal relationships, and traditional social structures influence transportation decisions and trip-chaining patterns.

Schönfelder and Axhausen (2016) and Boissevain, (2016) have reported on religious practices and obligations, which constitute another important dimension of mobility culture in peri-urban communities of developing countries. Akinpelu *et al.* (2023) and Yakubu *et al.* (2023) in their studies gave report on the significant role of religious travel in shaping weekly mobility

patterns, with many residents making regular trips to places of worship that may be located outside their immediate neighbourhoods. This religious dimension of mobility has important implications for transportation planning, as it represents regular, predictable travel demand that could be served by improved public transport services.

2.5 Theoretical Framework

This study is anchored on two complementary theoretical perspectives that provide a comprehensive lens for understanding peri-urban mobility patterns: the Mobility Paradigm and the Accessibility-based Equity Framework. The mobility paradigm, originally articulated by Sheller and Urry (2006), represents a fundamental shift from traditional transportation geography by conceptualizing mobility as a complex socio-technical phenomenon that encompasses not merely physical movement but also the embedded practices, meanings, and power relations associated with travel. This paradigm emphasizes that mobility is inherently political, involving differential access to movement resources and capabilities across social groups (Cresswell, 2011). Within peri-urban contexts of developing countries, the mobility framework is particularly relevant as it acknowledges the co-existence of multiple transportation modes and the fluid, context-dependent nature of mobility choices. Vannini (2010) demonstrates that mobility cultures emerge from the intersection of material infrastructure, social practices, and individual agency, recognizing that residents in transitional spaces like peri-urban areas develop sophisticated multi-modal strategies that reflect both constraints and opportunities within their spatial environments.

The accessibility-based equity framework provides the normative foundation for evaluating transportation justice in this study. Unlike traditional mobility-focused approaches that emphasize movement efficiency, accessibility theory centres on people's ability to reach valued destinations and opportunities (Lucas *et al.*, 2016). Pereira *et al.* (2017) argue that accessibility provides a more comprehensive measure of transportation equity as it integrates spatial, temporal, and social dimensions of opportunity access. Within developing country contexts, Delmelle and Casas (2012) demonstrate that accessibility analysis reveals how transportation systems may perpetuate or ameliorate spatial inequalities, particularly affecting lower-income populations in peripheral areas. The framework recognizes multiple dimensions of transport equity, including horizontal equity (equal treatment of equals) and vertical equity (differential treatment based on need or ability to pay). Martens (2017) advances the concept of "accessibility poverty" to describe situations where individuals lack sufficient accessibility to participate adequately in society, a condition particularly relevant to peri-urban residents who often face combined disadvantages of spatial remoteness, inadequate infrastructure, and economic constraints.

2.6 Empirical Review

Empirical research on peri-urban transportation in African contexts reveals consistent patterns of infrastructure deficits and adaptive mobility strategies. Adu-Gyamfi (2020) investigated transport challenges in Ghanaian peri-urban communities, finding that poor road conditions discourage formal transport operators from serving these areas, leading residents to develop indigenous solutions including informal taxi stations at the edges of accessible zones. This adaptation, while addressing immediate mobility needs, introduces safety concerns due to poorly maintained vehicles. Similarly, Poku-Boansi *et al.* (2018) contextualized transport infrastructure in Ghanaian peri-urbanism, documenting how centralization of urban activities combined with inadequate investment in peripheral transport services creates substantial mobility burdens for residents. Their research highlights the critical role of informal transport modes, particularly three-wheeled vehicles (tricycles), in filling service gaps left by formal systems. These findings resonate with research from other Sub-Saharan African cities, where

para-transit services have become integral to urban mobility systems despite operating in legal and regulatory grey zones.

Studies examining broader patterns of peri-urban development consistently emphasize the critical relationship between transport infrastructure and spatial accessibility. Woltjer (2014) and Nilsson (2014) identify high dependence on transport for commuting as a defining characteristic of peri-urban areas, with fragmented communities and weak spatial governance exacerbating mobility challenges. Study by Schlesinger (2013) in Tanzanian and Cameroonian peri-urban areas documented how infrastructure development patterns create distinct zones of accessibility, with residents in outer peri-urban areas experiencing significantly longer travel times and higher transportation costs relative to income. These spatial disparities in accessibility have profound implications for economic opportunity and social inclusion. Aluko et al. (2024) examined transport-related social exclusion in Lagos, Nigeria, demonstrating how inadequate public transportation in low-income neighbourhoods blocks residents' access to employment, education, and healthcare, thereby perpetuating cycles of poverty. Their analysis of opportunity costs associated with extended travel times revealed that poor residents spend disproportionate shares of both income and time on transportation, effectively reducing their capacity for productive economic activities.

The role of gender in shaping peri-urban mobility patterns has received increasing attention in recent empirical work. Study indicates that women in developing country contexts face distinct mobility disadvantages stemming from multiple factors including lower vehicle ownership rates, cultural restrictions on movement, and complex trip-chaining patterns associated with domestic responsibilities (Porter, 2011). Salon and Gulyani (2010) found in their study of Sub-Saharan African cities that women disproportionately rely on walking and informal public transport, modes that are both time-consuming and potentially unsafe. These gendered patterns of mobility access contribute to broader inequalities in employment access and economic participation. Furthermore, studies examining religious and cultural dimensions of travel behaviour demonstrate that mobility patterns in developing countries cannot be understood purely through economic rationality frameworks. Regular religious travel, community obligations, and social network maintenance generate substantial transportation demand that operates according to different temporal and spatial logics than employment-related commuting (Boissevain, 2016), necessitating transportation planning approaches that accommodate diverse trip purposes and scheduling requirements.

3.0 Methodology

A cross-sectional survey research design approach was employed to capture the quantitative patterns of mobility behavioural culture among peri-urban residents of Minna. This approach was selected to provide a comprehensive understanding of transportation patterns while also exploring the underlying cultural, social, and economic factors that influence these patterns. Primary data collection was conducted through a comprehensive household survey administered to 825 residents across the selected peri-urban neighbourhoods. The questionnaire covered various aspects of mobility behaviour including trip patterns, mode choice preferences, travel costs, infrastructure perceptions, and socio-demographic characteristics. The survey employed a systematic sampling approach, with households selected at regular intervals along major roads and pathways in each neighbourhood. Both descriptive and inferential statistical approaches were employed in the analysis of data collected for this study. The descriptive statistics was used to characterize mobility patterns, while the inferential approach was deployed basically to establish the relationship between variables. Cross-tabulation analysis was used to examine associations between demographic characteristics and transportation

behaviour, while correlation analysis explored relationships between continuous variables such as income, travel distance, and transportation costs.

4.0 Results and Discussion

4.1 Socio-Demographic Characteristics and Mobility Patterns

The survey captured responses from 825 households across fourteen peri-urban neighbourhoods in Minna, providing comprehensive insights into the mobility culture of these transitional communities. Table 1, the demographic profile reveals a predominantly male population (68%), with 32% female respondents, reflecting traditional household survey response patterns in sub-Saharan Africa (Gough *et al.*, 2019). The age distribution shows a concentration of economically active residents, with majority (70%) of respondents aged between 15-45 years, indicating a demographic structure conducive to high mobility demands.

The educational profile demonstrates significant human capital development, with 55% of respondents having tertiary education and 28% possessing secondary education. This educational distribution challenges conventional assumptions about peri-urban populations in developing countries, suggesting a middle-class composition that aligns with contemporary urbanization theories (Gough and Yankson, 2020). The occupational structure reinforces this finding, with 37% employed as civil servants, 23% as traders, and 23% as self-employed professionals. The household size distribution reveals predominantly medium-sized households, with 40% having 5-8 members and 34% having 1-4 members. This pattern reflects demographic transition processes common in emerging economies, where household sizes moderate as urbanization advances (Bertinelli and Strobl, 2020).

Table 1: Socio-Demographic Characteristics

Demographic Variable	Category	Frequency	Percentage
Sex	Male	562	68
	Female	263	32
Age	15-30	245	30
	31-45	334	40
	46-60	205	25
	Above 60	41	5
Household size	1-4	280	34
	5-8	330	40
	9-12	215	26
Education	No formal education	79	10
	Primary	61	7
	Secondary	231	28
	Tertiary	454	55
Occupation	Civil servant	309	37
	Trader	192	23
	Self-employed professional	186	23
	Unemployed	138	17

4.2 Income Distribution and Economic Mobility Constraints

Monthly income patterns expose significant economic stratification within peri-urban communities. The majority (38%) earn 30,000 naira or less monthly, while 35% earn between 31,000-60,000 naira. Only 12% earn above 90,000 naira monthly, indicating limited economic resources that constrain transportation choices.

Table 2: Income Distribution and Transportation Affordability

Monthly Income (Naira)	Frequency	Percentage	Transport Cost Burden
30,000 or less	314	38	High
31,000-60,000	287	35	Moderate
61,000-90,000	121	15	Low
Above 90,000	103	12	Very Low

*Transport cost burden calculated as percentage of monthly income spent on transportation

This income distribution depicted in Table 2 has profound implications for transportation mode choice, as established by transport economics theory. Lower-income households typically allocate higher proportions of income to transportation, often exceeding the World Bank's recommended 10-15% threshold (Carruthers *et al.*, 2020). The concentration of lower-income households in peri-urban areas creates what Guzman and Bocarejo (2019) term "mobility poverty," where spatial location compounds economic disadvantage.

4.3 Residential Mobility and Settlement Patterns

The analysis reveals significant residential mobility, with 36% of respondents being indigenous to Minna, while 52% relocated from other areas. Among non-indigenous residents, 29% originated from suburb areas of Minna, while 12% came from the core area. This migration pattern reflects the "filtering" process described in urban development theory, where households relocate to more affordable peripheral locations as cities grow (Brueckner and Sridhar, 2020).

Table 3: Place of Birth and Migration Patterns

Place of Birth	Frequency	Percentage	Implication
Indigenous to Minna	300	36	Established local networks
Suburb area of Minna	239	29	Intra-urban mobility
Core area of Minna	96	12	Urban-to-peri-urban filtering
Outside Minna	190	23	Inter-urban migration

The duration of stay in current neighbourhoods shows relative stability, with 29.6% residing for 5-10 years and 29.5% for 11-15 years. This residential stability contradicts assumptions about peri-urban areas as temporary settlements, instead suggesting they function as permanent residential destinations (Cobbinah and Amoako, 2021).

4.4 Housing Characteristics and Built Environment

The housing typology according to Table 4 reflects diverse architectural responses to peri-urban development pressures.

Table 4: Housing Types and Characteristics

Building Type	Frequency	Percentage	Typical Household Size
Two-bedroom bungalow	230	28	5-8 members
Three-bedroom bungalow	208	25	5-8 members
Tenement building	180	22	1-4 members
Four-bedroom bungalow	99	12	9-12 members
Traditional building	108	13	Variable

Bungalows dominate the housing stock, with two-bedroom bungalows comprising 28%, three-bedroom bungalows 25%, and four-bedroom bungalows 12%. Tenement buildings account for 22% of housing units, while traditional buildings constitute 13%. Building age distribution indicates recent development; with 28.0% of structures aged 11-15 years and 22% aged 16-20 years. This recent construction pattern aligns with Minna's rapid urban expansion since 2000, reflecting what Parnell and Oldfield (2020) describe as "peripheral urbanization."

4.5 Work-Related Mobility Patterns

Employment location analysis in Table 5 confirmed the significant spatial separation between residence and work. Only 36% of residents work within their neighbourhoods, while 56% commute to external locations. This pattern generates substantial commuting demands that strain transportation systems and increase household expenditures.

Table 5: Work Location and Transportation Modes

Work Location	Frequency	Percentage	Primary Transport Mode
Within neighbourhood	301	36	Walking/Motorcycle
Outside neighbourhood	461	56	Personal vehicle/Commercial
No response	63	8	-

Transportation mode choice for work trips demonstrates diverse modal preferences reflecting household economic capabilities and service availability. Personal automobiles account for 56% of work trips, representing the largest single mode category. This relatively high private vehicle usage distinguishes Minna's peri-urban areas from similar contexts in other developing countries, where public transport typically dominates (Cervero and Golub, 2021). Commercial transport modes serve 56% of work trips, with tricycles, motorcycles, and taxis providing flexible, door-to-door services valued by peri-urban residents. Walking accounts for 18.0% of work trips, primarily for short-distance commutes within or near residential neighbourhoods.

4.6 Transportation Expenditure Patterns

Transportation costs represent significant household expenditures, with implications for economic welfare and accessibility. Among personal vehicle users, weekly fuel expenditures vary considerably, with 13.5% spending 1,000-2,000 naira and 8.5% spending 2,001-3,000 naira. However, 22.9% spend above 3,000 naira weekly, indicating substantial transportation cost burdens as indicated in Table 6.

Table 6: Weekly Transportation Expenditure Patterns

Expenditure Category	Personal Vehicle (Fuel)	Public Transport (Daily)
Low ($\leq 1,000/\leq 100$)	54 (6.6%)	83 (10.1%)
Moderate (1,001-3,000/101-300)	181 (22.0%)	243 (29.4%)

Expenditure Category	Personal Vehicle (Fuel)	Public Transport (Daily)
High (3,001-5,000/301-500)	106 (12.9%)	64 (7.7%)
Very High (>5,000/>500)	22 (2.7%)	34 (4.1%)

Daily transportation expenditures across all modes show that 22.0% of respondents spend 100-200 naira, while 12.6% spend above 300 naira daily. When contextualized against income levels, these expenditures can consume 15-25% of household income for lower-income families, significantly exceeding international affordability benchmarks (Serebrisky *et al.*, 2019).

4.7 Trip Distance and Spatial Accessibility

Home-to-work distances reveal the spatial structure of employment accessibility and transportation demand generation. According to Table 7, the analysis shows that 24.0% of residents work within 500 meters from home, while 21.0% work 500m-1km away. However, 25.0% work beyond 2 kilometres, with 12.0% commuting more than 10 kilometres daily. This distance distribution reflects the polycentric nature of Minna's urban structure, where employment opportunities exist both locally and in distant centres. The presence of both short and long commutes within the same communities indicates diverse employment patterns and varying spatial relationships between residential and workplace locations.

Table 7: Trip Distance Distribution and Mode Choice

Distance Category	Frequency	Percentage	Dominant Mode
≤500m	196	24	Walking
500m-1km	177	21	Motorcycle/Walking
1.1km-2km	146	18	Motorcycle/Tricycle
2.1km-5km	111	13	Personal vehicle/Commercial
5.1km-10km	100	12	Personal vehicle
>10km	95	12	Personal vehicle

4.8 Shopping and Commercial Travel Patterns

Shopping mobility patterns provide insights into commercial service accessibility and spatial integration. The analysis reveals that 53.8% of residents travel outside their neighbourhoods for shopping, indicating limited local commercial development. Among external shoppers, Kure market dominates as a destination, attracting 32.0% of shopping trips, followed by Tunga market (6.1%). Shopping trip distances are generally shorter than work commutes, with 32.8% traveling less than 500m and 20.5% traveling 500m-1km. This pattern suggests that while residents may need to access external commercial centres, these destinations remain within reasonable walking or cycling distance for many households.

4.9 Religious Travel and Cultural Mobility

Religious travel represents an important but often overlooked dimension of mobility patterns. The analysis shows that 41.4% of residents travel outside their neighbourhoods for religious obligations, contributing to regular and predictable transportation demand with implications for service planning. Religious trip distances show that 45.8% of religious traveller's journey less than 500m to places of worship, while 16.0% travel 500m-1km. However, 15.2% must travel beyond 1.5km for religious activities, representing longer trips that may require motorized transport. Transportation costs for religious travel are generally lower than work-related expenditures, with 21.2% spending less than 100 naira weekly and 16.1% spending 100-200 naira weekly. Nevertheless, 18.1% spend above 300 naira weekly on religious transportation, indicating substantial costs for some households.

4.10 Implications of the Findings

Theoretically, this study professes challenges to prevailing assumptions about African peri-urban transportation by revealing high private vehicle ownership (38.7% for work trips), suggesting evolving mobility cultures toward automobile dependence as middle-class populations settle in peri-urban areas. The continued significance of walking (18.1%) alongside substantial private vehicle use demonstrates that residents employ flexible, multi-modal approaches. Moreover, cultural and religious travel patterns (41.4% traveling outside neighbourhoods for religious obligations) highlight that mobility planning must consider social dimensions beyond economic activities. Also, policy frameworks should recognize complementary roles of different transport modes, with formal services handling high-capacity corridors while informal modes provide flexible connectivity. The concentration of shopping trips to Kure market (32.0%) and substantial religious travel suggest opportunities for dedicated bus services along major corridors, integrated with existing informal transport networks rather than competing directly.

Based on affordability and social equity, transportation costs present significant equity challenges, with 12.6% of respondents spending above 300 naira daily. For households earning below 70,000 naira monthly (66.1%), this represents household income, far exceeding below international affordability benchmarks. Policy interventions should include targeted subsidies for low-income households and local economic development to reduce transportation demand. In regard to gender-responsive policies, the demographic composition (66.8% male respondents) suggests traditional surveys may underrepresent women's mobility needs. Transportation policies should incorporate gender-responsive elements including women-only services during peak hours, improved lighting and security at transport nodes, and services accommodating complex trip patterns associated with care responsibilities.

On road Infrastructure development, substantial reliance on motorized transport (77.4% for work trips) indicates urgent infrastructure needs. Development should prioritize multi-modal accessibility, including dedicated lanes for motorcycles and tricycles (34.6% of work trips). For short-distance trips, (39.7% within 1km); pedestrian infrastructure should receive priority while longer trips require improved arterial roads. In addition, Multi-modal transport hubs at strategic locations should integrate informal operators with formal services, including facilities for different operator types, secure parking, and commercial services. The finding established that 56.0% of residents work outside their neighbourhoods indicates spatial mismatch generating substantial transportation costs. Strategies should include promoting mixed-use development, supporting small enterprise development, and improving telecommunications infrastructure for remote work opportunities. The complexity of peri-urban mobility systems requires sophisticated institutional arrangements. Reforms should establish integrated metropolitan transportation authorities with mandates spanning multiple jurisdictions, capable of strategic planning, regulating informal operators, and coordinating infrastructure investments across government levels.

5.0 Conclusion and Recommendations

This study examined the mobility culture of peri-urban residents in Minna, Niger State, Nigeria, with specific objectives focusing on identifying predominant transportation modes, examining factors influencing mode choice decisions, assessing satisfaction levels with current mobility options, and exploring the cultural and social dimensions of transportation behaviour in peri-urban areas. The research was motivated by the recognition that peri-urban zones represent critical transitional spaces where rapid urbanization creates unique transportation

challenges that require nuanced understanding beyond conventional urban or rural mobility frameworks. Methodologically, the study employed a cross-sectional survey research design approach to capture quantitative patterns of mobility behavioural culture among peri-urban residents. A comprehensive household survey was administered to 825 residents across fourteen peri-urban neighbourhoods in Minna through questionnaire administration.

This study therefore, concludes on the note that peri-urban mobility of Minna represents a complex socio-technical phenomenon where spatial, economic, and cultural factors intersect to shape transportation behaviours. The coexistence of high private vehicle ownership alongside substantial reliance on informal transport and non-motorized modes indicates evolving mobility cultures that cannot be adequately addressed through single-mode transportation solutions. The significant affordability challenges faced by lower-income households, combined with spatial mismatches between residential locations and employment opportunities, create conditions of "mobility poverty" that perpetuate social and economic inequalities. Furthermore, the importance of religious and cultural travel patterns highlights that mobility planning must extend beyond purely economic considerations to accommodate diverse trip purposes and social practices.

The study recommends several key intervention areas to address identified challenges: establishment of integrated multi-modal transportation corridors that accommodate diverse modal preferences through bus rapid transit services, licensed informal operator integration, and protected lanes for motorcycles and tricycles; implement income-based affordability programs including transportation vouchers and progressive pricing structures to reduce the significant cost burden affecting lower-income residents; develop gender-responsive and culturally sensitive services that accommodate religious travel patterns and enhance women's mobility through dedicated services, improved security measures, and infrastructure supporting complex trip-chaining behaviours associated with care responsibilities; prioritize infrastructure development that supports both motorized and non-motorized transport, with particular attention to pedestrian facilities for the 39.7% of trips occurring within one kilometre distance; promote mixed-use development and local economic opportunities to reduce the spatial mismatch that compels 56.0% of residents to commute outside their neighbourhoods for employment; and establishment of a metropolitan transportation authority with integrated governance spanning multiple jurisdictions and policy sectors, capable of strategic planning, regulating informal operators, and coordinating infrastructure investments across government levels.

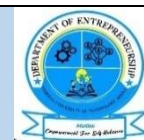
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Microfinance Services and Business Growth of Women in Agro-Allied Businesses in Kwara State

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Abstract

Women are major players in the economic development of a nation but their income and participation tend to be low due to challenges like social cultural prejudice and poor access to finance when they are compared with their men counterparts. Steps have been taken by the government to improve and expand the role of women in Micro Small and Medium Enterprises (MSMES) as well as to eliminate all forms of discrimination against women business owners to improve their access to finance but there is yet to be a significant improvement in their business growth. This study is to examine the impact of microfinance service (financial and non-financial services) to women in agro-allied business growth in Kwara state. Descriptive research survey was used in this study. The population for the study consisted of numbers of women in agro-allied businesses in Kwara state. 368 women were selected using Krejcie & Morgan (1970) formula and sample size determination. Multiple linear regression was used to test the hypotheses at 5% level. The finding revealed that financial grants and flexible-loans term are the most valued financial supports for sustained business growth at 5% level and that non-financial services account for a relatively small portion to the sustainable business growth. It is recommended that MFBs should develop and promote financial solution to support women in agro allied businesses in ensuring their effort to attain business growth and that MFBs should create awareness on importance of non-financial services to boost their business survival.

Keywords: Agro allied business, business growth, business survival, medium small and micro enterprises.

1.0 Introduction

Women's capital investments are crucial for advancing the socio economic and political advancement of emerging nations, just as their involvement in entrepreneurial endeavours fosters regional development and economic growth (Swapna 2021). Scholars generally agree that women are vital to the economic success of their homes and societies, but in developing countries in particular, barriers like unemployment, discrimination, low household income, and poverty have made it difficult for women to carry out this important role (Awojobi, 2014).

Microfinance as a concept is not recent; Small sums of microcredit have traditionally been given to active but poor or jobless people or organisations who would not have had any other way to get formal financial services. Globally, microfinance has shown itself to be an efficient and successful tool for reducing poverty (Berger 2022). One instrument that may be utilised to support women entrepreneurs is microfinance. Microfinance is primarily targeted at poor women, who are more likely to establish small businesses with small loans (Idolor, 2020).

In an effort to create a system that would allow the poor and destitute to access resources that the financial buoyant people have access to, microfinance specialises in lending modest amounts of capital to these businesses. Idolor (2020) asserted that microfinance banks have an institutional role in addressing poverty in addition to merely lending money to the underprivileged. It aims to formulate organisations that offer financial facilities to the

underprivileged, who are systematically not taken care of by the traditional financial institutions.

Nigerian women as well as women in Kwara State actively engaged in various agro-allied activities like crop production, livestock farming and food processing to support their families prior to the emergence of feminist ideals and the drive for equality. Feyishola (2025), observed that essential financial and non-financial services are made available by microfinance institution to women in agro-allied businesses to improve their productivity and generate income. The women travel to the market to sell the sea food and agricultural products, while the majority of males are involved in farming and fishing.

Despite the benefits derived from microfinance and non-microfinance some women face challenges in accessing microfinance as a result of lack of collateral, high interest rate and complex application process (Maryam et. al., 2019). Women are starting agro-allied businesses because of the rise in unemployment rate in the country, and for them to maximise profits from this, development is required. International Finance Corporation (IFC, 2023) claims that just 2 out of 10 newly founded Nigerian women-owned enterprises make it to the fifth year. The goal of this study therefore is to examine the effect of microfinance bank (MFB) services on business growth of women in agro-allied businesses in Kwara state. The specific objectives of the study were to: examine the impact of financial services on the growth of business of women in agro allied business in Kwara State and determine the effectiveness of non-financial services on women's business survival in agro allied in Kwara State. To achieve these objectives, the study tested the following hypotheses:

Ho1: Financial services have no significant impact on the growth of business of women in the agro allied business in Kwara state.

Ho2: Non-financial services have no significant impact on the survival of women's business of in the agro allied in Kwara State.

2.0 Literature Review

2.1 Conceptual Clarification

The intent of microfinance and non-financial services are targeted at entrepreneurs towards the growth and development of their business (Eluhaiwe, 2023). Microfinance banks offers financial services which includes financial grants, savings / deposit, interest rates, insurance, flexible loan time, while non-financial services entail training, financial literacy, marketing assistance, business advisory, repayment plan (Waseem et al., 2018). The act of offering impoverished and people and their microenterprises varieties of financial services, including loans, money transfers, payment services, deposits, and insurance, is known as microfinance. Offering modest, short-term loans to company owners who don't have access to launch a small business or engage in other revenue-making ventures is known as microfinance (Onugu, 2022).

In addition to increasing their income level and becoming self-employed rather than looking for work elsewhere, microfinance users pursue money from MFIs and commit them in future chances (Muogbo, et al., 2018). Microfinance banks provide their qualified customers financial services including credit, savings, payment services, and insurance (Ledgerwood, 2020). Oduntan (2019), posited that the aim of microfinance is to give financial services to the underprivileged, who are constantly overlooked by other conventional financial institution. A percentage of the profits are used to support home expenses and company growth, which lowers poverty, raises quality of life, and encourages customers' social and economic empowerment (Canadian International Development Agency (CIDA), 2020).

The term "business growth" describes the general shift in tactics from a low to a greater level of company growth (Penrose, 2018). This might be demonstrated by better methods of

operation or a boost in the sale volume or calibre of goods or services generated. The activities and procedures related to the systematic preparation of possible growth opportunities, as well as the help and oversight of their execution, are referred to as sustainable business growth. Business growth encompasses a wide variety of services such as marketing, information, technology development and transfer, training, consultancy, and business linkage promotion. These services address both strategic and operational issues, which are of day-to-day concerns and medium- to long-term problems that enhance performance, as well as the performance of businesses, their access to markets, and their ability to compete United Nations Development Program (UNDP, 2023).

One important component in growing or enhancing sustainable operations is funding, and this is where microfinance banks come into play (mostly in the instance of Micro, small, and medium-sized firms (MSMEs) also help to drive long-term industrial advancement by increasing the number of organizations that attain maturity.

2.2. Theoretical Review

Endogenous growth theory (Romer, 1994) states that economic growth is attained within a system as a result of internal processes. It also states that investment, innovation, human capital as well as knowledge impact the economic growth within an economy. This study is anchored on this theory because microfinance services (financial and non-financial) are vital to business growth especially for women in agro allied business as they enhance innovation, output and entrepreneurial capability (Kabeer, 2005). Specifically, microfinance financial services (such as credit, savings, and insurance) enhance capital gain and investment at the enterprise level (Beck et al., 2007). In the same vein, microfinance non-financial services (such as financial literacy, training, and advisory services) facilitate human capital development and knowledge gain which are vital to Endogenous Growth Theory (Lusardi and Mitchell, 2014). Therefore, business growth quantified through parameters such as profitability, income, and increased output reflects the endogenous growth outcomes predicted by the theory.

However, the theory has limitations. It assumes efficient utilization of knowledge and finance, which may not always exist due to influence of external factors such as gender-related socio-cultural issues, market instability, and low financial literacy. It also gravitates to understating the effect of external economic and institutional factors, especially in emerging economies (Solow, 2000). Despite these weaknesses, Endogenous Growth Theory remains vital in examining the impact of financial and non-financial services on business growth outcomes (Romer, 1994).

2.3 Empirical Review

Kadiri et al. (2018) explored the relationship between ethical practices of senior executives in Nigerian microfinance banks and their financial and non-financial performance. Using cluster sampling, 129 executives from six microfinance banks in Ilorin, Kwara State, Nigeria, were selected. Data was collected via self-administered questionnaires and analyzed using descriptive, comparative, regression, and correlation techniques. Findings revealed that the environmental index negatively affect both financial and non-financial outcomes, whereas ethical, community, and diversity indices positively influenced performance. The study suggested that microfinance banks should strengthen community involvement, reduce environmental harm, and adopt stakeholder-oriented ethical guidelines.

Fowowe et al. (2022) examined the factors impacting the success of women entrepreneurs as well as the impacts of microfinance on women's business growth potential and performance in the setting of the Federal University of Technology, Akure, Ondo State, Nigeria (FUTA). For this reason, information was collected in a FUTA environment from female entrepreneurs. The findings shows several obstacles to company growth in the FUTA premises. The primary

obstacles include non-registration, high loan interest rates, and a lack of collateral. The poll also revealed several challenges that micro business entrepreneurs encounter. These include inadequate educational achievement, problems with families, high interest rates, and a dearth of support in the business sector.

Aladejebi (2019) explored the influence of MFBs on the development of SMEs in Lagos city. Data was gathered through questionnaires distributed to SME business owners who held accounts with MFBs in the area. Of the 209 questionnaires issued, 205 were valid and analyzed using regression analysis. Findings highlighted that SME savings were limited due to high interest rates compared to traditional deposit banks, delays in loan disbursement, and the lack of training programs provided by MFBs. However, most SMEs reported financial growth through the use of MFB products.

Maryam et al. (2019) conducted a study to examine the effects of microfinance on the economic empowerment of women entrepreneurs in Gombe State. The research was carried out across six local government areas within the state, utilizing questionnaires as the primary data collection method. Through regression analysis, the study found that microfinance initiatives in Gombe State had a positive impact on women entrepreneurs. The results highlighted that microfinance significantly improves the well-being of its beneficiaries. Based on these findings, the study suggests that the government should expand microfinancing opportunities for women as a strategy to reduce poverty in the state.

The above review shows that previous studies on the nexus between microfinance supports and women's empowerment failed to separate financial services of microfinance banks from non-financial services in order to demonstrate a clear link of microfinance services to business growth particularly among women in agro allied business. More often, this research gaps have been found from several empirical reviews in Kwara State but very few studies have evaluated microfinance services on women's business growth and survival in agro-allied business in the study area.

3.0 Methodology

The research employs a descriptive survey design, focusing on 9,001 women involved in rice and cassava processing within Kwara State's agro-allied sector. Participants were selected using a purposive sampling technique, guided by criteria established in Fowowe et al.'s (2022) prior research. The sample size of 368 was determined using Krejcie and Morgan's (1970) formula.

Primary source was used to collect data from micro, small, and medium enterprises (MSMEs) in the agro-allied business. A structured questionnaire was developed to explore the relationship between microfinance (MF) and business growth (BG) among women in this industry. The questionnaire featured a 5-point Likert scale, with responses ranging from Strongly Disagree (1) to Strongly Agree (5). It comprised 25 questions addressing financial and non-financial services, as well as business growth metrics.

3.1 Model Specification

The model used in this study specified as follows:

Model 1: Impact of Financial Services on Business Growth

The dependent variable is specified as Business Growth (BG) while the independent variables are perceived Financial Services (PFS). In general form, the model is specified as:

$$BG = \beta_0 + \beta_1 FNG + \beta_2 PFLT + \beta_3 SDT + \beta_4 INS + \epsilon \dots \dots \dots \text{Equation (1)},$$

Where:

BG: Business Growth (dependent variable)

FNG: Financial grants

FLT: Flexible loan term

SDT: Savings Deposit Thresholds

INS: Micro insurance

B_0 : Intercept

$\beta_1, \beta_2, \beta_3, \beta_4$ Coefficients of financial services

e: Error term

Model 2: Effectiveness of non-financial services on Business Growth Sustainability

The dependent variable is: Business Growth Sustainability (BGS) while the independent variables are non-financial services

$$BGS = \beta_0 + \beta_1 EPT + \beta_2 FNL + \beta_3 BAS + \beta_4 MKA + e \dots \dots \dots \text{Equation (2)},$$

Where:

BGS: Business Growth Sustainability

EPT: Entrepreneurship Training

FNL: Financial Literacy

BAS: Business Advisory Service

MKA: Marketing Assistant

Other terms remain as previously defined

4.0 Data Analysis and Discussion of Results.

This section contains presentation and analysis of data followed by the discussion of the results obtained

4.1 Demographic Profile of Respondents

Table 1: Demographic Characteristics of Respondents

	Age Distribution	Frequency	Percentage
Age	21-40 years	104	30.9
	41-60 years	135	40.1
	60 years above	98	29.0
	Total	337	100
Distribution By Marital Status			
Marital Status	Singled	108	32.0
	Married	200	59.3
	Divorced	18	5.3
	Widow/Widowers	11	3.4
	Total	337	100
Education			
Education	Primary education	123	36.5
	Secondary education	165	49.0
	N.C.E/O.N.D	31	9.2

H.N.D/Bachelor's degree	18	5.3
Total	337	100

Source: Field Survey (2025)

The study's demographic and socioeconomic characteristics have shown that the study cut across people of different age group, and that the area is dominated by youth in their active age group. This implies a great number of the youth among women engaged in agro allied business in the area. The marital status depicts that 108 (32.0%) were single, 200 (59.3%) were married, 18(5.3%) were divorcees, while 11(3.4%) were widowers. This implies that the study cut across varying marital status in the selected areas and married women constituted the majority of the people involved in agro allied business in the study area. Lastly, the basic literacy level of selected respondents indicated that the respondents with primary education or equivalent were 123(36.5%), secondary education was 165(49.0%), and diploma qualification was 31 (9.2%) while respondents with degree certificate were 18 (5.3%). This result depicted a relatively low educational level among the respondents. The fact was that most of the respondents possess basic literacy certificates and this means they have basic education to comprehend the business activities in the study area.

4.2 Test of Hypotheses

Before testing the hypotheses using multiple linear regression (MLR), the study mandates the data have a multivariate normal distribution, and the assumption of heteroskedasticity and in some cases multicollinearity issues was observed using variance inflator factor (VIF). However, this model utilizing Heteroskedasticity Consistent Standard error Estimator (HCSE) to address the potential biases in S.E that can violate the assumption of homoskedasticity (constant variance of the errors). Similarly, various diagnostics check of fitted, residual and t-residuals was conducted signifying that the residual data are normally distributed. Linearity test was equally assessed by visually examining the shape of residual. According to the fitted and residual plot, it is appropriate to conclude that this dataset conforms to meet the assumption of linearity.

Table 2: Regression Diagnostics

<i>Diagnostics</i>	<i>Minimum</i>	<i>Maximum</i>	
Fitted	.7382	5.3081	
Residual	-1.0796	.9682	
t-residuals	-2.5573	2.2834	
<i>Shape of residuals</i>			
	Skewness	Kurtosis	
Value	.2105	.2996	
Std. error	.1591	.3169	
Breusch-Pagan test of heteroskedasticity			
	<i>Chi-square</i>	<i>df</i>	<i>P</i>
Normal	1.8834	3.0000	.5970
Robust	1.6611	3.0000	.6456

SPSS Computation, 2025

Meanwhile, SPSS was further employed to assess and potentially mitigate the impact of heteroskedasticity in the regression results using Breusch-Pagan test which shows chi-square robustness of 1.6611 lesser than the critical at a degree of freedom of 3 ($p\text{-value}=0.6456>0.05$), implies there is no heteroskedasticity in the model. Also, addressing the shape of residuals, the skewness and kurtosis values are .2105 and .2996 respectively and the normality test reveals a chi-square value of 1.8834 at degree of freedom of 3 ($p\text{-value}=0.5970>0.05$). This is an indication that test passed assumptions of normality and homoscedasticity of running least square regression model.

H_{01} : There is no significant impact of financial services on business growth among women in agro allied business in Kwara State

Table 3: Model Summary of the Relationship Between Financial Services and Business Growth among women in agro allied in Kwara State

Model 1	R	R Square	Adjusted R Square	Std. Error of the Estimate
Main Effect	.963 ^a	.927	.926	.42037

(FNG, FLT, SDT, INS)

a. Dependent Variable: BG

b. Predictors: (Constant), FNG, FLT, SDT, INS

The model summary demonstrates that the R- squared value is 92.7% (0.927) in the main effect of financial services, when all variables (FNG, FLT, SDT, INS) were included. Also, the adjusted R-squared of 92.6% was observed as the variance of business growth (BG) explained by the change in the metrics of financial services of microfinance bank (FNG, FLT, SDT, INS) in this model. The result reveals a strong relationship between financial services and business growth among women in agro allied in Kwara State exists at ($R=0.963$).

Table 4: ANOVA^{a,b} Test of Overall Significant of the Relationship Between Financial Services and Business Growth among women in agro allied in Kwara State

Model 1		Sum of Squares	df	Mean Square	F	Sig.
Main Effect	Regression	515.107	4	128.777	1055.549	.000 ^b
	Residual	40.466	333	.122		
	Total	555.573	337			

a. Dependent Variable: BG

b. Predictors: (Constant), FNG, FLT, SDT, INS

In table 4, the Anova test reveals an F-statistic value of 1055.549 for the model in the main effect with a significance level of $p=0.00<0.05$ at a degree of freedom (4, 333). This posited that there is significant relationship between financial services and business growth among women in selected agro allied businesses at 5% level of significant.

Table 5: Regression Coefficients^a Confirming the Significant of the Impact of Financial Services on Business Growth among women in agro allied in Kwara State

Model 1	Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	t		Tolerance	VIF
Constant	-.869	.144		.6050	.000		
INS	.331	.035	.299	9.457	.000	.668	1.497
SDT	.058	.021	.052	2.813	.005	.926	1.080
FLT	.082	.031	.053	2.651	.009	.797	1.255
FNG	.905	.039	.773	23.159	.000	.285	3.507

a. Dependent Variable: BG

The results in Table 5 indicates that all metrics of financial services of MFB (FNG, FLT, SDT, INS) have significant impact on business growth of women in agro allied ($p\text{-values} < 0.05$). Thus, using standardized beta-coefficients, the result perceived financial grants (FNG) positively affect business growth by 77.3% ($\beta = .773$; $t_{cal} = 23.159 > 1.645$). While the result perceived a unit change in flexible loan term (FLT) has positive improvement on business growth by 5.3% ($\beta = .053$; $t_{cal} = 2.651 > 1.645$). Similarly, perceived benefits of savings deposit thresholds (SDT) are tested positive to 5.2% improvement on business growth ($\beta = .052$, $t_{cal} = 2.861 > 1.645$). Lastly, a unit change of micro insurance (INS) is tested positive to cause 29.9% increase in business growth ($\beta = .299$; $t_{cal} = 9.457 > 1.645$). This result rejected the null hypothesis accepted the alternative by posited that there is significant impact of financial services on business growth among women in selected agro allied businesses in Kwara State.

H₀₂: Nonfinancial services have no effect on the sustainability of business among women in agro allied business in Kwara State.

Table 6: Model Summary^{a,b} of the relationship between non-financial services (NFS) and business growth sustainability (BGS) in agro allied in Kwara State

Model 2	R	R Square	Adjusted R Square	Std. Error of the Estimate
FRS, CBN, CAC, NCC	.954 ^a	.910	.909	.59889

a. Predictors: (Constant), EPT, FNL, BAS, MKA

b. Dependent Variable: BGS

IBM SPSS Computation, 2025

The table above demonstrates the model summary regression of non-financial services (EPT, FNL, BAS, MKA) on business growth sustainability (BGS). The model summary shows the R-square value is 0.910, which implies 91% improvement in business growth sustainability by the joint explanatory effect of non-financial services (EPT, FNL, BAS, MKA). Furthermore, the adjusted R-Square (0.909) which is a more conservative way of looking at the coefficient of determination is greater than 50%. In this case, metrics of non-financial services has variance possibility to determine 90.9% effective improvement on

business growth sustainability than the amount of unexplained variance (9.1%) in the model. This implies other unexplained factors (9.1%) is negligible or relatively small though deserve further empirical investigation. The R value of 0.954 revealed a strong positive relationship between non-financial services and sustainable business growth exists among women in agro allied in Kwara State.

Table 7: ANOVA^{a,b} of Overall Test of Significant of the Relationship between non-financial services and business growth sustainability among women in agro allied

				Mean		
Model 2		Sum of Squares	df	Square	F	Sig.
EPT, FNL, BAS, MKA	Regression	1142.997	4	285.749	2350.092	.000 ^c
	Residual	112.982	333	.339		
	Total	1255.980	337			

a. Dependent Variable: BGS

b. Predictors: (Constant), EPT, FNL, BAS, MKA

IBM SPSS Computation, 2025

In Table 7, the F-statistic values of 2350.092 output for the model with a significance level of $p=0.00<0.05$ at a degrees of freedom (4, 333) respectively. This posited that there is significant relationship between the metrics of non-financial services (EPT, FNL, BAS, MKA) and business growth sustainability (BGS). Hence, non-financial service has perfect predictive power to determine the effectiveness of sustainable business growth among women in agro allied at 5% level of significant.

Table 8: Regression Coefficients Showing Effect of Non-financial services on Sustainable Business Growth

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.036	.082		.433	.665		
MKA	.069	.016	.051	4.313	.001	.648	1.543
BAS	.232	.053	.220	4.407	.000	.715	1.399
FNL	.255	.057	.247	4.462	.000	.593	1.686
EPT	.615	.054	.543	11.404	.000	.726	1.377

a. Dependent Variable: BGS

b. Predictors: (Constant), EPT, FNL, BAS, MKA

IBM SPSS Computation, 2025

From the result of the weighted least square regression parameters as indicated by the p-values in table 8, all metrics of non-financial services (EPT, FNL, BAS, MKA) have significant effect on sustainable business growth ($p\text{-values}<0.05$). Thus entrepreneurship training (EPT) causes 61.5% improvement on business growth sustainability ($\beta=.615$; $t_{cal}=11.404>1.645$). While financial literacy (FNL) projected 25.5% improvement on business growth sustainability ($\beta=.255$; $t_{cal}=4.462>1.645$), a unit change in business advisory service causes an improvement of 23.2% of sustainable business growth $\beta=.232$; $t_{cal}=4.407>1.645$). Lastly, a unit change in marketing assistant (MKA) causes about 6.9% improvement on sustainable business growth $\beta=.069$; $t_{cal}=4.313>1.645$). This result implies that the t-values above the

threshold of 1.645 and therefore posited that there is effectiveness of non-financial services to causes a significant improvement on sustainable business growth at 5% level.

4.3 Summary of Findings

This study examines the roles of microfinance services (financial and non financial services) on business growth and sustainability of women in agro allied business in Kwara State. The result of the first hypothesis which posits that there is no significant impact of financial services on business growth among women in agro allied business in Kwara State, was tested using multiple regression analysis. The substantial R square value (0.927) highlights the positive significance effect of financial services on business growth in selected agro allied business in the study area. Contrarily, scholars have proclaimed that the impact of financial services may be overstated in certain context. For instance, Babajide (2012), Arogundade (2010), Muogbo and Tomola (2018) highlighted that while financial service is crucial, its accessibility from microfinance banks did not improve the growth of small business in Nigeria. This study provides substantial evidence to reject the null hypothesis (H_{01}), affirming that financial services have a significant impact on the business growth among women in selected agro allied businesses in Kwara State. This underscores the necessity to prioritize and implement most effective financial services to bolster the growth of women's business in agro allied in the long run.

The findings from the second hypothesis revealed that non-financial service account for 91% increase in sustained business growth which suggest that entrepreneurship training is the most effective instrument of microfinance banks which accounts for a higher explanatory power of the sustainable business growth. The limited explanatory power of the micro insurance aligned with the previous study of Fowowe et. al., (2022) and Aladejebi (2019) that there is a vacuum created when certain issues that prevent microfinance banks from effectively supporting business in realizing the growth aren't adequately addressed. This finding suggests that while non-financial service is effective, it is higher in explanatory power on its own to drive sustainable improvements in business growth. Therefore, women entrepreneurs in agro-allied business should adopt a multifaceted approach, combining financial and non-financial services with broader sustainability strategies to enhance business growth.

5.0 Conclusion and Recommendations

This study concluded that there is significant impact of financial services on business growth of women in agro-allied and that the level of effectiveness of non-financial support to survival of agro-allied business of women is limited in Kwara State.

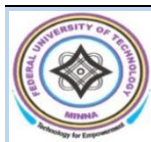
The study recommended that MFBs should develop and promote financial solutions tailored to support women in agro-allied businesses, to ensure attainment of business growth. MFBs should intensify their effort to provide entrepreneurship training for sustainability of business growth among women in the agro allied business in Kwara State.

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Impact of Government Recurrent Expenditure on Nigeria's Economic Growth: 1981-2023

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Abstract

Nigeria is a developing economy that has been enjoying slow and volatile growth despite the consistent rise in their recurrent expenditure in government even though this growth has been low, which makes one wonder whether government spending is actually effective in driving economic performance. This paper analyzes how government recurrent expenditure affects the economic growth of Nigeria, between 1981-2023 with Autoregressive Distributed Lag (ARDL) model. The findings reveal that there is a high rate of adjustment, 96 percent of the past disequilibrium was corrected in a year which demonstrates a rapid recovery to the long run stability. The results indicate that frequent spending on agriculture (EGRXA) has a negative impact on economic growth with about 1% rise in EGXA will lead to 2% and 3% reduction in economic growth in the short and long run, respectively. There are also negative, nonsignificant impacts of spending on road construction (EGRXR), inflation (NIFR), and other economic services (EGRXO) on the growth. On the contrary, communication recurrent expenditure (EGRXT) has a positive and significant effect on economic growth in both time horizons, with about 1% rise in EGRT will lead to 2% and 5% rise in economic growth in the short and long run, respectively. The research finds out that composition of recurrent expenditures are important to the growth of Nigeria economy and recommends more recurrent funding on agriculture, maintained investment in communication services and better accountability in other economic service sectors, to boost their contribution to the economic growth of Nigeria.

Keywords: Government Spending, Recurrent Expenditure, Economic Growth, Autoregressive Distributed Lag Model (ARDL), Expo Facto.

1.0 Introduction

In economic growth, government spending is key especially in developing economics like Nigeria. Public expenditure is still among the most important instruments of affecting economic performance as governments around the globe intervene in the economy with fiscal and monetary policies to attain macroeconomic goals (Okere et al., 2019). Public spending is being used to redistribute income, allocate resources to strategic areas, and alter the mix of national output in both the developed and developing countries. This is even more important in the case of developing countries where it is equally accepted that government expenditure is a major contributor to infrastructure growth, human capital building and technological advancements, which are seen to play a vital role in catalyzing economic growth and facilitating the establishment of an enabling environment whereby the private sector can invest. The government spending, which is financed by the revenue generated by taxes, levies, and other means, thus becomes an essential tool to ensure a sustainable growth and more balanced economic results (Assi, et al., 2019; Okere et al., 2019).

The necessity of state intervention in the economic activity was particularly demonstrated during the Great Depression of the 1930s that led to the development of the Keynesian economic theory. Unlike classical opinions on the self-regulating influence of the market forces, Keynesian economics underlines the necessity of conscious government spending to stabilize production, generate demand, and eliminate unemployment (Shaikh, 2009; Backhouse, 2015). Although government spending today takes many different shapes (investment, transfers or consumption), it is still critical to stimulate growth as well as alleviate poverty and enhance welfare in developing economies (Farooq et al., 2023). In line with the Keynesian theory, government expenditure may boost aggregate demand, which in turn supports additional economic expansion and job creation. But, cutting back on government spending might have a negative impact on the economy. The economy is stimulated when the government spends more because it raises demand for goods and services. Higher production levels and employment rates as a result of this rise in demand support economic expansion. Spending by the government can also be very important in lowering unemployment. Redistributing income is another major goal of government spending, which is crucial for lowering poverty and advancing equality (Tenai, 2020).

Government expenditure is classified into capital expenditure and recurrent expenditure. The former includes spending of government on creating or acquiring non-current assets that are permanent in nature. The benefits of capital expenditure are not immediately revelatory, yet they are necessary for the development and growth of the economy. These include the construction of roads, buildings, health and educational facilities, dams, air and sea ports, etc. The recurrent expenditure (hereinafter referred to as government consumptions), on the other hand, is concerned with spending on items consumed for a limited period of time or expenses incurred on a regular basis for the functioning of government machinery. Such items include wages, salaries, consumables like stationery for schools, drugs for health services, national defence, pensions, cost of governance, among others (Andinyanga & Anietie, 2022).

The government's total expenditure, which encompasses both capital and recurrent expenditures, increased at an irregular rate from approximately ₦11.4 billion in 1981 to approximately ₦60.3 billion in 1990 and 12.1641 trillion in 2021 (CBN, 2021). The federal government's spending in Nigeria has been significantly impacted by recurring expenditures, which are a result of factors such as the growth of the civil service and the disproportionate salaries of political office holders, among others. Recurrent expenditure increased from ₦4.8 billion in 1981 to approximately ₦36.2 billion in 1990 and surpassed ₦9.1452 trillion in 2021. Capital expenditures also underwent some changes during these periods, as the total capital expenditure increased from ₦6.6 billion in 1981 to ₦24 billion in 1990 and ₦2.5225 trillion in 2021 (CBN, 2021). There is no doubt that the government spends more on recurrent expenditure than capital expenditure. Basically, to achieve a sustainable level of development, it is expected that the government participate in the provision of some basic public infrastructures that are fundamental to the economy. These public infrastructures include roads, bridges, security, health, water, electricity, school and so on (Okere et al., 2019). The large quantum of funds injected into the economy by the Nigerian government to finance the recurrent and capital expenditure has therefore led to an increase in aggregate money supply without the corresponding stability of the macroeconomic variables (employment/unemployment rate, interest rate, balance of payment, consumer price index, gross domestic product and so on) (Monogbe et al., 2016). Rising government recurrent expenditure is one of the ways the government has used to support economic growth and development (Ekpo et al., 2022).

Over the years, the Nigerian economy has grown unevenly and frequently slowly, much like the economies of many developing nations. The federal government's recurrent spending is

one of the main causes of this rise. Recurrent spending by the federal government, which includes payments for purposes other than capital projects, is also essential for promoting sustainable economic growth (Frank & Kereotu, 2020). According to some perspectives, government spending can be a significant growth engine, while others contend that excessive government spending might hinder economic expansion (Pehlivan et al., 2021; El-Yaqub et al., 2025). This emphasizes the need for a more thorough comprehension of the connection between Nigeria's economic growth and government spending. Some argue that there is no meaningful relationship between government spending and economic growth, while others contend that there is a positive association (Idris & Baker, 2017, Akomolafe & Agunbiade, 2019). Nigerian governments have been investing large sums of money in infrastructure, operating costs, and expenditures in the hope that this will accelerate the nation's economic growth and development. However, current trends indicate that the rate of output growth is outpacing the rate of economic expansion. According to statistics, for instance, the government grew from ₦60.3 billion in 1990 to 12.1641 trillion in 2021 without the economy growing at a rate that matched the increase in government (CBN, 2021). Despite the fact that Nigeria's gross domestic product (GDP) increased by an average of 7% between 1970 and 1979, it experienced an average decline of 0.9% in corresponding periods due to numerous recessions. Instead of experiencing economic growth, the country plunged into recession as a result (Okere et al., 2019).

The impact of government expenditure on economic growth in the Nigerian economy is revisited in this research in light of the competing claims made in the literature that government improve economic growth (Awode and Akpa, 2018, Idris and Bakar, 2017, Ihugba and Njoku, 2017, and Jibir and Aluthge, 2019) but Okere et al., 2019; Farooq et al., 2023; Gukat and Ogboru, 2017; Nurudeen and Usman, 2010; Segun and Adelowokan, 2015; Awode and Akpa, 2018 argued that government spending do not improve economic growth. It is on the basis of the inconclusive results that this study also wants to reinvestigate the impact of government expenditure on Nigeria's economic growth. Lastly, the study was motivated by separate data on government recurrent expenditure. Few studies have only looked at the effects of government capital expenditure and recurrent expenditure. Others, like Gukat and Ogboru (2017), went even further and separated government capital expenditure and recurrent expenditure into administration, economic service, social and community service, and transfer payment. This study, on the other hand, only looks at economic service under recurrent expenditure, which is an area that many scholars didn't pay enough attention to. The study focuses on the impact of public recurrent expenditure on economic growth with disaggregated data only on economic services by looking at the contributions of government recurrent expenditure on agriculture, road construction, communication and other economic services.

The study is structured as follows; section one deals with the introduction while section two, explains literature review and theoretical framework. Section three presents the methodology of the study and section four focus on data analysis, discussion of results. Finally, section five presents the conclusion and recommendations of the study.

2.0 Literature Review

2.1 Conceptual Review

Government expenditure is the sum of all the funds that the government allocates to a variety of services and facilities in order to stimulate economic growth and development, (Jeff-Anyeneh and Ibenta, 2019; Akomolafe & Agunbiade, 2019). Ukwueze (2018) disaggregates or classify public expenditures into subheadings, such as recurrent expenditures and capital expenditures. The recurrent expenditures are expenditures or purchases of stationeries, wages

and salaries of workers, fuel, electricity bills and other bills, interest on loans, and maintenance costs. They are all examples of recurring expenses that the government incurs. The majority of this expenditure is comprised of wages, salaries, and supplements, as well as spending on goods and services and consumption of fixed capital (depreciation) (CBN 2021). Capital expenditures on the other hands, are allocated to initiatives such as roads, airports, health, education, electricity production, telecommunications, and water. Capital expenditures are constructions undertaken by the government on roads, bridges, health centres, schools, military installations and hardware. Capital expenditures, on the other hand, are payments made for the acquisition of intangible assets, stock, property, or fixed capital assets. A prominent example of infrastructure initiatives is the construction of new schools, hospitals, or highways. Although the majority of donor-funded "capital" expenditure relates to projects, it also includes payments on non-capital expenditure (CBN 2021).

Anyiwe and Oziegbe (2020) claimed that economic growth is linked to increasing levels of urbanisation, health, education, technology, and production across all industries. Furthermore, economic growth is defined as the gradual expansion of a nation's capacity to offer a broader selection of economic goods and services to its populace. This process also leads to an increase in national production and income, as it entails the gradual expansion of the economy's productive capacity. Economic growth is a phenomenon in which the national income, population, and real per capita income all significantly and persistently rise over time. The expansion of the system in one or more dimensions is all that's needed to achieve economic progress; no fundamental adjustments are required (Anyiwe & Oziegbe, 2020; El-Yaqub, Akomolafe & Owunnah, 2025). Ukwueze (2018) states that a nation is considered to be economically developed when there is a noticeable and long-lasting growth in its production or per capita income, together with changes in the size of the labour force, consumption, capital, and trade volumes.

2.2 Theoretical Framework

The Keynesian theory of public expenditure was adopted because it is applicable to the issue under investigation. Keynes believed that expansionary fiscal policy would bring about economic growth. Keynes contended that there is a direct correlation between increased government spending and overall demand. The reduction in taxes would increase the after-tax earnings of households, and they are expected to spend the majority of this additional money, thereby increasing overall demand. The Keynesians favoured a higher budget deficit in order to mitigate a recession. In the event that inflation was a concern during an economic expansion, Keynesian thinking favoured the implementation of more stringent fiscal policy measures to mitigate excessive demand. In this scenario, it would be feasible to combat inflation and reduce overall demand by increasing taxes, reducing government spending, and transitioning to a budget surplus.

Consequently, Keynes was opposed to the notion that the government's treasuries should be depleted. He stated that budgetary policy should be contingent upon economic conditions. The Keynesian school of thought posits that governments should operate deficits during recessions and surpluses when inflation is caused by excessive demand. Is it possible for fiscal policy to mitigate economic volatility? The Keynesian theory of fiscal policy was the trend in the field of economics during the 1950s and 1960s. At that time, the majority of economists believed that fiscal policy could be implemented in a manner that would counteract the effects of business cycle fluctuations and have a substantial impact on the economy. However, the mission at hand is more difficult than initially anticipated. To have a stabilising impact on the economy, fiscal policy adjustments must be made at the right time.

2.3 Empirical Review

Chandana, Adamu, and Musa (2020) examined the impact of government expenditure on GDP growth in Nigeria. Their study examined the correlation between economic development in Nigeria and capital and recurrent government expenditure by employing time series data from 1970 to 2019. The investigation implemented the ARDL (Autoregressive Distributed Lag) model. In the co-integration analysis and unit root test, structural flaws are taken into account to make sure the results are reliable. Capital investment does influence economic development, as opposed to recurrent expenditure, which does not influence growth in the short or long term, according to the primary conclusions of the study. Ultimately, the study's results are consistent with the notion that a greater portion of the government's expenditures should be allocated to initiatives that enhance the quality of life for their constituents. Additionally, the government should exercise caution when allocating funds; however, it should allocate funds to initiatives that will contribute to human development and the nation's overall spending practices.

Rehman et al. (2020) worked on the government's expenditure composition and economic growth in Pakistan. The study aimed to ascertain the impact of different government spending components on Pakistan's economic development from 1973 to 2018. They used ARDL, taking into account the findings of the ADF test. According to the study, the impact of public spending, namely spending on R&D, subsidies and other transfers, employee remuneration, and education, on GDP per capita stayed considerable and positive. But the cost of the military and interest on loans has a notable and detrimental impact on Pakistan's per capita productivity. According to the report, the government should increase expenditure on employment, R&D, and education in command to hasten the nation's economic growth. Okere *et al.* (2019) investigated the impact of Nigerian government expenditures on GDP growth. The primary objective of the investigation is to ascertain the extent to which Nigeria's economic growth is influenced by government expenditures, which spans the years 1981–2016 with the error correction model (ECM) technique and Granger causality. The Granger Causality findings demonstrated a bidirectional causal relationship between economic growth and government expenditure on services and administration. Economic development and community services are causally related, but only in a single manner. The government ought to increase budgetary deductions in such sectors in a strategic and productivity-focused way.

According to Phiri's (2019) analysis of the impact of military expenditure on economic growth in Nigeria, the current level of defence expenditure does not facilitate growth and development. This was determined through the use of a VAR estimation method. The finding revealed that military expenditure does not translate to economic growth. He suggests that the government reduce defence spending and allocate the funds to other sectors of the economy in order to stimulate growth. Ditimi et al. (2019) equally examined the relationship between the components of government expenditure and economic growth in Nigeria from 1970 to 2018, with a particular emphasis on education, agriculture, health, and transportation and telecommunications factors. The results of the long-term and short-term regression estimates indicated that the most significant impact of government expenditure components on economic growth was on agriculture.

Ebaid and Bahari (2019) found a unidirectional connection between expenditure and economic growth using data from Kuwait and the ARDL estimate approach. In order for expenditure to have an impact on economic growth, they consequently proposed that it must follow a certain pattern of spending. Olayungbo and Olayemi (2018) using Vector Error Correction Model for 1981-2015 Nigerian data established government expenditure have negative and significant impact on economic growth in both short and long runs. This was due to the perceived debt burden has on government spending. They therefore suggest that government should limit its

spending in the economy within the confine of its budgetary revenue and avoid deficit as much they can to forestall the negative effect its spending has on economic growth. Nworji et al. (2018) conducted research that investigated the correlation between economic growth and public spending in Nigeria. Variables that were considered significant indicators of both economic growth and government expenditure from 1970 to 2017 were incorporated into the study. The Ordinary Least Square (OLS) multiple regression model was implemented due to the apparent causal relationship between government expenditure and economic growth. The study's results indicate that capital and recurring expenditure on economic services did not have a substantial impact on economic growth. The impact of capital expenditures on transfers on growth was negligible. Both one-time and ongoing expenditures on social and community services, as well as ongoing expenditure on transfers, significantly contributed to economic growth.

3.0 Methodology

The study used an ex post facto research design to determine the impact of government recurrent expenditure on economic growth in Nigeria. The ex post facto strategy is chosen because it allows the researcher the ability to control the variables, mostly because they have already happened and cannot be altered. One quasi-experimental approach is the ex post facto effect design, which looks at how several independent variables affected the dependent one. The Auto-Regressive Distributed Lag (ARDL) technique was employed in the empirical analysis of this research. It utilised yearly time-series data and covered a 43-year period, from 1981 to 2023. The ARDL bond testing method is employed to investigate the long- and short-term relationship between the independent and dependent variables of the study. As Pesaran *et al.* (2001) developed ARDL. ARDL method is applied to deal with the variables having stationary of series mixture of $I(0)$ and $I(1)$. ARDL model is superior to the other cointegration model and provides reliable results for small sample size (Pesaran *et al.*, 2001). The unit root, ARDL bound test and diagnostic checks were carried out as well.

Nature and Sources of Data

The study employs time series data for the period of 1981 to 2023. Data on economic growth proxied by GDP growth rate being the dependent variable and inflation rate being the control variable were sourced from World Bank development indicators (WDI, 2023) while government recurrent expenditure on agriculture, road construction, communication and other economic services.; formed the independent variables. They were sourced from the statistical bulletin of the CBN 2023.

Model Specification

The study adapted Okere *et.al* (2019) model. Their model is specified as follow:

$$RGDP = f(\text{ADMIN, ECON, COMTY, TRSF}) \dots\dots\dots (1)$$

Expressed in econometric form as:

$$RGDP = \alpha_0 + \alpha_1 \text{ADMIN} + \alpha_2 \text{ECON} + \alpha_3 \text{COMTY} + \alpha_4 \text{TRSF} + u \dots\dots\dots (2)$$

Where:

RGDP= Real Gross Domestic Product

ADMIN=Government Expenditure on Administration

ECON= Government expenditure on economic Services

COMTY= Government Expenditure on Community Services

TRSF= Government Expenditure on Transfers

μ = error term

Their model was therefore modified with introduction of inflation rate as control variable, and further disaggregate components of government recurrent expenditure on economics services into agriculture, road construction, communication, and other economics services. Then, also use GDP growth rate as proxied for economic growth. The model is now specified to achieve the objective of this study as follows:

$$\text{NEGR} = \alpha_0 + \alpha_1 \text{EGRXA} + \alpha_2 \text{EGRXR} + \alpha_3 \text{EGRXT} + \alpha_4 \text{EGRXO} + \alpha_5 \text{NIFR} + U \dots (3)$$

Where:

NEGR = Nigeria Economic growth (GDP growth Rate as proxy for economic growth)

EGRXA = Government Recurrent Expenditure on agriculture

EGRXR = Government Recurrent Expenditure on road construction

EGRXT = Government Recurrent Expenditure on communication

EGRXO = Government Recurrent Expenditure on other economics services

NIFR = Nigeria inflation rate

U = error term, α_0 = intercept, $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ = Coefficients of the model

Therefore, ARDL representation of the relationship among the variables is provided in Eq. (4) as follows:

$$\begin{aligned} \text{NEGR}_t = & \gamma_0 + \gamma_1 \text{NEGR}_{t-1} + \gamma_2 \text{EGRXA}_{t-1} + \gamma_3 \text{EGRXR}_{t-1} + \gamma_4 \text{EGRXT}_{t-1} + \gamma_5 \text{EGRXO}_{t-1} + \gamma_6 \text{NIFR}_{t-1} \\ & + \sum \beta_1 \Delta \text{NEGR}_{t-1} + \sum \beta_2 \Delta \text{EGRXA}_{t-1} + \sum \beta_3 \Delta \text{EGRXR}_{t-1} + \sum \beta_4 \Delta \text{EGRXT}_{t-1} + \sum \beta_5 \Delta \text{EGRXO}_{t-1} \\ & + \sum \beta_6 \Delta \text{NIFR}_{t-1} + \sum \beta_7 \Delta \text{ECM}_{t-1} + \varepsilon_t \dots (4) \end{aligned}$$

where $\beta_2, \beta_3, \beta_4, \beta_5$ and β_6 represent the short-run parameters while the $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6$ denote the long-run parameters and β_7 represents the error correction mechanism which also speed of adjustment of disequilibrium in previous period to restore equilibrium in current period.

A priori Expectations

The apriori expectation is expected sign that independent variables should have on dependent variable; EGRXA, EGRXR, EGRXT and EGRXO should have positive impact on Nigeria economic growth while NIFR is expected to have negative impact on Nigeria economic growth. It is stated symbolically as; $\alpha_1, \alpha_2, \alpha_3, \alpha_4 > 0$ while $\alpha_5 < 0$.

Variables Measurement

Data on economic growth proxied by GDP growth and inflation rate were measured in percentage while government recurrent expenditure on agriculture, road construction, communication and other economic services were all measured in billions of Naira.

4.0: Results and Discussion

4.1 Unit Root Test

The Unit root results for variables employed in the study are presented in Table 1 as follows:

Table 1: Unit Root Result

Time Series	ADF Statistics at level	Critical Value at level		ADF Statistics at 1 st Diff	Critical Value at 1 st Diff		Stationary Status at 5%
NEGR	-3.244201	-3.600987	1% level	-10.82942	-4.198503	1% level	(0)
		-2.935001	5% level		-3.523623	5% level	
		-2.605836	10% level		-3.192902	10% level	
EGRXA	-4.148049	-4.192337	1% level	-7.448236	-4.205004	1% level	(0)
		-3.520787	5% level		-3.526609	5% level	
		-3.191277	10% level		-3.194611	10% level	
EGRXR	-2.727497	-4.192337	1% level	-8.234120	-4.205004	1% level	(1)
		-3.520787	5% level		-3.526609	5% level	
		-3.191277	10% level		-3.194611	10% level	
EGRXT	-4.439581	-4.198503	1% level	-5.218947	-4.198503	1% level	(0)
		-3.523623	5% level		-3.523623	5% level	
		-3.192902	10% level		-3.192902	10% level	
EGRXO	-4.218183	-4.192337	1% level	-6.892115	-4.205004	1% level	(0)
		-3.520787	5% level		-3.526609	5% level	
		-3.191277	10% level		-3.194611	10% level	
NIFR	-4.025612	-4.198503	1% level	-6.554905	-4.205004	1% level	(0)
		-3.523623	5% level		-3.526609	5% level	
		-3.192902	10% level		-3.194611	10% level	

Source: E-view Version 10.0 Output, 2025.

Stationary result is reported in Table 1, that all the variables (NEGR, EGRXA, EGRXT, EGRXO and NIFR) are stationary at level; I(0) except EGRXR that is stationary at first difference I(1) at 5% level of significance. They result shows that the variables employed in the study are mixed order of integration which inform the use of ARDL.

4.2 ARDL Bound Test Results

Table 2 shows the ARDL bound test for long run relationship among the variables as follows:

Table 2: ARDL Bound Test Results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.081588	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: E-view Version 10.0 Output, 2025

Based on the result optimum lag selection, the ARDL bound Test is used to estimate long run relationship among the variables. The result shows that there is long run relationship among the variables because the F-statistics test for co-integration is 8.081588 is greater than all the critical values at both I(0) and I(1) as contain in Table 2.

4.3 ARDL Short Run Analysis

After the model is estimated the sort run impact of independent variables on dependent variable is represented in Table 3 as follows:

Table 3: ARDL Short Run Regression (Dependent Variable: NEGR)

ARDL Error Correction Regression

Dependent Variable: D(NEGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(EGRXA)	-0.019288	0.007285	-2.647642	0.0130
DLOG(EGRXT)	0.022759	0.007241	3.143256	0.0038
DLOG(EGRXT(-1))	-0.005932	0.006188	-0.958542	0.3457
DLOG(EGRXT(-2))	-0.015075	0.005683	-2.652852	0.0128
LOG(EGRXR)	-0.010482	0.008250	-1.270584	0.2140
EGRXO	-0.000111	8.05E-05	-1.376057	0.1793
NIFR	-0.042520	0.031168	-1.364230	0.1830
CointEq(-1)*	-0.953254	0.115366	-8.262898	0.0000
R-squared	0.701793	Adjusted R-squared		0.667712

Durbin-Watson stat

2.373254

Source: E-view Version 10.0 Output, 2025

The report of ARDL short run analysis is presented in Table 3 with the impact of estimated coefficients on dependent variable. The ECM result correctly signed with negative and significant impact on NEGR. This result is line with apriori expectation. This can be explained further that the speed of adjustment is 95% which implies that about 95% disequilibrium in previous period is restored into equilibrium current period. This speed is very fast and quick to restores any disequilibrium in short run to equilibrium in the long run.

Based on the behaviour of the estimated coefficients; it shows that independent variables have both positive and negative impact of on dependent variable. In other words, EGRXA and EGRXT have a negative and a positive significant impact on NEGR, respectively for the period under reviewed. EGRXT conformed with a priori expectation because is expected that rise in EGRXT should lead to rise in EGRXR while EGRXA did not conform with a priori expectation because is expected that rise EGRXA should lead to rise in NEGR but reverse is the case. To further illustrate this, 1% rise in EGRXA and EGRXT will lead to 2% fall and rise in NEGR in the short run, respectively.

However, EGRXT, NIFR and EGRXO have a negative insignificant impact on NEGR, respectively with about 1% rise in EGRXT and NIFR will lead to 1% and 4% fall in NEGR, respectively while $\text{N}1$ rise in EGRXO will lead to $\text{N} -0.000111$ fall in NEGR. On the final note in Table 3 is the coefficients of determination (R^2) measure the proportion of variability in the NEGR that is accounted for independent variables. The $R^2 = 0.701793$ presents a model that is positively strong between NEGR and independent variables. Therefore, the model is a good fit since about 70% of changes in the NEGR are due to changes in explanatory variables, while 30% of changes in the NEGR are due to influence of external factors not reflected in the model. Base on the rule of thumb, DW is 2.373254 which implies that there is no autocorrelation in model because the value is close to or around two approximately. By implication, the estimated parameters are valid and good for policy making.

4.4 Long-Run Estimation

The long-run impact of independent variables on dependent variable is estimated as in Table 4 as follows:

Table 4: Long-Run Estimation Results (Dependent Variable: NEGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(EGRXA)	-0.034414	0.010285	-3.345945	0.0023
LOG(EGRXR)	-0.010996	0.008624	-1.275139	0.2124
LOG(EGRXT)	0.055594	0.011278	4.929385	0.0000
EGRXO	-0.000116	8.13E-05	-1.430305	0.1633
NIFR	-0.044605	0.032275	-1.382047	0.1775
C	0.058917	0.012950	4.549422	0.0001

Source: E-view Version 10.0 Output, 2025

The Long run estimation is reported in Table 4 with the impact of EGRXA, EGRXR, EGRXT, EGRXO and NIFR on NEGR. The results show that EGRXA and EGRXT have a negative and a positive significant impact on NEGR, respectively with about 1% rise EGRXA and EGRXT on average will lead to 3% and 5% reduction in NEGR, respectively. On the other hand, EGRXR has a negative insignificant impact on NEGR with 1% rise in EGRXR on average will lead to about 1% fall in NEGR. Finally, on Table 4 contains negative insignificant impact of EGRXO and NIFR on NEGR with 1% rise in NIFR on average will lead to 0.4% reduction in NEGR while ~~N~~1 rise in EGRXO on average will lead to ~~N~~-0.000116 fall in NEGR.

4.5 Diagnosis Checks

Stability Test

The test for stability is shown in Figure 1

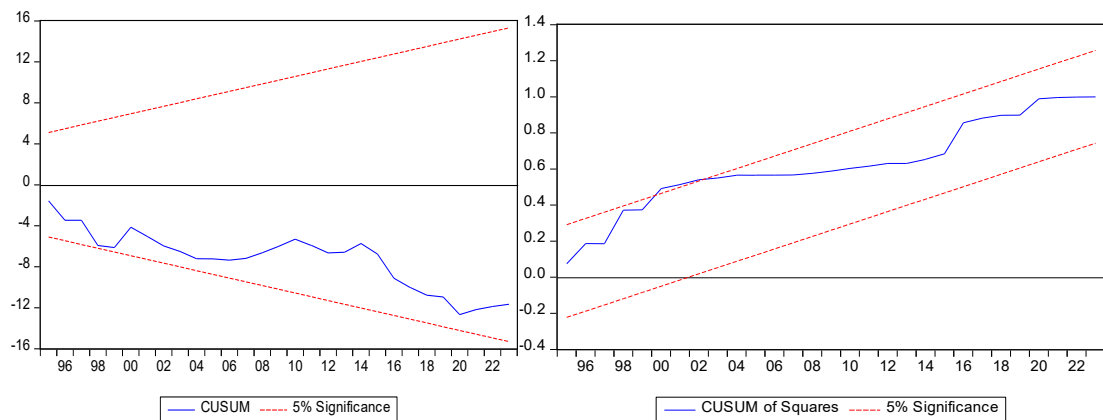


Figure 1: CUSUM and CUSUM of squares, Source: E-view Version 10.0 Output, 2025

Testing for stability of the model is very paramount to determine the validity of the parameters used in the study; it is on this CUSUM and CUSUM of squares are used to test for stability of the model which is reported in Figure 1 the plot of the CUSUM and CUSUM of squares statistics for the ARDL model reveal that CUSUM and CUSUM of squares stay within the critical 5% bounds which show the stability of the ARDL model over the period of investigation. The result of ARDL can be relied upon and good for policy making. The result also informs us that there is no structural break for the period under review.

4.6 Residual Diagnostic Check

The residual diagnostic check is presented in Table 5 as follows:

Table 5: Residual Diagnostic Check

Test Statistics	Assumption	Probability
Breusch-Godfrey	Serial Correlation	0.2419
Breusch-Pagan-Godfrey	Heteroskedasticity	0.8862
Jarque Bera	Normal Distribution	0.2942

Source: E-view Version 10.0 Output, 2025

Autocorrelation heteroskedasticity, and normality tests are reported in Table 5 with insignificant probability values of 0.2419, 0.8862, and 0.2942, respectively. This reveals the absence of serial correlation heteroskedasticity, and non-normality assumptions suggesting that the estimated model is valid and useful for policy implication.

4.7 Discussion and Policy Implications

The results estimated are for both long run and short run with a view to provide policy makers with options to make appropriate decision for the overall performance of the economy either in short run and long run. Economics services of Government Recurrent Expenditure on agriculture (EGRXA) have negative significant impact on Nigeria economic growth (NEGR) both in the short run and the long run. In other words, increase in government recurrent expenditure on agriculture has not in any way improves economy activity either in long run or short run. In fact, the more government increase overhead expenditure on economics services, economic growth is retarded which does not conform with a priori expectation and the study of Ditimi, *et. al*; 2019 who discovered that government expenditure improves economy activities via agriculture but Chandana, Adamu & Musa (2020) finding revealed that government recurrent expenditure has no significant impact on NEGR. This could be as result of corruption and embezzlement of public funds by government officials and wrong or poor implementation of government policies.

However, government recurrent expenditure on road and construction (EGRXR) has a negative significant impact on NEGR both in short run and long run. This implies that increase in government recurrent expenditure on economic services has negative influence on the economy which should have positive impact on the economy. This does not confirm with a priori expectation that government spending on economic services promote growth. This finding is line with Chandana *et al*; 2020 and Onifade, *et al* (2020) but Ditimi *et. al*; 2019 but has contrary result. Furthermore, Economics services of Government Recurrent Expenditure on transport and communication (EGRXT) has positive significant impact on NEGR in short run and long run respectively. The finding conform with a priori expectation in both in short run and the long run with a view that if government increases overhead spending on communication will result to positive and impact significant impact on economic activities both in the short run and the long run through payment of workers' salaries and staff training because investment in human capital through training will improve productivity of workers and also have multiplier effect on economy because workers will be empowered through wages and salaries received to buy goods and services from other sectors of the economy. The finding collaborates Ditimi, *et. al*. (2019), and Iheanacho, (2016).

Additionally, Economics services of Government Recurrent Expenditure on other economics services (EGRXO) has negative insignificant impact on NEGR both in short run and long run. This is one of the components of government recurrent expenditure on economics that its impact neither felt significantly both in short run or long run. Government investment on EGRXO government overtime has no meaningful impact on the economy. This also could be possible due to corruption and embezzlement that have eaten deep into the system. This finding was supported by Chandana, *et.al*, 2020 who investigated impact of government expenditure on GDP growth in Nigeria. Finally, Nigeria inflation rate (NIFR) has negative insignificant impact on NEGR in short run and long run. This implies that low inflation rate will improve economic growth. Even though, there is increase in government expenditure for long period of time, in the presence of high inflation, purchasing power will be reduced and eventually, growth will be retarded which does agree with theoretical justification that low inflation promotes growth.

5.0 Conclusion and Recommendations

The study concluded that the increase in government economic services and recurrent expenditure on agriculture over time have not translated into economic growth. In a situation where proper monitoring and adequate attention are not given in the way and manner in which government resources are allocated to the sector, the situation becomes worrisome, and there is a tendency for embezzlement and misappropriation of resources by government officials that will eventually retard growth. Furthermore, economic services of government recurrent expenditure on road construction (EGRXR) and economic services of government recurrent expenditure on other economic services (EGRXO) have not been effective over the period under investigation, which calls for the government to exercise caution before pumping more funds into this particular sector. Finally, the study concluded that government expenditure has a significant impact on Nigeria's economic growth, and the economic services of government recurrent expenditure on communication (EGRXT) is the most productive and effective component of government recurrent economic services expenditure, with a positive and significant impact on Nigeria's economic growth (NEGR) in both the short and long run.

Recommendations

The following are recommended base on the findings:

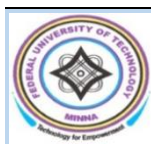
- i. Government through budget and allocation office should deliberate allocate more resources for recurrent expenditure on economics services on agricultural sector with a view to strengthen the productive activities in the sector and every resource allocated to the sector should be monitored and accounted for.
- ii. Government spending on recurrent expenditure on communication should be sustained and increased in order to enhance productivity.
- iii. Government through ministry of budget and economic planning should supervise and scrutinize every activity under the ministry of works especially on road construction and cut excessive spending in the sector.
- iv. Government through ministry of budget and economic planning should cut recurrent expenditure on economics services on other economics services and channel such unproductive expenditure towards agricultural sector and road construction sector in order to enhance movement of agricultural products from rural areas to where the products are needed.

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Credit Risk Management and Financial Performance of Deposit Money Banks in Nigeria

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Abstract

This study examines the effect credit risk management on the financial performance of Deposit Money Banks (DMBs) in Nigeria. Analysing panel data from five internationally licensed banks between 2013 and 2022, a log-linear regression model was employed with Return on Equity (ROE) as the performance measure. The results indicate that Loan-to-Deposit Ratio (LDR) ($\beta = 1.288$, $p = 0.00002$), Non-Performing Loan Ratio (NPLR) ($\beta = 0.472$, $p = 0.00099$), and Risk Asset Ratio (RAR) ($\beta = 0.233$, $p = 0.0003$) all have positive and statistically significant effects on ROE. Specifically, a 1% increase in LDR and NPLR leads to approximately 1.29% and 0.47% increases in ROE, respectively, while a 1% rise in RAR improves ROE by about 0.23%. The model explains about 39.8% of the variation in ROE which indicate a moderate explanatory power. The study concludes that effective credit risk management enhances profitability but cautions that excessive risk-taking in pursuit of higher returns could undermine long-term financial stability. It recommends that regulators strengthen supervisory frameworks to balance profitability objectives with sound risk management practices.

Keywords: Credit risk, financial performance, deposit money banks, Non-performing loan

1.0 Introduction

Commercial banks in Nigeria have evolved significantly over the years, transitioning from the foundational role of collecting and safeguarding depositors' funds to becoming critical drivers of economic growth through credit creation, financial intermediation, and the provision of diverse financial services (Mogaji *et al.*, 2021; Yahaya, 2022). As key players in Nigeria's financial system, deposit money banks facilitate economic activities by channeling funds from surplus units to deficit units to support businesses, industrial development, and financial inclusion (Omodero, 2021).

The efficacy of a bank's credit risk management is typically gauged through specific financial metrics that reflect the quality of its loan portfolio and the prudence of its lending practices. Key among these metrics is the Non-Performing Loan (NPL) ratio, which measures the proportion of loans on which debtors have failed to make scheduled payments for a specified period. A high NPL ratio is a direct indicator of poor asset quality and weak credit assessment processes, eroding profitability through loss provisions and impairing the bank's capital base (Kolapo *et al.*, 2020).

Another critical metric is the Loan-to-Deposit Ratio (LDR), which indicates the percentage of a bank's deposits that have been advanced as loans. While a high LDR suggests efficient financial intermediation, an excessively high ratio may signal overexposure to credit risk and potential liquidity shortfalls, prompting regulatory oversight such as the CBN's minimum LDR requirement of 65% to stimulate lending (CBN, 2019; Arogundade and Adegbeie, 2024).

Furthermore, the Risk Asset Ratio is often adopted to assess the bank's capital buffer against its risk-weighted assets. This ratio is crucial for determining the bank's resilience to loan losses; a strong capital adequacy position ensures that the bank can absorb unexpected losses without becoming insolvent, thereby safeguarding financial stability (Adeusi *et al.*, 2023). Collectively, these dimensions provide a comprehensive view of the credit risk landscape facing Deposit Money Banks in Nigeria.

Previous studies attention have been directed towards understanding the nexus between credit risk management and bank performance. For instance, Kajola *et al.* (2018) examined the effect of credit risk indicators on the financial performance of ten listed deposit money banks in Nigeria between 2005 and 2016. Using return on assets as proxy for performance, and non-performing loans to total loans ratio (NPLLR), non-performing loans to total deposit ratio (NPLDR), and capital adequacy ratio (CAR) as credit risk measures, they found a statistically significant relationship between credit risk management and bank performance. Similarly, Ayinuola and Gumel (2023) noted that bad debt tended to have a negative effect on performance deposit money banks.

While these studies have provided valuable insights into the relationship between credit risk and bank performance, several gaps remain unaddressed. The studies rely on aggregate financial indicators without disaggregating across bank sizes, structures, or market strategies, thus overlooking the heterogeneity in how banks manage credit risk. In addition, the interaction between digital credit technologies, risk profiling tools, and loan performance remains underexplored, despite their growing relevance in contemporary banking operations. This study therefore aims to address these gaps by examining the relationship between loan-to-deposit ratio (LDR) and financial performance of deposit money banks in Nigeria; risk asset ratio (RAR) and financial performance of deposit money banks in Nigeria; non-performing loans ratio (NPLR) and financial performance of deposit money banks in Nigeria. The study used return on equity (ROE) as a proxy for assessing the performance of deposit money banks in Nigeria.

2.0 Literature Review

2.1 Conceptual Review

Credit Risk is defined as the potential that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms, leading to a financial loss for the institution (Basel Committee, 2001). Beyond this regulatory definition, it represents the probability of default on a debt obligation that may arise from a borrower's declining financial capacity or willingness to repay (Afriyie *et al.*, 2021). Effective credit risk management is not merely about loss avoidance but involves a strategic trade-off: maximizing returns from lending while maintaining exposure within prudent and regulatory limits. This is particularly critical in emerging economies like Nigeria, where economic volatility and information asymmetry can exacerbate default probabilities (Ayinuola and Gumel, 2023). This study focused on NPLR, LDR, and RAR as key indicators of credit risk management because they collectively capture asset quality, liquidity efficiency, and risk-weighted asset exposure which are fundamental determinants of banks' financial performance.

The Non-Performing Loan Ratio (NPLR) is a primary and direct indicator of asset quality within a bank's credit portfolio. It is calculated as the value of non-performing loans (loans where principal and/or interest payments are past due by a specified period, typically 90 days) divided by the total loan portfolio. A rising NPLR signals deteriorating credit quality, leading

to reduced interest income and increased provisions for loan losses, which directly erode profitability (Kolapo *et al.*, 2020). A high NPLR is often linked to capital impairment and can trigger regulatory scrutiny, as it threatens the bank's stability and lending capacity (Almustafa *et al.*, 2023).

Loan-to-Deposit Ratio (LDR) measures a bank's liquidity and its credit expansion strategy, calculated as total loans divided by total deposits (Basel Committee, 2001). It indicates what percentage of a bank's core deposits are deployed into interest-earning loans. While a higher LDR suggests efficient utilization of deposits to generate revenue, it also signifies lower liquidity and potentially higher credit risk exposure. An excessively high LDR may indicate that the bank is over-leveraging its deposit base, which could lead to inadequate liquidity buffers and increased vulnerability if loan defaults spike (Coyle, 2016).

The Risk Asset Ratio (RAR) is often contextualized within capital adequacy frameworks, assesses the riskiness of a bank's asset portfolio. It is frequently expressed as the ratio of risk-weighted assets to total assets. Not all assets carry the same risk; for instance, loans to corporates are riskier than government securities. The RAR reflects the degree to which a bank's assets are concentrated in higher-risk categories. A higher RAR implies a greater potential for volatility in the asset base and necessitates a stronger capital cushion to absorb potential losses, as per the Basel Accords. It is a forward-looking indicator of portfolio risk concentration, and its prudent management is essential for maintaining capital adequacy and long-term solvency (Olanrewaju, 2021).

Within the framework of this study, financial performance is measured using Return on Equity (ROE), which captures how efficiently a bank converts shareholders' equity into net profits. ROE serves as a vital indicator of managerial efficiency, profitability, and capital utilization (Ichsani and Suhardi, 2021; Hertina and Saudi, 2023) which makes it a useful proxy for assessing the outcomes of credit risk management practices. Effective management of credit risk variables such as Non-Performing Loan Ratio (NPLR), Loan-to-Deposit Ratio (LDR), and Risk Asset Ratio (RAR) directly influences ROE by influencing both the income and risk profiles of banks. A lower NPLR and optimal LDR enhance earnings stability (Lusy *et al.*, 2018), while prudent RAR management ensures that profitability is not achieved at the expense of excessive exposure (Hertina and Saudi, 2023). Hence, ROE in this study indicates the dynamic balance between risk-taking and return optimization within Nigeria's banking sector.

2.2 Theoretical framework

This study is anchored on Credit Risk Theory (Merton, 1977) and Agency Theory (Jensen & Meckling, 1976). Credit Risk Theory provides a structural framework for understanding default risk which emphasized that a borrower's default occurs when the value of its assets falls below its debt obligations. In banking, this shows the vulnerability of financial institutions to borrower default and the importance of managing credit exposures to safeguard capital and maintain profitability. The use of the NPL aligns with this theory, as it represents the realized form of default risk. Agency Theory, on the other hand, explains how conflicts of interest between bank managers and shareholders can lead to excessive risk-taking. Managers pursuing growth targets or short-term gains may raise the LDR and RAR without due consideration of credit quality, which can increase default rates and reduce profitability. These theories provide a coherent foundation for examining how credit risk management variables used in this study influence the financial performance of DMBs which is reflected in their ROE.

2.3 Empirical Review

Several studies have assessed the relationship between credit risk management and the financial performance of commercial banks, both within Nigeria and internationally. The findings from these studies provide valuable insights for understanding how credit risk indicators influence bank performance over time.

Mogaji *et al.* (2021) assessed the effect of credit risk indicators on the financial performance of ten listed deposit money banks in Nigeria, using data from 2005 to 2016. Return on assets (ROA) and return on equity (ROE) were employed as performance indicators, while non-performing loans to total loan ratio (NPLLR), non-performing loans to total deposit ratio (NPLDR), and capital adequacy ratio (CAR) served as proxies for credit risk management. Their study revealed that the selected credit risk measures had statistically significant effects on both ROA and ROE, suggesting a strong link between credit risk management and financial performance.

Yahaya (2022) explored the effect of credit risk and bank-specific factors on the performance of commercial banks in South Asia, drawing on data from ten banks in Pakistan and nine in India between 2009 and 2018. Using the generalized method of moments (GMM), the study found that non-performing loans, cost-efficiency ratio, and liquidity ratio negatively and significantly influenced both ROE and ROA. In contrast, capital adequacy ratio and average lending rate showed a positive and significant association with both performance metrics, underscoring the regional applicability of credit risk indicators.

Olanrewaju (2021) examined the impact of credit risk management on the profitability of commercial banks in Ethiopia using data spanning 2008 to 2018. Return on assets (ROA) was adopted as the proxy for profitability. Their regression results indicated that capital adequacy ratio, loan-to-deposit ratio, and provision for loan loss to total loans had significant positive effects on ROA. Conversely, non-performing loans, loan-to-total asset ratio, and cost-per-loan ratio exerted significant negative effects on bank profitability.

Mudanya *et al.* (2022) investigated the relationship between credit risk management practices and financial performance of commercial banks in Vihiga County, Kenya, using a mixed-method approach that included secondary data (2016–2021) and questionnaire responses. Their findings demonstrated that loan default monitoring, credit scoring techniques, and adherence to credit policies significantly influenced financial performance, as measured by ROA.

More recently, Bhatt *et al.* (2023) studied the determinants of credit risk and their relationship with the performance of commercial banks in Nepal. Using partial least squares structural equation modeling (PLS-SEM) to analyze data from a structured questionnaire, they found that environmental risk, credit appraisal mechanisms, and market risk analysis had significant effects on credit risk. Furthermore, credit risk management served as an intermediary variable, linking these determinants to the performance of commercial banks.

3.0 Methodology

This study adopted a correlational research design to examine the effect of credit risk management on financial performance of banks. The study population consists of all 25 Deposit Money Banks (DMBs) operating in Nigeria as of 2022. A purposive sampling technique was employed to select a sample drawn from Access Bank, First Bank, Fidelity Bank, Guaranty Trust Bank and Zenith Bank. The selection was guided by two criteria: the banks must hold

an international operating license from the Central Bank of Nigeria (CBN) and must be listed on the Nigerian Exchange Group (NGX). These criteria were implemented to ensure the consistent availability of high-quality, audited financial data and to enhance the comparability of the institutions across the study period which covered 2013 to 2022.

The data analysis for this study involved a multi-stage process to examine the relationship between the variables using the specified log-linear panel regression model. The results of the regression, including the coefficients, t-statistics, p-values, and the overall model fitness (R-squared), were then interpreted to draw conclusions on the impact of the credit risk metrics on bank performance. The variables considered in this study include the Loan-to-Deposit Ratio (LDR), Risk Asset Ratio (RAR), and Non-Performing Loans Ratio (NPLR) as proxies for credit risk, while Return on Equity (ROE) is used as the dependent variable and serves as a proxy for financial performance. To address issues of non-normality and heteroscedasticity often present in financial data, all variables were transformed using their natural logarithms prior to analysis.

3.1 Model Specification

The regression model adopted for this study is based on the model of Ayustina *et al.* (2023). However, the model for this paper was changed to the natural log to take care of the likelihood of a false result.

$$\text{Log}_{ROE} = F(\text{Log}_{RAR}^{\text{LDR}} \text{Log}_{NPL}^{\text{RAR}})$$

Where

ROE = Return on equity

LDR = Loan – to – Deposit Ratio

RAR = Risk Asset Ratio

NPL = Non = Performing Loans

$$\text{Log}_{ROE} = \text{Log}\alpha_0 + \text{Log}\alpha_1 \frac{\text{LDR}}{\text{RAR}} + \text{Log}\alpha_2 \frac{\text{RAR}}{\text{NPL}} + u$$

Where

α_0 = constant t / intercept

$\alpha_1 - \alpha_2$ = coeffieicients t of IV / intercept

U = error terms

4.1 Result and Discussion

4.2 Overall Model Fit and Diagnostics

The overall model fit provides a reasonable indication of the explanatory power and reliability of the estimated regression. The R-squared value of approximately 0.3984 suggests that about 39.8% of the variation in the log of return on equity (ROE) across the sampled banks and time periods is explained jointly by changes in the log functions of the independent variables. While this is moderate by econometric standards, it is not unusual for models using financial panel data, where unobserved institutional and macroeconomic factors may account for additional

variation in performance outcomes. The adjusted R-squared, which accounts for the number of explanatory variables, stands at 0.2742, indicating that after adjusting for degrees of freedom, roughly 27.4% of the variation in ROE remains attributable to the included predictors.

The F-statistic of 12.11, accompanied by a p-value of 0.0323, confirms that the joint explanatory power of the regressors is statistically significant at the 5% level. This implies that the model as a whole has predictive value and that the included credit risk indicators (LDR, NPLR and RAR) are not jointly irrelevant in explaining changes in bank profitability. Furthermore, the Durbin-Watson statistic of 2.1610 suggests that the model does not suffer from first-order autocorrelation in the residuals, which strengthens the reliability of the coefficient estimates. The diagnostic criteria such as the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn also help in comparing model fit across alternative specifications, with lower values indicating better model efficiency. Taken together, these diagnostics affirm the adequacy of the model in capturing key dynamics between credit risk management and bank performance.

Table 1.1: Natural log regression result

	<i>Coefficient</i>	<i>Std. Error</i>	<i>T-ratio</i>	<i>P-value</i>	
<i>C</i>	1.24611	0.276101	4.1732	0.00003	***
<i>LogNPL</i>	0.471921	0.12617	3.1315	0.00099	***
<i>LogLDR</i>	1.28842	0.210560	4.2200	0.00002	***
<i>LogRAR</i>	0.2329	0.12706	3.2710	0.0003	***

Dependent variable: *LogROE*

Mean dependent var	-3.226048	S.D. dependent var	1.313191
Sum squared resid	76.92370	S.E. of regression	1.006789
R-squared	0.398411	Adjusted R-squared	0.274206
F- statistic	12.11352	P-value(F)	3.23e-02
Log-likelihood	-120.1780	Akaike criterion	213.9510
Schwarz criterion	134.8191	Hannan-Quinn	221.1143
		Durbin Watson	2.1610

Source: Author's Calculation

Table 1.1 presents the result of the data analysis. The coefficient on $\ln(\text{NPL}) = 0.4719$ ($P = 0.00$) indicates that a 1 % increase in the non-performing loans ratio is associated with roughly a 0.50 % increase in ROE, all else equal. This positive coefficient may appear counterintuitive, one might expect that rising non-performing loans would erode profitability. However, in the Nigerian DMB context, this result can be interpreted thus. Banks that maintain higher NPL ratios may be those that take on riskier credit exposures (e.g., lending at higher spreads to marginal borrowers). If the riskier loans generate higher interest margins (before being written off), the bank's overall ROE can rise even as NPLs mount. In other words, the bank's asset-pricing strategy might "front-load" returns at the cost of increased future credit losses.

The coefficient on $\ln(\text{LDR}) = 1.288$ ($P = 0.00$) indicates that a 1 % increase in the loan-to-deposit ratio is associated with about a 1.3 % increase in ROE, holding other factors constant. This result aligns with standard financial intermediation theory which shows banks that lend a larger proportion of their deposits typically generate higher interest income (spread), which feeds directly into equity returns, provided credit quality does not deteriorate too sharply. In

practical terms, a bank that pushes its LDR from, say, 50 % to 51 % (roughly a 2 % relative increase) could see its ROE expand by approximately 2.6 % ($2 \% \times 1.3$).

The coefficient on $\ln(\text{RAR}) = 0.2329$ ($P = 0.0003$) indicates that a 1% increase in the risk asset ratio is associated with approximately a 0.23% increase in Return on Equity (ROE), *ceteris paribus*. This positive and statistically significant relationship suggests that Nigerian banks with a higher proportion of risk-weighted assets in their portfolio tend to experience higher profitability. This finding aligns with the fundamental risk-return paradigm in finance, which posits that higher expected returns are a compensation for bearing greater risk (Coyle, 2016). In practice, this implies that banks are generating higher returns by allocating more capital to riskier, higher-yielding assets such as corporate loans and commercial mortgages, as opposed to low-risk, low-return government securities.

The positive relationship between non-performing loans (NPLs) and profitability found in this study presents an intriguing contrast to the predominant findings in the Nigerian banking literature. For instance, the results of Kolapo *et al.*, (2020), who established a significant negative impact of NPLs on bank performance, align with the conventional expectation that asset quality deterioration erodes profitability. Similarly, Olanrewaju (2021) identified high NPL levels as a core challenge to profitability in the post-consolidation era. The counterintuitive positive coefficient in the current analysis, however, may not necessarily invalidate these earlier findings but rather suggest a more nuanced, short-term strategic behavior. It is plausible that the period under review captures a scenario where certain banks engaged in higher-risk lending at premium interest rates, thereby "front-load" returns. This strategy would temporarily boost interest income and ROE, even as NPLs accumulate, a risk that may materialize fully in a subsequent period. Conversely, the strong positive relationship between the loan-to-deposit ratio (LDR) and ROE is consistent with financial intermediation theory and aligns with (Mudanya *et al.*, 2022) who highlighted the profitability benefits of efficient fund utilization following the Central Bank of Nigeria's LDR policy.

5.1 Conclusion and Recommendation

This study assessed the relationship between credit risk management and the financial performance of selected deposit money banks (DMBs) in Nigeria over a ten-year period (2013–2022). Utilizing a log-linear panel regression model on data from five systemically important banks, the analysis confirms that credit risk metrics are statistically significant determinants of bank performance, as measured by Return on Equity (ROE).

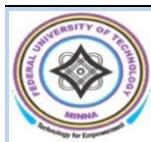
The findings reveal two key insights. First, the loan-to-deposit ratio (LDR) demonstrated a strong positive influence on ROE, underscoring the fundamental profitability of financial intermediation for Nigerian banks. Second, and more notably, a positive relationship was found between the non-performing loans ratio (NPLR) and ROE. This counterintuitive result suggests a nuanced credit environment where banks may be engaging in risk-based pricing, generating higher interest income from riskier loans in the short term, even as this strategy leads to an accumulation of non-performing assets. This highlights a potential trade-off between immediate profitability and long-term asset quality stability within the Nigerian banking sector. To strengthen credit risk management and promote sustainable financial performance, regulatory authorities such as the Central Bank of Nigeria should enhance risk-based supervision, including stress testing, while also reviewing monetary policy tools like the Cash Reserve Requirement to avoid unintended constraints on deposit funding and exposure to foreign exchange risk. At the institutional level, bank management and boards should reinforce

internal credit governance by investing in data-driven assessment systems, adhering strictly to risk management policies, and developing risk-based pricing models, while also ensuring diversification of loan portfolios across sectors, borrower sizes, and regions to reduce concentration risks.

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Transportation and Economic Development in Lagos State, Nigeria

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Abstract

Lagos state as the commercial capital of Nigeria has chains of commercial activities driving its overall economic wellbeing. While it is difficult to clearly state the major drivers of economic development in Lagos, it is certain that Lagos witnesses the influx of people from all walks of life as settlers and for business purposes. This brings about the need to enhance the transportation system and the infrastructure to accommodate the ever-increasing population of the commercial city. This study therefore examines the effect of transportation on the economic development of Lagos state, Nigeria. Transportation was assessed using three themes (transport infrastructural quality, transportation policy frameworks and operational performance) while economic development was considered from the overall well-being of the state. The study utilized qualitative research design and deployed content analysis on the reviewed extant literature to draw inferences based on the themes of the study. The study found that Lagos has robust transportation infrastructure in place and outstanding transportation policy framework. However, the operational performance of the transport system requires the implementation of the state transport policy to achieve the desired efficiency. It was recommended among others, that the state should intensify effort in ensuring full implementation of its transport policy to mitigate incidence of congestion, touting among commercial drivers and enhance transportation safety.

Keywords: Transportation, Economic Development, Infrastructure, Urban Mobility

1.0 Introduction

Transportation is one of the cornerstones of every nation's economy as it stimulates economic activities through the movement of people, goods, and services across spatial and market boundaries. Efficient transportation networks facilitate access to markets, employment opportunities, and social services, thereby enhancing economic output and competitiveness. According to Rodrigue (2020), transportation does not only support production and distribution processes but also, links regions and stimulating industrial growth. In developing economies like Nigeria, the quality and accessibility of transportation infrastructure often determine the pace and direction of economic development. Economic activities encompass the various processes through which goods and services are produced, distributed, and consumed within an economy. These activities include trade, manufacturing, construction, logistics, and service delivery, all of which rely heavily on a well-structured transportation system for optimal performance. Banister (2021) affirmed that efficient transportation networks reduce transaction costs, enhance supply chain reliability and increase productivity by minimizing delays in production and distribution.

In the context of Lagos State, where commerce, industry, and informal trade dominate the economic landscape, transportation is not merely a support system but a catalyst that drives investment, employment, and regional integration. Hence, understanding how transportation infrastructure influences these economic activities is vital for sustainable urban development.

Road transportation which is the focus of this study is a dominant mode of transportation in Nigeria, accounting for the majority of passenger and freight movement across the country and

Lagos in particular. These facilities include highways, expressways, bridges, urban roads, and feeder routes that connect residential, industrial, and commercial areas. According to the Federal Ministry of Works and Housing (2022), over 90% of human and goods movement in Nigeria occurs via road transport, making it the most critical mode for daily economic transactions. Well-maintained roads facilitate efficient mobility, reduce vehicle operating costs, and ensure timely delivery of goods and services. Conversely, inadequate or deteriorating road infrastructure results in increased travel time, higher transportation costs, and reduced productivity. As highlighted by Aderamo and Magaji (2021), the condition of road networks directly correlates with economic performance, particularly in urban areas where industrial and commercial activities are concentrated.

In Lagos State, road transportation facilities significantly affect the state's economic activities due to the city's high population density and complex mobility patterns. Lagos, Nigeria's economic powerhouse, serves as a critical node in the national transportation network and a gateway to regional and international trade. With a population exceeding 20 million people, the state's rapid urbanization and economic vibrancy have created an enormous demand for efficient and reliable transport services. However, road congestion, poor maintenance, and inadequate infrastructure continue to impede economic efficiency. The World Bank (2023) notes that traffic congestion in Lagos leads to an estimated economic loss of over \$1 billion annually due to lost working hours and increased vehicle maintenance costs. Despite these challenges, efforts such as the expansion of the Bus Rapid Transit (BRT) system, road network rehabilitation, and the development of alternative corridors have been introduced to ease congestion and enhance mobility. According to the International Finance Corporation (2022), these initiatives are crucial in improving service delivery, promoting sustainable transport, and strengthening the state's economic resilience. The Lagos State Government has recognized the importance of transportation in its development agenda. Policies such as the Lagos State Transport Policy (2024) and the Lagos State Development Plan (2022–2052) outline strategies for sustainable transport development. These policies emphasize the need for integrated transport systems, public-private partnerships, and investment in infrastructure to support economic growth and improve quality of life for residents (Lagos State Government, 2024; World Bank, 2023).

Lagos State continues to grapple with severe transportation challenges that undermine its economic potential and urban efficiency. The state's road network, which carries over 90% of passenger and freight traffic (Federal Ministry of Works and Housing, 2022), is overstretched due to rapid population growth and urban expansion. According to the National Bureau of Statistics (2023), Lagos contributes approximately 30% of Nigeria's Gross Domestic Product (GDP), yet loses an estimated ₦3 trillion annually due to traffic congestion, productivity loss, and increased fuel consumption. The World Bank (2023) further estimates that the average Lagos commuter spends over four hours daily in traffic, representing one of the highest congestion rates in Africa. These practical realities highlight the urgent need for an efficient and sustainable transportation framework that can support economic development in Lagos State.

From a theoretical standpoint, this challenge aligns with the growth pole theory and the urban transportation economic model, which posit that infrastructure development particularly transportation acts as a catalyst for economic activities by improving accessibility, reducing transaction costs, and enhancing labour mobility (Perroux, 1955; Rodrigue, 2020). However, when transportation systems are inefficient, the expected multiplier effects on industrial growth, trade, and productivity are significantly diminished. In the case of Lagos, the disjointed transport infrastructure has resulted in high logistics costs, limited access to industrial zones, and low competitiveness in trade and service delivery. The theoretical implication suggests that

without a functional and integrated transportation system, Lagos's role as Nigeria's economic nerve centre may continue to be constrained by structural inefficiencies.

Empirically, several studies have underscored the relationship between transportation and economic growth in Nigeria, yet persistent challenges remain. For instance, Aderamo and Magaji (2021) found that inadequate road networks in Lagos significantly contribute to increased travel times and reduced industrial productivity. Similarly, Banister (2021) observed that poor transport coordination and weak policy implementation in urban centres limit the full exploitation of economic opportunities. In another study, Olagunju and Ajayi (2022) reported that while government investments in projects such as the Bus Rapid Transit (BRT) and Lagos Rail Mass Transit have improved mobility, but systemic inefficiencies such as maintenance lapses, policy inconsistencies and limited stakeholder participation continue to impede sustainable outcomes.

This implies that Lagos State's economic development is largely constraint by transportation efficiencies that manifest in congestion, inadequate infrastructure, environmental degradation and policy incoherence. While substantial investments have been made in road expansion, traffic management and public transport modernization, the expected improvements in economic efficiency and social welfare remain minimal. It is on the basis of the foregoing that this study examined the role of transportation in the economic development of Lagos State by analysing infrastructural quality, policy frameworks, and operational performance.

2.0 Literature Review

This section reviews Relevant literature within the subject matter of this study, conceptually, theoretically and empirically.

2.1 Concept of Transportation

Transportation, according to Rodrigue (2020), is the spatial process that links geographical areas through the movement of people, goods, and information. It serves as a critical component of economic and social development by facilitating access to markets, employment, education and healthcare. Hoyle and Knowles (2021) define transportation as the means and methods by which society's spatial structures are organized to enable movement from one place to another. Button (2020) describes transportation as the provision of infrastructure and services that allow people and commodities to move safely and efficiently between locations. More so, Banister (2022) defines transportation as the process of enabling mobility within societies through the development of infrastructure, technology, and governance mechanisms. The foregoing definitions underscores the importance of sustainable transportation systems that balance economic growth with environmental preservation.

Litman (2023) conceptualizes transportation as the organized movement of people and goods designed to meet the spatial and temporal needs of human activities through different mode and means of transportation. Furthermore, Black (2021) defines transportation as the movement of passengers and freight through various modes, including road, rail, air, and maritime systems, each governed by specific physical, economic, and institutional characteristics. In this study transportation is conceptualized as the movement of people, goods and services from one location to another using different modes such as air, water and land. The various modes of transportation as identified by Litman (2023) and Banister (2022) are air, water and land modes of transportation.

Air transport involves the movement of passengers and cargo by aircraft. It is the fastest mode of transportation, suitable for long distances, high-value goods and time-sensitive travel (Litman, (2023). In Nigeria, air transport connects major cities and supports international trade

and tourism. Water transport entails moving goods and passengers through oceans, rivers and coastal waterways (Banister, 2022). It is the oldest and most cost-effective mode for bulky, heavy and international shipments. In coastal cities like Lagos, water transport is also used for ferry services across inland waterways. Land transport includes road and rail systems and is the most widely used mode globally due to accessibility and flexibility (Litman, 2023). It enables door-to-door mobility and supports daily socioeconomic activities. In Lagos, land transportation particularly road transport is the dominant mode due to the city's dense population, widespread road networks and heavy reliance on buses, cars, motorcycles and commercial vehicles for commuting and freight movement. Given the three modes of transportation and the context of the study (Lagos state), the study dwell on land transportation (road and rail that carries over 80% of commuters and goods within the state).

From the foregoing definitions, it is evident that transportation is not merely about physical movement but also about the facilitation of economic, social, and spatial connectivity that serves as a critical determinant of economic performance, especially in urban centers like Lagos, where mobility challenges directly impact trade, employment and service delivery (World Bank, 2023; IFC, 2022; ScienceDirect, 2023).

2.1.2 Concept of Economic Development

Samuelson and Nordhaus (2020) define economic development as a sustained improvement in the economic well-being and quality of life of a population. It goes beyond mere increases in income or output to include structural transformation, improved living standards, enhanced human capital and expanded opportunities for individuals and businesses. Unlike economic growth which focuses mainly on quantitative expansion such as rising GDP economic development emphasizes qualitative changes such as better health, education, infrastructure, technological advancement, and institutional efficiency (Todaro and Smith, 2021). It is therefore a broad process that reflects how a country or region progresses socially, economically, and institutionally over time.

Gregory and Stuart (2020) affirmed that economic activities contribute to economic development when they generate employment, income, and productivity improvements that stimulate broader societal advancement. For example, investments in industries, services, agriculture, and technology lead to increased production, innovation, and market expansion. These activities create jobs, raise household incomes and expand government revenue, enabling greater public investment in infrastructure, education, healthcare and social services (Mankiw, 2022). As these improvements accumulate, they enhance human welfare, attract more investment, strengthen institutions and foster sustainable growth (Krugman and Wells, 2023; Aigbokhan, 2021). consequently, everyday economic activities such as trading, manufacturing, transportation, and service provision serve as engines that gradually transform a society from basic subsistence toward higher levels of prosperity and development.

From these definitions, it is clear that economic activities are central to the functioning of any economy. They involve a complex interaction between production, distribution, and consumption processes that drive income generation, employment, and overall economic growth. The efficiency of these activities is influenced by infrastructure, human capital, technology, and governance (World Bank, 2023; UNDP, 2022; Lagos State Ministry of Economic Planning and Budget, 2024). In the context of Lagos State, economic activities are particularly dynamic due to the state's status as Nigeria's commercial hub. The manufacturing, service, transportation, and informal sectors collectively contribute to the state's Gross Domestic Product (GDP). However, challenges such as inadequate road infrastructure, congestion, and urban inequality continue to hinder the full potential of economic activities

(IFC, 2022; Lagos State Government, 2024). For the purpose of this study, economic activities are operationally defined as all human and institutional efforts directed toward the production, distribution, and consumption of goods and services that generate income, create employment, and enhance the standard of living within Lagos State. This definition is adapted from Todaro and Smith (2021) because it comprehensively captures the productive and developmental dimensions of economic activities while aligning with the study's focus on how transportation influences economic performance in Lagos.

2.2 Theoretical Framework

Therefore, this paper is anchored on Urban Economic Theory. Urban Economic Theory focuses on how economic activities shape and are shaped by cities, focusing on land use, housing markets, and transportation systems (Fujita, 2024). It analyses how policies, infrastructure and governance impact urban development and the welfare of city residents. The understanding of urban economics helps make informed decisions about urban planning and sustainable growth ((Elo *et al.*, 2020; Vaia, 2024). A central concept in urban economic theory is the study of agglomeration economies, which occur when firms and individuals concentrate in urban areas, leading to increased productivity and innovation. This concentration allows for better access to labour, suppliers, and markets and transportation thereby fostering economic growth and development (Fujita, 2024).

2.3 Empirical Review

Fadare and Ayantoyinbo (2010) conducted a study on the Impact of Road Traffic Congestion on Freight Movement in Lagos. Utilizing stratified sampling, they surveyed 85 truck drivers, 91 shippers, and 108 suppliers, analysing the data through multiple regression techniques. The study found that congestion leads to decreased vehicle utilization, reduced fuel efficiency, increased fleet operation costs, and a shrinkage in market coverage, ultimately raising shipment costs. The authors recommended implementing traffic flow management strategies, off-peak transport incentives, and strategic route planning to enhance freight transport cost efficiency and sustainability. Bassey (2022) study on Urban Traffic Congestion in Calabar identified factors contributing to urban traffic congestion in Calabar, Nigeria. Through purposive sampling, the research focused on four major intersections: UNICAL Roundabout, Effio-Ette Roundabout, Watt Market Roundabout, and Ekpo Abasi Roundabout. The study utilized 200 randomly sampled questionnaires to gather data. Findings indicated that poor road conditions, inadequate infrastructure, and high vehicle volume were significant contributors to congestion. The study recommended improving road infrastructure, enforcing traffic regulations, and developing alternative routes to alleviate congestion.

Atoyebi (2015) examined Public Transport Efficiency at Ojuelegba Park, Lagos. The study employed physical observation, field inventory, oral interviews, and questionnaire administration to assess service efficiency. Findings revealed issues such as overcrowding, irregular schedules, and inadequate facilities affecting service efficiency. The authors recommended enhancing bus fleet management, improving scheduling, and upgrading facilities to meet increasing demand. World Bank (2020) analysed the Transport Infrastructure and Welfare in Nigeria. The study utilized data analysis of transport infrastructure and welfare indicators. Findings indicated that reducing transportation costs leads to increased crop revenue, non-agricultural income, wealth index, and local GDP. The report recommended investing in transport infrastructure to stimulate economic growth and improve welfare outcomes.

Banerjee *et al.* (2020) studied on the Access to Transportation Infrastructure and Economic Growth in China. The research analysed regional economic data over a twenty-year period. Findings revealed that proximity to transportation networks has a moderate positive causal

effect on per capita GDP levels across sectors. The study recommended prioritizing infrastructure development in under connected regions to promote balanced economic growth. World Bank (2023) examined The Economic Role of Transportation Infrastructure and Investment in Nigeria. The study employed an ARDL model to analyse time series data from 1980 to 2021. Findings highlighted the pivotal role of transportation infrastructure investment in driving economic growth in Nigeria. The report recommended increasing public and private investment in transportation infrastructure to sustain economic development.

3.0 Methodology

The study utilized qualitative research design. The of the research design is in tandem with nature of the study where the exploration and interpretation of the findings of the extant literature were reviewed to gain deeper understanding of the subject matter of this study. The reviewed empirical literature provides insights into the key themes of the study (infrastructural quality, policy frameworks and operational performance in relation to economic development). The reviewed literature were analysed using content analysis based on the themes of the study. This allows the study to discuss and draw inferences from the existing studies which provide basis for the conclusion and recommendations. The method also supports interpretive analysis, allowing for in-depth reflection on how improvements in transportation system can enhance economic growth and development.

4.0 Discussion of findings based on extant literature

Findings emanating from the reviewed literature are reviewed hereunder in line with the themes of the study.

4.1 Infrastructure Quality and economic development

The reviewed literature revealed that transportation systems and infrastructure exert a dual influence; positively when efficient and accessible, but negatively when characterized by congestion, inefficiencies and infrastructural decay. Evidence from the Lagos State Government's infrastructure reports (2024) and World Bank (2023) affirmed that efficient road networks and functional public transport highly correlate with increased economic productivity and trade facilitation, while bottlenecks and inefficiencies constrained growth and reduced competitiveness. One of the prominent sub-themes that emerged from the reviewed literature was traffic congestion, consistently identified as a major constraint on economic productivity in Lagos State. Empirical reports indicate that Lagos ranks among the most congested cities in Africa, with peak-hour travel extending up to three hours on major corridors such as the Lagos-Ibadan Expressway and Third Mainland Bridge (Fadare and Ayantoyinbo, 2010; Bassey, 2022). Congestion contributes to significant economic losses through reduced labour mobility, increased operational costs for businesses, and diminished access to employment centres. The inefficiency of freight movement also disrupts supply chains and logistics operations, resulting in higher commodity prices. This finding aligns with Banerjee, *et al.*, (2020), which established that urban congestion reduces city-level competitiveness and elevates logistics costs in major metropolitan economies.

There is clear evidence of huge investment in public transport to enhance mobility and economic inclusion in Lagos state. However, despite the presence of multiple transport options such as buses, and motorcycles; public transport in Lagos suffers from overcrowding, irregular scheduling and inadequate coverage, limiting accessibility to key economic zones (Atoyebi *et al.*, 2015). This inefficiency compels a shift towards private vehicle use, worsening congestion and environmental degradation. Remarkably, the ongoing initiatives such as the Bus Rapid Transit (BRT) system and Lagos Rail Mass Transit (LRMT) demonstrate the zeal of the state government to improve the public transport infrastructure and this has over the years, significantly enhanced workforce mobility, expand labour market access and stimulate small

and medium-scale enterprises. These findings affirm that accessible and efficient transport systems and infrastructure are foundational to inclusive economic growth and development.

4.2 Transport Policy Frameworks and Economic Development

Evidence from extant literature reveal that transportation infrastructure and management practices require necessary policy to exert a significant influence on economic development outcomes in Lagos State. Evidence shows that inefficiencies in transportation, particularly traffic congestion and inadequate public transit systems are policies issues that the state government of Lagos has achieved a remarkable feat in facilitating a seamless transport system in Logos state. Lagos State, Nigeria, has implemented several transportation policies aimed at improving mobility, reducing congestion, and supporting economic growth and development. Key policies include the Lagos State Transport Policy in 2018, which emphasizes the development of integrated and sustainable transport systems, the expansion of road networks, promotion of mass transit solutions such as Bus Rapid Transit (BRT) and encouragement of private sector participation in transport services. The state also prioritizes the development of rail, ferry, and light rail systems to complement road transport, as outlined in the Lagos State Strategic Transport Master Plan. These policies translate into substantial investments in transportation infrastructure, including the construction and rehabilitation of major roads, bridges and terminals, as well as the procurement of modern buses and ferries. This facilitated the efficient movement of goods and people, stimulates trade, attract business opportunities and enhance labour productivity, thereby driving the broader economic development of Lagos State.

4.3 Transport Operational performance and Economic Development

Revelation from the reviewed literature revealed strong linkages between transportation operational performance and the economic outcomes. Efficient transportation systems is confirmed to reduce travel time, minimize logistics costs, and enhance market access, thereby stimulating productivity and economic growth and development. Key economic zones in Lagos such as Ikeja, Victoria Island and Apapa depend heavily on functional transport operational efficiency to sustain commercial activities and attract investment. Comparative analysis shows that cities like Shanghai and New York leverage integrated transport planning and sustained investment to boost regional competitiveness and resilience (Banerjee *et al.*, 2020; Lagos State Ministry of Economic Planning and Budget, 2024). Thus, strategic improvements in Lagos's transportation system and operational efficiency are vital for sustaining long-term economic prosperity and maintaining its position as Nigeria's commercial capital.

5.0 Conclusion and Recommendations

This study examined the critical role of transportation in fostering economic development in Lagos State, data obtained from government annual reports, statistical bulletins, and institutional publications. Economic development in this context was measured through indicators such as gross domestic product growth, employment generation, trade volume, infrastructure investment, and transport sector performance, as documented in official economic records. The paper revealed that transportation systems in Lagos State function as both enablers and constraints to economic activities. Traffic congestion emerged as a major bottleneck, contributing to productivity losses, increased logistics costs, and reduced business efficiency. Data from transport and economic reports indicate that peak-hour travel times and vehicle operating expenses have escalated significantly over the past decade, undermining competitiveness and profitability for both formal and informal enterprises. Similarly, inefficiencies in public transport characterized by overcrowding, irregular scheduling, and limited service coverage were found to restrict labour mobility and access to economic opportunities. These challenges disproportionately affect low-income commuters who rely heavily on public transit for daily economic participation. Furthermore, deficiencies in road

infrastructure and maintenance continue to impede the smooth flow of goods and services, increasing operating costs and discouraging investment in critical sectors.

The study concludes that transportation remains a central pillar of economic development in Lagos State. Efficient transport infrastructure enhances productivity, reduces transaction costs, and improves connectivity among economic hubs. However, the persistence of congestion, inadequate public transport systems, and weak policy coordination undermines the sector's contribution to sustainable growth. Based on the findings, the study proposes specific recommendations for stakeholders in Lagos State:

- i. There is an urgent need to implement comprehensive congestion management strategies across major traffic corridors in Lagos. The analysis of secondary data indicates that congestion reduces productivity by extending travel time and increasing logistics costs. The government should prioritize the adoption of intelligent traffic management systems, synchronized signal control, and dedicated bus lanes to improve traffic flow. The Lagos Metropolitan Area Transport Authority should also strengthen enforcement mechanisms to curb indiscriminate parking and roadside trading, which aggravate congestion.
- ii. Continuous modernization of public land transport systems is essential for improving labour mobility and accessibility. Evidences from transport sector reports and commuter data show that overcrowded and irregular transport services impede participation in economic activities. Investment in high-capacity bus rapid transit systems, urban rail expansion, and intermodal connectivity will enhance efficiency and reduce dependency on informal transport modes. Public-private partnerships can be leveraged to sustain funding and ensure operational effectiveness.
- iii. Road infrastructure development and maintenance must be institutionalized as a long-term strategy. Statistical evidence from the Lagos State Ministry of Works and Infrastructure highlights that poor road conditions contribute to high vehicle operating costs and reduced productivity. Allocating a dedicated transport infrastructure maintenance fund and enforcing quality control during road construction will ensure sustainability. Integrating drainage and pedestrian walkways into new road designs will also reduce the frequency of road deterioration.
- iv. Policy coordination and institutional reform are crucial for achieving systemic efficiency. Secondary data analysis points to fragmented transport governance and policy inconsistencies among agencies. Establishing a unified metropolitan transport policy framework will promote synergy across agencies such as the Lagos State Ministry of Transportation, the Lagos State Traffic Management Authority, and the Lagos Metropolitan Area Transport Authority. Institutional capacity building, periodic policy review, and stakeholder engagement should be emphasized to ensure coherent implementation.
- v. Data-driven decision-making should guide transport planning and investment. Regular collection and publication of transport performance data covering congestion levels, public transport patronage, freight movements, and infrastructure condition will support evidence-based policymaking. Strengthening collaboration with the National Bureau of Statistics and research institutions will ensure that future planning aligns with evolving economic and demographic realities.

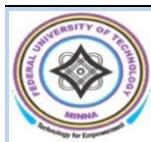
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Moderating effect of Entrepreneurial Motivation on Entrepreneurial Intention-Behaviour Gap among Fresh Graduates in Nigeria: A Proposed Model

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Abstract

The current economic realities of countries around the world enduring economic hardship, high unemployment and poverty, have made entrepreneurial development widely acknowledged and highly emphasized globally, with particular emphasis on developing Countries like Nigeria. However, it is very worrisome that despite the level of entrepreneurial education and intention among young graduates in Nigeria, the level of entrepreneurial behaviour, like venture creation, is still low, as majority of graduates still end-up looking for white collar jobs after graduating. This study therefore, adopt a critical review of relevant literatures, to assess the moderating effect of entrepreneurial motivation on the entrepreneurial intention-behaviour gap among fresh graduates in Nigeria. Moreover, the study proposed to advance the dimensions of Ajzen's theory of planned behaviour, being a popular theory used in entrepreneurial intention research. Literature revealed that Attitude, Subjective Norms, Perceived Behavioural Control, and Entrepreneurship Education, are major determinants of entrepreneurial intention which precedes entrepreneurial behaviour. Though, there seems to be a missing link between entrepreneurial intention and behaviour among fresh graduates in Nigeria, entrepreneurial motivation should moderate the relationship. This study, however, recommends that empirical research be conducted to validate the predictive model developed in the study.

Keywords: Entrepreneurial Behaviour, Entrepreneurial Intention, Entrepreneurial Motivation, Corps Members.

1.0 Introduction

The economic realities of many nations experiencing economic hardship, high rate of unemployment and poverty, in recent time, have made the role of entrepreneurs and entrepreneurial development much more recognized and greatly emphasized in all nations, particularly in the developing world including Nigeria. It has been shown in previous studies that entrepreneurship plays a vital role in creating employment opportunities all over the world (Farooq *et al.*, 2018; Dana, 2021; Adenutsi, 2023). This has become more important in developing countries such as Nigeria, because the public sector alone cannot cater for its growing population in terms of providing the needed job opportunities.

Consequently, Federal Government of Nigeria (FGN) and other bodies, with vested interest, have made several efforts to develop entrepreneurial activities in Nigeria. Despite these efforts, the twin economic malaises of unemployment and poverty in Nigeria have reached an alarming level, a situation that may become worse with the increasing level of inflation and dwindling revenue. This is why governments at all levels have been making efforts to enhance and promote the development of Entrepreneurial Intention (EI) and its resultant Entrepreneurial Behaviour (EB) as they are major parts of the cornerstones in any initiative geared towards employment generation (Wardana *et al.*, 2023).

However, being an entrepreneur or developing an EB begins with intention (Shirokova et al., 2022). Therefore, how to develop EI that will translate to EB among Nigerians, especially young graduates, has been the obsession of FGN. In spite of government efforts, particularly, to encourage self-employment among young graduates, such as the establishment of entrepreneurship centres in tertiary institutions across the country, establishment of entrepreneurship incubation centres and hubs, introduction of Skill Acquisition and Entrepreneurship Development (SAED) in to National Youth Service Corps (NYSC) programmes and the establishment of microfinance institutions and specialized banks to promote the development of EI and its resultant EB among Nigerians Youths, the dispositions towards EB, especially among young graduates, remain poor (Akinwale et al., 2024), and this suggests that government efforts have not obtained the desired results.

Since predicting behaviour has been the major objective of psychological theorists, they are very useful in investigating the underlying cause of behaviour. Hence, the Theory of Planned Behaviour (TPB) has been found to be very useful in predicting a wide range of behaviour (Alam *et al.*, 2019; Ajzen, 2020). Therefore, it is reasonable to believe that TPB will provide a very good foundation for us to investigate the determinants of EI and their effect on the formation of EB among fresh graduates in Nigeria. TPB by Ajzen emphasises three driving factors that underlie the formation of an individual's intentions, which include; Attitude, Subjective Norms (SN) and Perceived Behavioural Control (PBC). Just like these identified three general factors of EI, Entrepreneurial Education (EE) has equally been recognized by researchers (Adekiya & Ibrahim, 2016; Utami *et al.*, 2017) as one of the major factor driving EI in Nigeria. Though, not included in the TPB by Ajzen, EE has been seen as a tool of influence in the formation of EI by instilling the spirit of entrepreneurship.

Previous studies (Kurniawa *et al.*, 2019; Ranga *et al.*, 2019) have restricted the application of Ajzen theory to EI with only a handful of researches extending the application to EB (Bako *et al.*, 2017; Ohanu & Ogbuanya, 2018; Lortie & Castogiovanni, 2015). In entrepreneurship, intention is not an end, but a means to an end. However, it has been observed that many EIs do not lead to EB as they ended up at the level of intention (Bako *et al.*, 2017; Akinwale et al., 2024). Other previous researches have equally focus mainly on EI (Usman & Yenita, 2019; Kautonen *et al.*, 2015) which has little or no entrepreneurial value if such intention does not lead to EB. Although it is expected that the relationship between EI and EB may be influenced by Entrepreneurial Motivation (EM) (Akinwale et al., 2024), Alam *et al.* (2019) has posited that this aspect in entrepreneurial research has been under-researched and calls for more research attention.

Against this background, this study seeks to contribute to existing knowledge by assessing the moderating effect of EM on the relationship between the determinants of EI (Attitude, SN, PBC, & EE) and EB among serving fresh graduates in Nigeria, while extending the TPB.

The specific objectives of this study include the following:

- i. To assess the effects of the determinants of EI (Attitude, SN, PBC, & EE) on EB of serving fresh graduates in Nigeria.
- ii. To determine the moderating effect of EM on the relationship between EI and EB among fresh graduates in Nigeria.

2.0 Literature Review

The section begins with review of related literature on the concepts of EI with special attention on its determinants (attitude, SN, PBC, and EE) and EB. Also reviewed are the previous studies on EM with regards to its moderating effect on the relationship between EI and behaviour.

The theoretical framework, which consists of the underpinning theories of the study, as well as the empirical review and conceptual framework are explained and depicted. Conclusively, the summary of the literature review is presented.

2.1 Conceptual Review

2.1.1 Entrepreneurial Behaviour

Behaviour is a notion that we already have a tacit mastery, which means it is a very familiar concept. It is an action or reaction of an individual to internal or external stimulus (Akinwale et al., 2024). Understanding an individual behaviour involves understanding what he/she will do in response to an event or situation. Mostly, behaviour is a function of human nature or the nature of a situation or event.

Based on the difference in individual's behaviour in response to different situations and stimuli, human behaviour can be classified into different categories. The common categories as contained in the work of Fatima (2019) include; molecular and moral behaviour, overt and covert behaviour, and voluntary and involuntary behaviour. Molecular behaviour is a type of behaviour that is exhibited unexpectedly without prior thinking, while moral behaviour is preceded by thinking. Likewise, overt behaviour is a type of behaviour that is visible. It is exhibited openly and can be seen, while covert behaviour is not visible as no one can see it. Voluntary behaviour depends on human wants which is exhibited based on one's volition, while involuntary behaviour occurs naturally without having to think first.

All human being have their distinct behaviour that they exhibit as they deal with life situations. EB is therefore conceptualized as a process based on the effort-performance-outcome model of entrepreneurial expectancies. However, EB is the outcome of enterprising individuals' intentions and their subsequent actions (Kautonen et al., 2015). The intention-behaviour transition involves a series of developmental processes involving preparedness/readiness of an individual, exhibited in terms of EB (Newman et al., 2019). Indeed, much of what we consider "entrepreneurial action" is intentionally planned behaviour (Akinwale et al., 2024). However, sometimes intentions do not translate into actual start-up activities, creating the so-called "intention-behaviour" gap in entrepreneurship (Kautonen et al., 2015). Hence, this paper proposed that EM moderates the entrepreneurship intention-behaviour relationship among fresh graduates in Nigeria.

2.2.2 Determinants of Entrepreneurial Intention

Understanding how intention takes place is therefore very important towards understanding how behaviour is developed for entrepreneurship, since intention is a significant predictor of planned behaviour towards new business start-up (Loan et al., 2021). TPB appropriately provides theoretical basis about the development of EI (Ajzen, 2020). New business is generally created with planning and is less likely to be unexpected and out to plan. Hence, entrepreneurship is considered in perspective of TPB as a planned behaviour which is predicted by EI (Loan et al., 2021).

The Ajzen's TPB model (1991) uses three determinants to explain the cause of intention. According to the theory, the determinants of intentions are: attitude, SN and PBC. Moreover, some researcher efforts have equally focused on the issue of EE for determining EI (Duval-Couetil et al., 2016). Since the TPB lends itself to modification through the incorporation of factors considered to be relevant in the determination of EI (Krueger, 2017), this study proposes to integrate EE into the traditional Ajzen's theory as a determinant of EI while proposing that motivation will moderate the relationship between EI and EB. The four determinants of EI, adopted for this research, are discussed as follows:

i. Attitude

Personal attitude has been described as the attitude one holds towards a behaviour. That is, the degree to which a person has a favorable or unfavorable evaluation or appraisal of a particular behaviour (Ajzen, 1991). Ajzen (2020) posit that people develop attitudes based on the beliefs that they will bear the consequences of performing the behaviour. Such consequences include both intrinsic and extrinsic rewards as financial rewards, independence/autonomy, personal rewards and family security, all of which do influence the intention to start a business (Gieure et al., 2024).

Negative outcome expectancies such as perceiving risk associated with entrepreneurial activities impact unfavorably the intention to start personal business. Depending on how favorable individuals evaluate behaviours, their subsequent intentions will be formed. However, it is believed that people who have positive attitude towards entrepreneurship are more likely to be self-employed.

ii. Subjective Norms

SN relates to social pressure mounted by important others such as family, friends, and other individuals who would approve or disapprove of one's behaviour (Ajzen, 2020). Liñán and Fayolle (2015) posit that one's SN are to a large extent, a function of salient normative beliefs; and in general, tend to contribute more weakly on intention depending on the individuals' propensity to conform and personality characteristics.

In context of entrepreneurship, SN refer to the perception of what a person's "reference group" such as family, friends or significant others would think about performing EB, or whether they approve or disapprove of the entrepreneurial decision. The SN that exist for a given behaviour reflect the perceptions that person has about how positively or negatively others view the behaviour in question.

iii. Perceived Behavioural Control

PBC refers to the relative ease or difficulty of performing a behaviour. It refers to a situation when an individual perceives that performing a behaviour will be easy or difficulty. Not only does one's attitude towards PBC refers to past experiences, but it also refers to anticipated obstacles and other factors impeding the performance of the behaviour (Ajzen, 1991). Individuals who believes that they have high level of control over their behaviour will develop subsequent intentions to perform the behaviour. PBC does not only affect one's intentions but also directly affects one's behaviour as well.

In the context of entrepreneurial behaviour, PBC can also be called entrepreneurial self-efficacy (Santos & Liguori, 2019). However, Newman et al. (2023) argued that entrepreneurial self-efficacy greatly influences EB. Individuals with positive PBC are likely to persist when problems arise, and actively seek out challenges and by extension, challenging opportunities.

iv. Entrepreneurial Education

EE is an all-encompassing education and training activities that try to develop an individual's EI or some factors that affect his/her intention, such as desirability, feasibility, and knowledge of the entrepreneurial activity. Since Harvard Business School opened its first education program in 1945, EE has been spreading over the few decades at a fairly rapid pace, attracting intensive research interest among entrepreneurship scholars (Onjewu *et al.*, 2021; Kavita, 2020).

However, a distinction has been made between formal education and EE in relation to their effects on the formation of intention and behaviour. Research evidence show that unlike EE,

formal education does not impact positively on the formation of intention and behaviour. EE could be instrumental in the acquisition of the skill set needed for the creation and management of enterprises (Aladejebi, 2018), which supports the position that early exposure to EE would be particularly effective in promoting EI that will translate to EB. Hence, EE is one of the major determinants of EI included in this paper.

v. Entrepreneurial Motivation

Motivation is a generic term for all internal factors that combine intellectual and physical energy, initiate and organize individual activities, and direct or channel behaviour (Fosic *et al.*, 2017). Although motivation is truly based on individual, it involves a combination of factors or motives, which are believed to be typical of people with an entrepreneurial urge (Aloulou, 2018). Students and even graduates who have higher motivation are more likely to be ready to engage in their own entrepreneurial ventures than those who have low motivation to engage in activities or tasks that have a high degree of individual responsibility or outcomes.

While the formation of EI is important for EB to occur, EM is necessary to convert the intention into behaviour that exploits entrepreneurial opportunities. EI remains a mere behavioural dispositions until attempts are made to convert such EI into EB (Ajzen, 2005). Effort expended in starting a new entrepreneurial venture and the readiness to keep that venture going has a link with an entrepreneur's motivation (Gieure *et al.*, 2024). Therefore, Motivation can be aptly considered as the linking thread between EI and EB.

2.3 Theoretical Review

In order to provide a sound theoretical foundation for this research, the following theories were reviewed because of their relevance to the current study: TPB, Human Capital Theory (HCT) and Expectancy Theory.

2.3.1 Theory of Planned Behaviour

One of the most widely researched intention models is the TPB. The theory originated by Ajzen (1991). The TPB was derived from the Theory of Reasoned Action (TRA). Ajzen's TPB consists of three factors, which include attitude toward proposed behaviour, SN and PBC or feasibility of the proposed behaviour. It equally states that behavioural intentions are formed by one's attitude toward that behaviour and one's SN (influence by parents, role models, peers and the likes). According to the theory, entrepreneurship, which is planned behaviour, can be predicted by the intention.

Given the widespread use of the TPB for studying intentions in general, and more specifically, its support in past research on students and EI, the researcher chose to use it as a major theoretical foundation for this study. The study briefly reviewed the theory and present hypotheses regarding the determinants that can influence graduates' intentions towards developing EB. Figure 1 summarizes the basic relationships in the TPB as they apply to EI towards an EB.

2.3.2 Human Capital Theory

The theoretical framework of this study is adapted, in part, from studies relating to HCT. The theory, as propounded by Becker (1964), is a term that describes hierarchy of skills and knowledge. Human capital can be described as an intellectual capital's central element which formed an organisation's individuals' competence that include capabilities, knowledge, expertise, skills and experience (Vidotto *et al.*, 2017). HCT, as used in the past, is one of the most used theories in relation to entrepreneurial readiness and ability. The theory postulated that entrepreneurs, with higher level of resources like EE, will produce superior output (EB). It assumes that education is a determinant of the marginal productivity of labour which

determines earnings. Therefore if prospective entrepreneurs can be trained with the necessary required skills, it is expected that they will engage in EB of a superior nature.

However, the HCT is considered appropriate for this research, to support the inclusion of EE as one of the determinants of EI that may translate to EB, since it builds the skills and competences required for EB.

2.3.3 Expectancy Theory

The expectancy theory of motivation was first developed by Victor Vroom (1964) of Yale School of Management. It attempts to explain what keeps employees working. Its underlying principle is that employees perform in work situations because they expect to receive a direct reward from such efforts (Vroom, 1964). According to the theory, performance is tied to reward expectation called expectancy, the degree of expected reward which is called instrumentality, and the degree to which the reward is desired which is called valence. Hence, the dimensions of expectancy theory include; expectancy, Instrumentality and Valence.

The model underlying the expectancy theory expresses that motivation is equal to the product of expectancy, instrumentality and valence. It was argued that, if any of these factors is zero, the employee will be unmotivated (Nizhebetskiy, 2019). However, the theory is suitable and strongly supports the current research in the area of the moderating effect of EM.

2.4 Empirical Review

The Studies of Lortie and Castogiovanni, (2015), and Usman and Yennita, (2019) have focused on the relationship between attitude and EB. They considered whether there is a direct influence of attitude on behaviour or if the relationship is mediated by EI. Equally in Fenech *et al.*, (2019) study, attitude was found to have a significant effect on intention and behaviour. On the contrary, the study of Ozaralli and Rivenburgh (2016) opposes the positive relationship between attitude, intention and behaviour. Hence, their findings are in contrast with the TPB by Ajzen (1991).

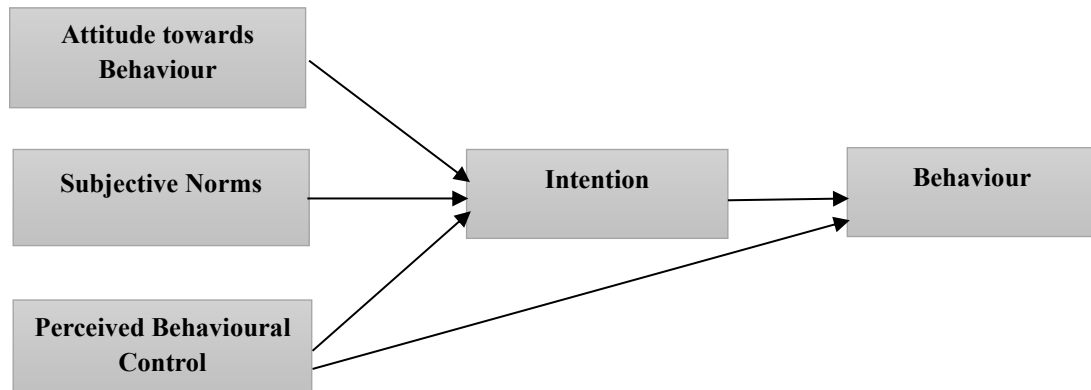
Similarly, Al-Swidi *et al.* (2014) carried out a study to investigate the applicability of TPB with special emphasis on measuring the direct and moderating effects of SN on attitude, PBC and buying intention in context of buying organic food. Results of the study showed that SN significantly influence the relationship between attitudes and buying intention, as well as between perceived behaviour control and buying intention, while SN significantly influence attitude toward buying intention.

Likewise, in the study of Manning (2011), the hierarchical linear modeling results indicated that, increase in social motivation is associated with a direct effect of descriptive norms and an inverse effect of injunctive norms (suppressor effect) on behaviour. The study equally found that SN only directly influenced behaviours where rejection was made salient. Altogether the results indicate that SN will have non deliberative effects on behaviours as social motivations increase. While the study of Kautonen *et al.* (2013), conducted to predict EB by extending the TPB, contributes to the occupational choice literature on entrepreneurship by applying the TPB to predict EB. The study found that attitude, PBC and SN were significant predictors of EI and PBC are significant predictors of subsequent behaviour.

However, studies on EI-behaviour gap have been in short supply. Though some researchers have pointed out the possibility of moderating effect of motivation in the transition from intention to action/behaviour (Alam *et al.*, 2019). This paper attempted to fill this identified gap.

2.5 Proposed Conceptual Framework

The conceptual framework of the study is developed based on Ajzen's (1991) TPB model as contained in the works of Lortie and Castogiovanni (2015) and Usman and Yennita (2019), Shown in Figure1.



Source: Ajzen (1991); Lortie and Castogiovanni (2015); Usman and Yennita (2019).

Figure 1: Theory of planned behaviour model

The researcher considers modification of the model necessary, as it was found to have some limitations which limit its application. The research of Van Gelderen *et al.* (2008), and that of Linan and Chen (2009) have shown that attitude, SN and PBC could only account for 30 to 45% of the changes in EI. This is a major weakness, hence the inclusion of more explanatory variables to boost the explanatory power of the model as suggested by Lortie and Castogiovanni (2015) and supported by Roy *et al.*, (2017). The TPB has also been critiqued for assuming a linear relationship between intention and behaviour (Alam *et al.*, 2019) thus, overlooking the role of factors such as EM, that could moderate the relationship.

However, the role of EE in the formation of EI is considered to have been played down in the traditional TPB (Bako *et al.*, 2017). Hence, the inclusion of EE as one of the predictors, since it has been found to impact EIs positively in some studies (Adekiya & Ibrahim, 2016; Utami *et al.*, 2017). Therefore, to take care of these limitations and in keeping with the need of modern time, the study include the two variables (EE & EM) as a form of modification to the theory. This is to suit the context of this research.

Based on our knowledge, this modified framework is therefore unique to the research of EI and EB. Thus, the framework proposes that the determinants of EI (attitude, SN, PBC and EE) will influence EB among fresh graduates in Nigeria, directly as well as indirectly, through EI as a link. It is equally proposed that, the relationship between EI and EB will be better with the introduction of EM as a moderating variable.

This paper therefore proposes the following conceptual framework, a modification of Ajzen (1991) model through the introduction of EE as an added determinant and EM as a moderator between EI and behaviour.

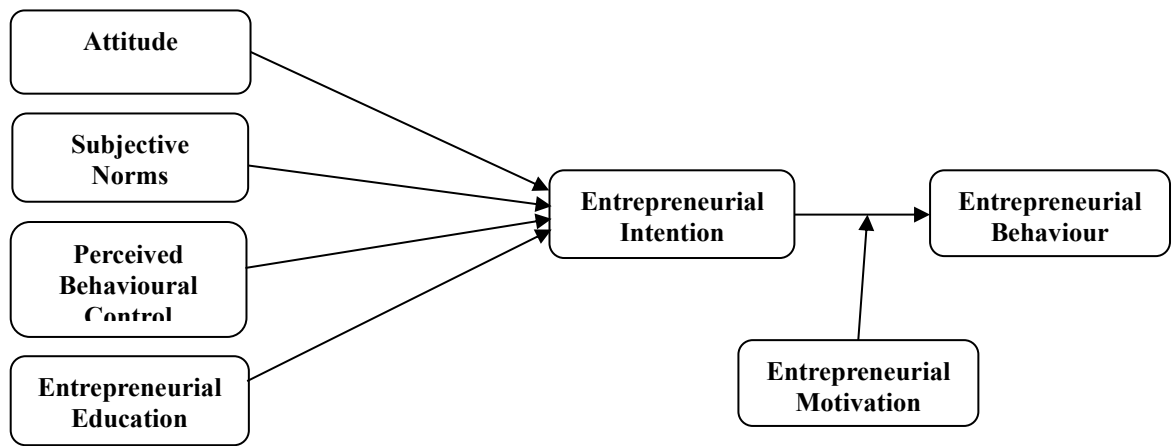


Figure 2: Proposed research framework of the study

Source: Adapted from Ajzen (1991); Lortie and Castogiovanni (2015); Usman and Yennita (2019).

3.0 Methodology

This paper adopts a critical review of relevant literature, carried out on the effect of EM on the EI-behaviour gap among fresh graduates in Nigeria. Literature were carefully selected and thoroughly studied on the basis of how relevant, current and the publishers' pedigree. Consequently, relevant works published by notable publishers like Scopus, Web of Science, Google Scholar and Science Direct databases, were largely used. Variables included in this study were sourced from relevant theories and previous studies. Articles published between 2015 and 2025 were largely considered in the research. Inclusion criteria were peer-reviewed journal articles written in English and focusing on entrepreneurial intention, entrepreneurial behaviour, and motivational factors. A total of 76 articles were initially identified, out of which 47 met the eligibility criteria after screening. The selected articles were critically analysed thematically to identify dominant theories, methodological trends, and gaps, which informed the development of the proposed conceptual model in this paper.

4.0 Result and Discussions

The critical review of extant literature reveals that very limited research have been conducted to explore the extension of Ajzen's TPB, particularly in the area of moderating the relationship between intention and behaviour, which posits to strengthen the EI outcomes in terms of EB (Venture Creation) with a focus on fresh graduates in Nigeria. More so, research shows that EE is a key determinant of EI, which have the potential to transform into EB, even most likely when EM influence the transformation process. Although the findings are conceptual based, a suitable model was developed for further empirical study in other to have empirical results that can give room for practical recommendations and generalisation.

5.0 Conclusion and Recommendation

Having carried out a critical review of relevant literature with a careful study of the previous related research findings, the researcher, in line with the objectives of the study, concludes that the determinants of EI (Attitude, SN, PBC and EE) have potential great influence on EB of fresh graduates in Nigeria and it is believed that this influence should be significantly moderated by EM. This projections will be clearly confirmed if an empirical study is conducted to test the model and further the research in the context of EI and EB gap. However, a workable model has been proposed for further research in order to ascertain its efficacy in assessing the

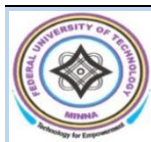
moderating effect of EM on the relationship between EI and EB, especially among young graduates in Nigeria.

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Transport Subsidies and Social Benefit in Nigeria: A Policy-Level Conceptual Analysis

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Abstract

Although transport subsidies are intended to promote equity and accessibility, Nigeria's heavy reliance on universal fuel subsidies has produced regressive outcomes, fiscal inefficiency, and limited social impact due to poor targeting, weak governance, and the absence of an integrated, transparent, and inclusive subsidy framework. Transport subsidies represent one of the most contentious instruments in mobility policy, oscillating between poverty alleviation, equity enhancement, and fiscal unsustainability. This paper undertakes a conceptual review of global and Nigerian experiences to examine how and for whom transport subsidies generate social benefits. The review identifies gaps in integrating fuel and transport subsidies into a unified social-welfare framework, in gender- and disability-sensitive evaluations, and in assessing alternative instruments such as mobility vouchers. The paper proposes a reorientation toward transparent, impact-driven subsidy models that prioritise accessibility and equity, offering actionable lessons for Nigerian transport policy. Drawing on welfare economics, transport justice, and political-economy frameworks, the analysis highlights that subsidies can correct market failures and expand accessibility, but only when targeted, transparent, and aligned with equity objectives. International evidence from London, Oslo, and Nairobi demonstrates that technology-enabled and performance-based subsidies improve affordability, labour-market participation, and environmental outcomes. By contrast, Nigeria's heavy reliance on universal fuel subsidies—absorbing up to 2% of GDP—has proven regressive, disproportionately benefiting higher-income groups while eroding fiscal space for pro-poor investments. Public-transport interventions, such as the Lagos BRT and Abuja Unity Bus, deliver measurable gains but remain constrained by scale and governance weaknesses.

Keywords: transport subsidy, social benefit, equity, accessibility, fuel subsidy

1.0 Introduction

Nigeria's transport sector accounts for approximately 3 % of gross domestic product (GDP) and employs over 1.2 million people directly, yet it remains the most visible arena of market failure in the country (National Bureau of Statistics, 2023). Average household transport expenditure absorbs 28 % of the income of the poorest urban quintile, compared with 8 % in the top quintile, generating a regressive burden that intensifies multidimensional poverty (World Bank, 2022). Successive governments have responded with a mosaic of subsidies such as petrol under-recovery, import-duty waivers for buses, federally funded e-mobility pilots, and state-level fare rebates as of which cost the federation account an estimated ₦ 2.9 trillion (USD 6.3 billion) between 2017 and 2022 (CBN, 2023). Paradoxically, Nigeria still scores 0.38 on the World Bank's Transport Connectivity Index, below the sub-Saharan Africa average of 0.44, while traffic fatalities (64 per 100 000 population) are among the world's highest (WHO, 2023). The apparent dissipation of fiscal resources without commensurate social gain has reignited scholarly and policy debate on whether transport subsidies in Nigeria are pro-poor instruments or opaque rent-seeking channels (Adeyemi & Oluwaseun, 2021; Uchendu, 2022).

The social benefit of transport subsidies is contingent on their ability to lower generalized transport costs, expand labour-market catchments, and crowd-in human-capital accumulation

(Stanley et al., 2020). In Lagos, for example, each additional kilometre of high-capacity bus corridor has been associated with a 0.7 % increase in female labour-force participation (Lagos Metropolitan Area Transport Authority, 2023). Conversely, when subsidies are captured by informal cartels or diverted to politically connected operators, they can entrench spatial inequality and delay modal shift to cleaner technologies (African Development Bank, 2022). Nigeria's 2021 National Transport Policy frames subsidies as "temporary palliatives" pending full cost-recovery, but offers no measurable social-welfare targets, thereby inviting ad-hoc implementation (Federal Ministry of Transportation, 2021). The opacity is compounded by petrol subsidies that dwarf public transport subsidies by a ratio of 20:1, creating price signals that encourage private-car use and undercut public-transport patronage (PwC, 2023).

Globally, the pendulum has swung toward targeted, technology-enabled transport subsidies that maximise social return per fiscal dollar. Colombia's TransMilenio system, for instance, conditions operator compensation on passenger-kilometres logged through electronic fare cards, achieving 92 % leakage-free disbursement (Bocarejo & Oviedo, 2021). Kenya's Nairobi Commuter Rail subsidy is financed via a fuel levy ring-fenced by legislation, ensuring predictable funding and eliminating annual lobbying cycles (Kumar *et al.*, 2022). Such experiences contrast sharply with Nigeria's discretionary regime, where annual subsidy ceilings are announced mid-year without legislative appropriation, thereby undermining medium-term planning by state transport corporations (Ogunbodede *et al.*, 2023).

The social dimension is further complicated by Nigeria's rapid urbanisation, an average urban growth rate of 4.2 % per annum, and the proliferation of informal settlements that are poorly served by fixed-route systems (UN-Habitat, 2023). Women, persons with disabilities, and internally displaced persons face disproportionate transport poverty; 63 % of women in Kano report sexual harassment in unregulated minibuses, prompting modal retreat to costlier but safer motorcycle taxis (Amnesty International, 2022). Conventional subsidies that merely lower fare levels do not address such non-price barriers, suggesting the need for redesign that embeds gender and inclusion metrics (Peters, 2020).

This paper aims to synthesise fragmented evidence on Nigeria's transport subsidies and to appraise their social benefit through a policy-level conceptual lens. The review interrogates whether current subsidy instruments are structurally capable of maximising social welfare or whether they merely perpetuate rent-seeking equilibria that disproportionately burden the poor.

The specific objectives to be achieved are: to map the typology and fiscal magnitude of transport subsidies operational in Nigeria between 2010 and 2023, to critically evaluate the conceptual and theoretical underpinnings that inform the design of these subsidies, to distil empirical evidence on the distributional incidence of transport subsidies across income quintiles, gender, and spatial domains, and to identify policy design gaps that attenuate social benefit and to propose a re-calibrated subsidy framework anchored on measurable social-welfare outcomes.

By integrating fiscal, equity, and governance perspectives, the review intends to furnish the Federal Executive Council, state governors, and development partners with an evidence base for transitioning from opaque, price-based subsidies to transparent, social-impact-based instruments that align with the 2030 Agenda for Sustainable Development and the African Union's Agenda 2063.

2.0 Literature Review

This section reviews existing literature on the subject matter of the study to provide a sound basis for this study.

2.1 Conceptual Review

In high-income economies, the subsidy conversation has shifted from blanket support to precision instruments that maximise social return per fiscal dollar. London's Oyster-card concessionary scheme, for example, couples 30 % fare discounts for low-income recipients with automatic capping, reducing both administrative cost and stigma (Transport for London, 2023). Evaluation shows a 0.8 elasticity of trip-making among beneficiaries, translating into a 7 % wage premium from expanded job-search areas (Booz & Company, 2022). Oslo's move to zero-fare electric buses for users under 20 and over 67 cut youth unemployment by 4 % within two years, while CO₂ emissions on radial corridors fell 11 % (Hauge *et al.*, 2023). These cases illustrate that targeted, technology-enabled subsidies can simultaneously advance equity and environmental welfare.

Developing-country evidence is more sobering. Indonesia's 2014 conversion from universal fuel subsidies to a fixed per-litre subsidy for public transport, paired with smart-card fare rebates, reduced fiscal outlay by USD 15 billion yet generated only modest accessibility gains because intermediaries siphoned 23 % of transfers (World Bank, 2021). Colombia's TransMilenio operates a performance-based subsidy: operators receive top-ups only for passenger-kilometres logged on registered smart cards. Leakage is below 5 %, but crowding externalities have eroded user satisfaction, highlighting the equity, quality trade-off (Bocarejo & Oviedo, 2021). Kenya's Nairobi Commuter Rail is financed through a hypothecated fuel levy, insulating capital budgets from annual political bargaining; ridership rose 60 % between 2019 and 2022, with women reporting a 30 % fall in sexual harassment relative to matatus thanks to sealed coaches and formalised staff (Kumar *et al.*, 2022).

Three cross-cutting lessons emerge. First, the instrument must match the institutional capacity; sophisticated smart-card systems fail where electricity and data networks are unreliable. Second, transparent earmarked funding, fuel levies, congestion charges, or climate finance, outperforms general-revenue appropriations in predictability and accountability. Third, social-impact contracting (payment per passenger-kilometre or accessibility index) aligns operator incentives with policy goals better than cost-plus reimbursement. Nigeria's patchwork of ad-hoc grants and opaque fuel under-recovery violates each of these principles.

Nigeria's subsidy architecture is bifurcated along petrol and public-transport tracks. Petrol under-recovery, formally "premium-motor-spirit subsidy", absorbed ₦ 2.1 trillion (USD 4.6 billion) in 2022, dwarfing the combined federal health and education budgets (CBN, 2023). Introduced in the 1970s as a cushion against oil-price volatility, the subsidy became an entitlement whose removal in 2012 triggered nationwide strikes and a partial reinstatement within two weeks (Adagbon, 2020). The literature converges on its regressive incidence: the richest quintile captures 52 % of the benefit through higher car ownership, while the poorest quintile receives 3 % (Arze del Granado *et al.*, 2022). Moreover, by keeping pump prices artificially low, the subsidy depresses public-transport patronage, delays modal shift to cleaner fuels, and incentivises petrol smuggling to neighbouring countries where prices are 30–40 % higher (PwC, 2023).

Public-transport subsidies are smaller but more diverse. Lagos Bus Rapid Transit (BRT), launched in 2008, combines capital subsidies (USD 100 million World Bank loan) with operating top-ups pegged to the consumer-price index. Smart-card data show that 68 % of BRT passengers belong to the bottom two income quintiles, and female commuters report a 25 % reduction in perceived safety risks compared with danfo minibuses (LAMATA, 2023). Yet, the system carries only 350 000 passengers daily, less than 5 % of metropolitan trips, because fleet expansion is hostage to foreign-exchange volatility and import-duty policy reversals.

Abuja's "Unity Bus" scheme offers 50 % fare discounts to students and civil servants, financed through the Federal Capital Territory's internally generated revenue. Evaluation is scant, but a 2021 household survey found that 41 % of intended beneficiaries still pay full fare because buses are oversubscribed during peak hours, illustrating the classic quantity-rationing problem (Ogunbodede *et al.*, 2023). At state level, Anambra and Cross-River operate rural ferry subsidies that reduce passenger fares by 30 % during harvest seasons; these interventions raised farm-gate prices by 6–8 %, but leakage through ghost passenger manifests is estimated at 18 % (AfDB, 2022).

The political-economy literature attributes the persistence of inefficient subsidies to a distributive coalition of petroleum marketers, transport unions, and populist politicians who benefit from opaque pricing windows (Uchendu, 2022). Attempts at reform such as the 2021 Petroleum Industry Act have been stymied by mid-year "supplementary subsidy appropriations" that bypass legislative scrutiny (Ogunbodede *et al.*, 2023).

2.2 Theoretical Review

Transport subsidies are deliberate fiscal transfers that reduce the private cost of mobility below the marginal social cost (World Bank, 2022). They can be direct, such as fare rebates, concessionary passes, or procurement grants for buses, or indirect, exemplified by fuel price under-recovery, import-duty waivers, or tax holidays for operators (Gwilliam, 2021). Demand-side instruments lower the price faced by users, whereas supply-side measures underwrite operator costs with the expectation that savings are passed on to passengers (Hensher & Stanley, 2021).

"Social benefit" is construed here as any measurable improvement in individual or collective welfare attributable to reduced transport constraints. The dimensions include (i) equity and vertical (income-based) and horizontal (gender, disability, spatial) redistribution; (ii) affordability, as such that household transport expenditure is below 10 % of disposable income (iii) accessibility to basic routine destinations such as jobs, schools, and clinics reachable within 30 min by low-income households; (iv) poverty reduction via labour-market enlargement or lower commuting costs that free resources for food, health, and education; and (v) environmental welfare which constitutes cleaner air and lower carbon exposure for vulnerable populations (Martens *et al.*, 2022; UITP, 2023).

Nigeria functions as a critical case because urban household transport outlays absorb 28 percent of income among the poorest quintile, double the global vulnerability threshold, while 40 percent of the populace lives below the national poverty line (NBS, 2023). This nation devotes more expenditure to transport-related subsidies, about 2% of GDP, than to health, yet still registers 0.38 on the World Bank Connectivity Index, below the sub-Saharan mean (World Bank, 2023). Over ninety percent of passenger movement relies on road-based paratransit lacking regulatory obligations to cross-subsidize socially necessary but unprofitable service

routes (Oyesiku, 2020). Consequently, the Nigerian experience provides a natural experiment demonstrating how nominal pro-poor subsidies interact with weak regulatory capacity, pervasive informality, and intense political contestation.

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Welfare economics conceptualises subsidies as Pigouvian corrections for positive externalities or redistributive tools to move society toward a socially preferred welfare frontier (Boardman *et al.*, 2023). Where transport markets undersupply socially optimal levels of accessibility, targeted subsidies can, in principle, shift the economy to a higher indifference curve by raising the consumption possibilities of the poor without reducing those of the rich (Varian, 2021).

Public goods and equity theory extend this logic by treating accessibility as a quasi-public good characterised by non-rivalry up to capacity constraints and exclusion costs (Martens, 2022). Equity theory distinguishes between “equality of mobility”, equal litres of fuel or passenger-kilometres, and “equity of accessibility,” which demands that subsidies be allocated according to need, capability, and rights-based claims (Rawls, 2020).

Transport justice frameworks merge distributive, procedural, and recognitional dimensions (Friman *et al.*, 2022). Distributive justice asks who receives the subsidy; procedural justice examines whether affected communities participate in design; recognitional justice demands that gender, disability, and minority identities are acknowledged in eligibility rules. These tenets are operationalised through the “3 A’s” test, availability, affordability, and acceptability, providing measurable criteria for social-benefit appraisal (Lucas *et al.*, 2021).

From policy-analysis perspectives, cost–benefit analysis (CBA) monetises social benefits against fiscal costs using social discount rates, while political-economy models emphasise rent-seeking, electoral cycles, and elite capture (Bardhan & Mookherjee, 2022). The “second-best” theorem cautions that in distorted economies, typified by Nigeria’s multiple exchange rates and fuel price opacity, transport subsidies can either amplify or mitigate pre-existing inefficiencies depending on design (Lipsey & Lancaster, 2023).

Agency theory further predicts that information asymmetry between government (principal) and operators (agent) invites moral hazard unless contracts embed verifiable social-performance indicators (Eisenhardt, 2023). Transaction-cost economics highlights the trade-off between the ex-ante costs of targeting (means-testing, smart cards) and the ex-post costs of leakage and fraud (Williamson, 2010).

Collectively, these theories yield a unifying analytical lens: subsidies generate social benefits only when (i) marginal social benefit exceeds marginal social cost, (ii) targeting minimises dead-weight losses, and (iii) governance structures internalise equity externalities. The subsequent sections deploy this lens to interrogate global practices and Nigerian realities.

2.3 Empirical Review

Empirical work inside Nigeria repeatedly finds that the form of the subsidy determines whether social benefits materialise. Evaluations of the Lagos BRT (LAMATA, 2023) show that every

₦1 of operating subsidy generates ₦1.60 in user-benefit through travel-time savings and lower fare burden; 68 % of beneficiaries are in the poorest two quintiles, and female labour-force participation within 1 km of BRT corridors rose 4.3 % (Balogun *et al.*, 2022). Student fare rebates in Kano State improved school attendance among girls 12-17 by 5.5 %, but only where additional buses were supplied; pure price reductions without capacity expansion simply shifted crowding from danfos to formal buses (Garba & Mamman, 2021).

Petrol subsidies, by contrast, yield meagre social gains. CGE modelling by Arze del Granado *et al.* (2022) indicates that eliminating the petrol subsidy and transferring 25 % of the fiscal savings to rural transport infrastructure would cut national poverty head-count by 2.1 percentage points and CO₂ emissions by 7 %. At present, however, the social wage of the petrol subsidy is negative: the richest quintile receives a transfer 17-times larger than the poorest, while urban air-quality monitors show PM_{2.5} levels 3.5× WHO limits, partly because cheap fuel encourages generator use (Health Effects Institute, 2023).

Gender and disability dimensions remain under-studied. Amnesty International (2022) reports that 63 % of women in Kano avoid night trips because subsidised minibuses lack lighting and safe shelters, illustrating that affordability without security undercuts broader social benefit. Similarly, only 4 % of Lagos BRT stations have tactile paving, limiting accessibility gains for visually impaired users (Disability Rights Commission, 2021).

Unintended consequences are well documented. Fuel subsidies consumed 22 % of federal revenue in 2022, crowding out capital spending on rural roads (CBN, 2023). Leakage through “ghost lorries” and cross-border smuggling is estimated at 15–20 % of total subsidy value (PwC, 2023). The fiscal burden also amplifies exchange-rate pressures, indirectly raising the landed cost of buses and spare parts, thereby undermining supply-side subsidies for public transport (Ogunbodede *et al.*, 2023).

Emerging Gaps in the Literature

First, no study has integrated fuel, fare, and capital subsidies into a single social-accounting matrix; most analyses treat petrol and public-transport subsidies in silos, obscuring cross-price effects. Second, distributional analyses rely on static household-expenditure surveys that cannot capture dynamic accessibility gains, e.g., job upgrades, resulting from improved mobility. Third, rigorous gender-disaggregated impact evaluation is scarce; only two peer-reviewed papers (Balogun *et al.*, 2022; Garba & Mamman, 2021) use difference-in-differences to quantify female-specific benefits. Fourth, there is virtually no modelling of alternative instruments such as targeted mobility vouchers or conditional e-cash transfers, despite their proven success in Colombia and Kenya. Finally, the political-economy literature describes elite capture but offers no testable theory of how transparency technologies (e-ticketing, GPS tracking, open data) alter rent-seeking equilibria. This paper addresses these gaps by proposing an integrated social-welfare metric that combines fiscal cost, distributional incidence, and accessibility elasticity within a common framework.

3.0 Methodology

A systematic scoping review was conducted to locate, select, and synthesise policy documents, peer-reviewed studies, and fiscal datasets on Nigerian transport subsidies published 2010-2023. Arksey & O'Malley's (2005) five-stage framework guided the process.

Search strategy

Four bibliographic engines (Scopus, Web of Science, EconLit, and AJOL) and six grey-literature repositories (World Bank, AfDB, CBN, NBS, Federal Ministry of Transportation, and Lagos State Government) were queried with combined keywords: "transport subsidy", "Nigeria", "social benefit", "equity", and "bus fare". Forward and backward citation chasing was performed on seed papers (Adeyemi & Oluwaseun, 2021; Uchendu, 2022).

Screening and eligibility

Titles/abstracts were independently screened by two reviewers; conflicts resolved by a third. Inclusion criteria: (i) empirical or policy analysis of Nigerian passenger transport subsidies; (ii) explicit distributional or social-welfare metrics; (iii) English language. Exclusion: freight-only or pre-2010 studies.

4.0 DISCUSSION / POLICY-LEVEL CONCEPTUAL ANALYSIS

Reinterpreting Subsidies through a Social-Welfare Lens

The literature review demonstrates that transport subsidies are neither inherently efficient nor equitable; their social impact depends on design, targeting, and governance. Welfare economics posits that subsidies should correct market failures or redistribute consumption possibilities toward the poor (Varian, 2021). In practice, Nigerian fuel subsidies deviate from this ideal: while they absorb nearly 2 % of GDP, incidence analyses confirm that over half of the benefit accrues to the richest quintile (Arze del Granado *et al.*, 2022). Conversely, targeted public-transport subsidies, such as Lagos BRT concessions, show measurable gains in equity, affordability, and accessibility (LAMATA, 2023). Thus, policy must shift from blanket transfers to precision instruments that explicitly satisfy social-benefit criteria.

Policy Trade-Offs and Institutional Constraints

A central dilemma is the balance between fiscal sustainability and inclusivity. Universal fuel subsidies expand affordability in the short term but impose an unsustainable fiscal burden, crowding out rural road investments and health expenditure (CBN, 2023). Precision subsidies are rebates, smart-card discounts, or targeted mobility vouchers, which are fiscally leaner yet demand higher administrative capacity. Nigeria's weak digital infrastructure, unreliable electricity, and fragmented regulatory oversight constrain the feasibility of high-technology instruments (Ogunbodede *et al.*, 2023). The policy challenge is therefore to sequence reform: replacing universal subsidies with hybrid approaches that combine modest, technology-enabled targeting in urban centres with low-tech, seasonal interventions in rural areas.

Governance and Political Economy Considerations

Transport subsidies in Nigeria are deeply embedded in patronage networks involving petroleum marketers, transport unions, and populist politicians (Uchendu, 2022). Agency theory predicts that asymmetric information between government and operators fosters rent-

seeking unless contracts embed verifiable performance indicators (Eisenhardt, 2023). Yet Nigerian subsidy regimes rarely include enforceable conditionalities. Lessons from Colombia's TransMilenio and Kenya's commuter rail suggest that tying subsidy disbursements to passenger-kilometre logs or accessibility indices reduces leakage and strengthens accountability (Bocarejo & Oviedo, 2021; Kumar *et al.*, 2022). Nigeria's failure to institutionalise transparency technologies, GPS tracking, e-ticketing, open data, explains persistent elite capture. Political-economy analysis therefore implies that reform is not merely technical but requires confronting entrenched distributive coalitions.

Aligning Subsidies with Equity and Justice Frameworks

Transport justice frameworks highlight that distributive benefits alone are insufficient; procedural and recognitional dimensions are equally critical (Friman *et al.*, 2022). In Nigeria, subsidy design rarely incorporates gender or disability perspectives. BRT evaluations reveal that while female commuters report improved safety, night accessibility remains constrained by poor lighting and inadequate shelters (Amnesty International, 2022). Disability audits show that less than 5 % of BRT stations are compliant with universal-access standards (Disability Rights Commission, 2021). Without inclusive eligibility rules and participatory policy design, subsidies risk entrenching rather than alleviating social exclusion. Future policy must therefore operationalise the "3 A's" test, availability, affordability, and acceptability (Lucas *et al.*, 2021), to ensure that subsidies advance equity beyond price reduction

Pathways for Reform in the Nigerian Context

Synthesising global lessons with Nigeria's realities suggests three policy pathways. First, reallocate fiscal savings from fuel subsidies toward targeted public-transport support, ensuring pro-poor redistribution. Second, institutionalise transparent funding sources, such as earmarked fuel levies or climate finance, to stabilize subsidy budgets. Third, embed accountability mechanisms by linking disbursements to verifiable accessibility metrics. These shifts would align Nigeria's subsidy architecture with welfare economics' efficiency criteria, transport justice's equity principles, and political-economy imperatives for institutional resilience. The conceptual implication is clear: subsidies produce social benefit only when governance structures mediate fiscal transfers into equitable, inclusive, and sustainable mobility outcomes.

5.0 Conclusion and Recommendations

5.1 Conclusion

This paper frames transport subsidies as fiscal tools that, when properly designed, can significantly enhance affordability, accessibility, poverty alleviation, and environmental sustainability. International best practices favour targeted, transparent, and performance-driven subsidy systems over universal entitlements. Nigeria's current approach, however, diverges from this model. Fuel subsidies drain public finances while disproportionately benefiting wealthier groups and harming the environment. Conversely, targeted interventions like the Lagos Bus Rapid Transit (BRT) show that well-structured subsidies can promote equity and mobility, though they remain limited in scope. The analysis concludes that subsidies yield social value only when their marginal benefits outweigh their costs, equity is a central objective, and robust governance mechanisms are in place to prevent misuse and elite capture.

5.2 Policy Recommendations

- i. Gradually eliminate broad-based fuel subsidies and reallocate part of the resulting fiscal savings to targeted fare support for vulnerable groups, including low-income individuals, students, women, and people with disabilities.
- ii. Deploy a mix of delivery tools such as paper vouchers in rural regions and smart-card systems in urban areas, to suit Nigeria's varying administrative capabilities.
- iii. Establish stable and transparent funding, sources like dedicated road-user fees, congestion charges, or climate finance, to reduce reliance on politically volatile budget allocations.
- iv. Tie subsidy disbursements to measurable outcomes by embedding performance-based conditions, such as improvements in access to jobs or schools within 30 minutes for low-income households.
- v. Expand inclusive infrastructure by incorporating universal design in transport facilities, ensuring adequate lighting for night-time safety, and integrating gender-sensitive planning.
- vi. Shift from subsidy-centric models to broader social mobility initiatives that combine targeted subsidies with strategic infrastructure investments, especially in rural feeder roads and multimodal transport systems.
- vii. Harness digital tools such as GPS tracking, electronic ticketing, and open data platforms to curb fraud and improve transparency in subsidy administration.

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Small-Scale Farmers' Resilience Strategies against the Effects of Insurgency on Yam Production and Distribution in Niger State, Nigeria

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Abstract

Insurgency has had significant impact on the yam supply chain in Niger State. Farmers however have adopted several coping strategies, in order to ensure continued production and distribution. This study assesses the adaptation strategies adopted by small-scale yam farmers in Niger State in response to the impact of insurgency on yam production and distribution. Adopting a quantitative research design, primary data was collected through structured questionnaires from a sample of 318 small-scale yam farmers across five (5) Local Government Areas (LGAs) in Niger State. A stratified random sampling technique was used to select respondents, and 313 completed questionnaires were analysed. Descriptive statistics such as mean statistics and ANOVA were adopted for data analysis. The findings revealed that insurgency had a major impact on yam production and distribution as it led to significant declines in output (mean = 4.97), loss of farmland (mean = 4.89), and increased cost of labour (mean = 4.83). To mitigate these effects, farmers adopted various coping strategies, such as prayer for safety, the payment of taxes to insurgents, making pact with insurgents, employment of security and diversification into other agricultural activities. The study concludes that safety issues, labour expenses, and transportation infrastructure are critical factors that affect yam production and successful distribution in Niger State. The study recommended enhancement of security, opening of new safer yam markets, encouraging collaboration in information dissemination among farmers, community leaders and security agencies and the provision of financial support to affected farmers to boost farmers' resilience.

Keywords: Resilience strategies; Insurgency; Yam distribution; Yam production; Small-scale farmers; ANOVA

1.0 Introduction

Agriculture still remains one of the key industries in the Nigerian economy, providing jobs, food, and a source of income to a significant percentage of the population. In this industry, small-scale farmers play an important role, as they produce over 70% of national food production (FAO, 2022). Their agricultural practices provide nutritional support to their households, rural earners, and local markets, especially in states like Niger where agriculture is the backbone of the economic system. However, small-scale farmers continue to face systematic problems, such as poor access to credit, poor mechanization, poor infrastructure, and market instability. Over the last few years, the threat of insecurity, i.e. insurgency and banditry, has been one of the worst threats to their viability.

In many areas in the Niger state, the insurgent attacks have led to displacement, loss of life and property, and destruction of farmlands. This has led to a situation where most farmers have abandoned farming due to the safety factor, leading to significant agricultural productivity and income losses (Mustapha et al., 2025; Ajiboye et al., 2024b). Yam, one of the major staple crops and sources of income to rural households, has been affected with severe production and market losses (Ogaji et al., 2022). Most of the Yam farmers are small-scale farmers living in remote villages that continue to be susceptible to attacks, making access to land, agricultural inputs, and transport channels more difficult (Yunusa et al., 2023).

Extant literature has mostly focused on the economic impact of insecurity on agriculture (Ajiboye, 2023; Ogaji et al., 2022). However, there remains a gap in understanding about the ways of adjustment of small-scale farmers and the impact that the adaptive responses have on the resilience of agriculture. To this end, the present study aims at assessing the adaptation measures undertaken by small-scale farmers to insurgency and to determine its effectiveness on yam production and distribution in Niger State.

2.0. Literature Review

2.1 Conceptual Review

2.1.1 Farmers Resilience against Insurgency

According to Bruck & d'Errico (2019), resilience is a complex idea that may be defined as the capacity to recover from a variety of shocks or disruptions without suffering long-term harm. Communities in some Local Government Areas in Niger State, such as Shiroro, Munya, Rafi have shown incredible resiliency in the face of insurgency and banditry by creating a variety of coping mechanisms to deal with the ongoing dangers. This is consistent with the results of Arias *et al.* (2019), who found that households impacted by war in rural areas had a high degree of shock tolerance. When outnumbered and without security support, one of the most important tactics is to temporarily reach agreements with the robbers and rebels (Hamza *et al.* 2022). Though these agreements are fragile and often breached, they provide temporary respite and a means of survival.

Communities in Munya Local Government Area have taken steps to guarantee that their children's education continues. They hold their classes outside of their schools despite the difficulties, and they give teachers food supplies as payment. This initiative demonstrates their dedication to making education a top priority, especially in times of crisis (Ajiboye, 2024a; Yakubu, 2021; Shaibu *et al.* 2020). In line with Abraham Maslow's hierarchy of needs, accepting the circumstances that bandits and insurgents impose emphasises the significance of safety and security as basic wants (Hamza *et al.* 2022).

Hellige (2018) looked at risk, threats, equilibrium, social norms, and stress in order to create a taxonomy of resilience. In response to bandit and insurgent assaults, most communities have established vigilante organisations. These groups are in line with Reisman and Their (2018) assumptions regarding the frequency of these attacks and their effects on agricultural activity. These communities often rely on symbiotic relationships with their neighbours to survive, as they are far from urban centres where law enforcement presence is stronger.

2.2 Theoretical Framework

2.2.1 Resilience Theory

In 1973, Holling created the resilience theory which now serves as an important framework for understanding system and community reactions to disturbances while keeping their essential goals intact. Holling (1973) defined resilience as the ability of a system to endure change and rebuild while maintaining its essential identity and functions. This theory points out the relationship between human and environmental processes and has been applied to different

fields even outside its intended area of focus (Folke *et al.*, 2010). The three basic aspects of the theory are transformability, adaptability, and persistence. According to Walker *et al.* (2004), the terms "persistence," "adaptability," and "transformability" describe a system's capacity to hold onto its stable state in the face of external shocks, modify procedures to reduce vulnerabilities, and develop whole new systems in the event that the existing ones prove to be unworkable.

Resilience theory has been employed in several fields ranging from disaster management, climate change as well as sustainable development. According to Adger (2000), the theory explains how communities respond, adjust or recover from tragedies. This makes this theory ideal for this study as it studies how small-scale farmers tend to respond to the impact of insurgency on the yam production and distribution. Farmers' ability to welcome or embrace new farming techniques is an indication of their flexibility, their ability to continue farming despite challenges is an indication of their tenacity while their efforts to try out new methods and markets show their transformability as evidenced in the studies (Ajiboye, 2023; Hamza *et al.*, 2022; Ibane *et al.*, 2009).

The resilience theory is especially useful in understanding how small-scale farmers in the state of Niger adapted to insurgency. The fact that the farmers were able to continue producing yams despite the insecurity and disruption issues is an element of persistence in the theory. Adaptability can be seen in their attempts to adapt farming methods, including shifting planting seasons or planting different crops, and changing their methods in order to adapt to the altered environment. Also, there is the aspect of transformability demonstrated by the diversification of the farmers, who are venturing into other forms of agriculture and looking into newer markets in their effort to construct more robust production and distribution systems against the threats that have been posed on them. The framework, in turn, enables us to describe how farmers are not merely coping with the consequences of the insurgency but are proactively changing and adjusting their tactics to be able to continue living.

2.3 Empirical Review

Adisa *et al.* (2022) evaluated the tactics used by crop farmers in Osun state, Nigeria to lessen hostilities with livestock herders. Their study analysed the causes, impacts and coping methods of these farmers in order to lessen the effects of their disputes with herders in Osun state. In this study, a purposive and proportional sampling strategy was utilised in choosing a total of 120 vulnerable crop producers from around the state using a quantitative research design. After that, a structured, closed-ended interview schedule was used to gather pertinent study data while both descriptive and inferential statistics were used to examine the collected data. Result from the study revealed that crops loss as well as reduced farmers output and income were the major effects of conflict. Improved farm security, praying for peace and requesting support from friends and relatives were the major strategies adopted by farmers in the areas. The study also revealed that years of residence of farmers, farming experiences and the effects of the conflicts determined the coping strategies adopted by the farmers. The study recommended that relief materials should be provided by government and donor agencies to farmers to help cushion the effects of the conflicts.

Rabiu *et al.*, (2022) analysed the effect insurgency had on food crop production in Gaidam Local Government Area of Yobe state, Nigeria. The study adopted a quantitative research design utilising a multi-stage sampling method to select 100 respondents for the population. Structured questionnaires were distributed as instrument of data collection to the respondents. Descriptive statistics such as frequencies, means and percentages were adopted for data analysis while inferential statistics like multiple regression model was adopted for hypothesis testing. The study revealed that low crop production, inaccessibility of farm land, inaccessibility of rural market, poor nutrition, unemployment, reduced income, increased social

vices, increased hunger, hike in prices of commodities, loss of invested money as well as loss of crop harvested to insurgents were some of the effects that the insurgency had on crop production in the study area. The study also identified diversion to other forms of agriculture like livestock rearing, fishing, poultry farming as some coping strategies adopted. Others adopted back yard farming, dry season farming, begging, petty trading, craft making and processing of agricultural products as coping strategies adopted to cushion the effects. The study recommended the provision of training and literacy classes for farmers by educational authorities to enlighten the farmers of best practices and broaden their scope to aid them adopt better strategies.

Chibundu *et al.* (2022) conducted a study assessing the strategies employed by crop farmers in Imo state, Nigeria against the effects of agricultural land conflict. The study employed a descriptive research method. Farmers were selected from different local government areas within the state using a mixed sampling technique namely, purposive, proportionate, simple random and snowball sampling techniques. Structure interview schedule was then employed as instrument for data collection. The collected data were analysed using percentages and weighted mean. The study revealed that increased cost of inputs, lack of market for produce, land redundancy, improperly time farming activities, loss of lives and reduction in crop size were the major effects of agricultural land conflicts. The study also discovered that diversification from crop production, appeasing other parties, praying for peace, and adoption of less risky income generating activities were strategies employed to cope with the identified effects. The study therefore recommended that there should be a review of existing land governance system in order to accommodate recent happenings.

While these reviewed studies provide significant contributions, they share some common limitations. Most of the studies focused on the general effects of conflicts and insecurity on crop production, without a specific emphasis on particular crops or the nuanced impact on local food systems. Additionally, these studies were region-specific, and their findings may not fully reflect the unique challenges faced by farmers in other regions, particularly in Niger State, which is not represented in the reviewed studies. The current study fills these empirical gaps by focusing specifically on the effects of insurgency on yam production and distribution in Niger State, a region that has not been extensively studied in the existing literature. By collecting data from farmers in five Local Government Areas (LGAs) of Niger State, the study aims to identify region-specific coping strategies, while also employing advanced inferential statistics such as ANOVA to analyse the variation in adaptation strategies across different farmer groups. This approach offers a novel perspective on how insurgency affects yam production and distribution in Niger State, contributing new insights to the broader discourse on agri-food resilience in conflict-affected regions.

3.0 Methodology

The study was carried out in Niger East Senatorial District of Niger State, Nigeria, adopting a quantitative research design. The population for the study consisted of 1,553 small-scale yam farmers which were selected from the list of registered yam farmers with the Agriculture Department of the LGAs, with 287 from Rafi LGA, 380 from Paikoro LGA, 465 from Shiroro LGA, 187 from Munya LGA, and 234 from Gurara LGA. These are the major yam producing LGAs in Niger State and are majorly affected by insurgency due to their accessibility to Kaduna State. A sample size of 318 small-scale farmers, calculated using the Taro Yamane formula, was adopted for the study. Using the proportion formula, a sample of 59 farmers were taken from Rafi LGA, 95 from Shiroro LGA, 78 from Paikoro LGA, 38 from Munya LGA, and 48 from Gurara LGA. A stratified sampling technique was employed to select the respondents.

The study focused on yam-producing areas where insurgent activities had been reported or occurred, limiting the scope to five LGAs: Gurara, Munya, Paikoro, Rafi, and Shiroro which are major yam producing areas but are majorly affected by the insurgency due to their accessibility to Kaduna State (See Figure 1). Small-scale yam farmers were selected from the nine wards in each of the five LGAs, with one community chosen from each ward. Out of the total 318 administered questionnaires, 313 completed questionnaires were used for analysis. Descriptive statistics, such as mean statistics, were employed for the analysis, and a one-way ANOVA was performed to test the null hypothesis that there is no statistically significant difference in the mean responses of farmers on the strategies adopted to mitigate the effects of insurgency on yam production and distribution, at a 95% confidence level.

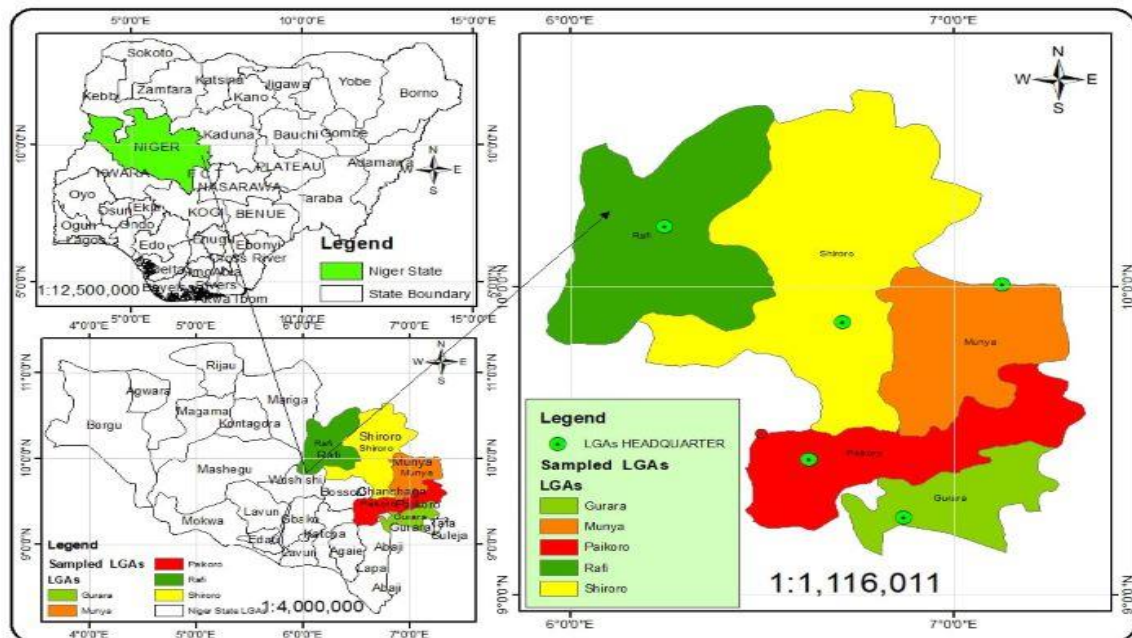


Figure 1: Map of the Selected LGAs in Niger East Senatorial District

4.0 Results and Discussion

4.1 Impact of Insurgency on Yam production and distribution

The research findings showed that the insurgency has affected every stage of yam production such as obtaining supplies for farming activities before the planting of seeds, planting of the seeds, harvesting and marketing of the harvested yams. According to the data presented in Table 1, it was found that the presence of insurgency has resulted in a decrease in the amount of yam produced with a value of 4.97. Additionally, farm lands have been taken over by insurgents with a value of 4.89. Moreover, businesses have suffered from a loss of capital and funds due to attacks by insurgents with a value of 4.85. There has also been a rise in labour costs with a value of 4.83 and a decrease in job opportunities and business activities with a value of 4.78. Furthermore, losses have been incurred due to attacks, on storage facilities resulting in a value of 4.78.

The grand mean score of 4.16 indicates that the insurgency has greatly affected the cultivation of yams as all aspects of yam farming have been impacted in some way or the other. This influence has resulted in increased cost of production, reduced yields resulting in inability to meet demand of yam thereby resulting in increased price of yam. This agrees with the research findings of Yusuf *et al.* (2018) and Ajiboye (2023), which studies highlighted that insecurity has adverse effect on agricultural production.

Table 1. Effect of Insurgency on Yam Production and Distribution (n = 313)

S/No	Effect of Insurgency on Yam Production and Distribution	Mean Average
1.	Inability to get Yam seeds or seedlings for planting	4.33
2.	Inability to acquire fertilizer	2.34
3.	Difficulty in getting pesticides and herbicides	3.14
4.	Disruption in transport infrastructure	2.44
5.	Damage to seedling markets and store houses	4.55
6.	Loss of capital and fund for business	4.85
7.	Increased cost of farm inputs	4.57
8.	Increased cost of transportation	4.67
9.	Increased cost of labour	4.83
10.	Loss of harvests	4.78
11.	Loss harvests during transportation	3.65
12.	Loss of Occupation and business	3.78
13.	Decline in Quality of Yam produced	4.67
14.	Decline in Quantity of yam produced	4.97
15.	Loss of farm land to insurgents	4.89
	Grand mean	4.16

Source: Authors' Survey (2024)

4.2 Resilience Strategies adopted by Yam farmers and their effectiveness

In a bid to ensure continued production and distribution of yam by the small-scale farmers, several strategies have been adopted to cushion, reduce or even eliminate the effects of insurgency on yam production and marketing. The study as shown in Table 2 revealed that paying of taxes to leaders of the insurgent groups, making pacts with insurgents, migration to safer areas, collaboration in disseminating information on security situation, organising prayers, diversification to other agricultural activities, hiding harvests underground to prevent detection by insurgents were the major strategies adopted. This agrees with the findings of Chibundu *et al.* (2022) and Adisa *et al.* (2022). In agreement with Rabiou *et al.* (2022) the study also discovered that the farmers tend to diversify to other agricultural activities such as livestock rearing to minimise losses and remain productive in other areas. Making pacts with insurgents or paying taxes to the insurgents were discovered to be more widely adopted by the farmers than relying on security from security agencies or vigilantes. This is a worrying development showing increasing loss of trust and confidence on the ability of the security agencies to provide protection.

Table 2: Resilience Strategies to Yam Production and Distribution (n=313)

S/No	Resilience Strategies	Mean Average
1.	Changing planting schedule	2.27
2.	Diversification to other crops or other agricultural activities	3.63
3.	Paying taxes to insurgents	4.33
4.	Making pacts with insurgents	4.25
5.	Migration to safer areas	4.72
6.	Collaboration in information dissemination between farmers to get firsthand information on terrorist movements, so as to evade attacks	4.53
7.	Masking heaps in between denser plants to prevent detection	2.75
8.	Hiding harvests underground to prevent detection by insurgents.	3.87
9.	Following alternative safer routes to transport harvests to market	4.88
10.	Employing securities or vigilantes for protection during cultivation and harvests	3.56
11.	Transporting harvests to other safer markets within towns and cities	4.78
12.	Organising prayers for protection	4.89

Source: Authors' Survey (2024)

4.3 Hypothesis Test Results

A one-way ANOVA was performed to test the null hypothesis that there is no statistically significant difference in the mean responses of farmers on the strategies adopted to mitigate the effects of insurgency on the yam production and distribution. The result is presented in Table 4.

Table 3: ANOVA result

Source of Variation	SS	Df	MS	F	p-value
Between LGAs	180.25	4	60.08	5.23	0.0016
Within LGAs	3370.75	309	11.43		
Total	2551.00	211			

Source: Authors' Computation

Table 3 shows the result of the ANOVA analysis on the mean responses of farmers on the adaptation strategies adopted to mitigate the effects of insurgency on the yam production and distribution in various Local Government Areas. The values (SS = 180.25, MS = 60.08, F = 5.23, p = 0.0016) indicates the variation in mean responses between farmers from the five Local Government Areas: Gurara, Munya, Paikoro, Rafi and Shiroro. The result shows an F-value of 5.23, with a p-value of 0.0016. Since the p-value is less than 0.05, hypothesis one is rejected, which therefore shows that there are statistically significant differences in the mean responses of farmers across these Local Government Areas. This means the differences in the adaptation strategies used by farmers are unlikely to have occurred by random chance. This result implies that the farmers in different Local Government Areas have varied approaches to dealing with

the challenges posed by insurgency. For instance, some areas might have more effective strategies than others.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study assessed the coping mechanisms adopted by the small-scale farmers on the effects of insurgency on yam production and supply chain in Niger State. Data was collected using questionnaires and analysed using descriptive statistics and one-way ANOVA analysis technique. The research findings indicate that insurgency greatly affected the yam production and distribution, thus, resulting to low yield, loss of farmlands, high production costs, disruption in yam supply chain, high cost of transportation, damage and burning of storage infrastructure among others. In dealing with these situations, the farmers have resorted to measures like payment of taxes to insurgents, alliances, burying yams in pits and diversification to other agricultural activities. The study concludes that the adoption of these strategies is an indication of farmers' resilience in the face of threats to yam production. However, this also shows growing dependence on insurgent groups due to the perceived failure of security agencies.

5.2 Recommendations

The study recommends that government should enhance security in the impacted regions. This can be done by the intensification of patrols and development of the community policing in the communities and local markets which can help in restoring security and trust with farmers.

Secondly, newer safe yam markets may be established for these individuals to engage in the yam production sector. This will keep the farmers and their families within the yam production chain while also increasing the chances of growth.

Thirdly, government should invest in the improvement of the transport infrastructure in order to ensure the safe and efficient delivery of yam produce to the markets which has been hampered by insurgency.

Fourthly, collaboration in information dissemination between farmers, community leaders and security agencies should be encouraged in order to get firsthand information on terrorist movements, so as to evade attacks should be encouraged.

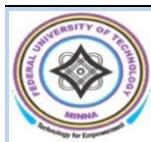
Finally, the state government should provide financial aid to farmers, while also encouraging diversification into other forms of agriculture or other areas within the yam supply chain in order to lessen dependence on yam production as and boost their resilience to the threat of insurgency.

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Entrepreneurial Skill Acquisition and Student's Entrepreneurial Intention in Kwara State Polytechnic, Ilorin

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Abstract

High levels of graduate unemployment and the shrinking availability of government employment opportunities have raised serious concerns about the low entrepreneurial intention among students in Nigerian tertiary institutions. Although, entrepreneurship is widely recognized as a key driver for reducing unemployment and fostering economic development. It is against this backdrop, this study examines the effect of entrepreneurial skill acquisition on students' entrepreneurial intention at Kwara State Polytechnic, Ilorin. A cross-sectional survey research design was adopted, and a sample of 351 students was selected from a total population of 4,198 using the Krejcie and Morgan sample size determination table. The respondents were drawn from six departments within the Institute of Financial and Management Studies. Data were collected through structured questionnaires and multiple linear regression was used in order to determine the effect of entrepreneurial skill acquisition on entrepreneurial intention. The findings reveal a positive and significant effect between managerial skills and entrepreneurial intention (Adjusted $R^2 = 0.382$, $p < 0.05$). Similarly, technological skills were found to have a positive and significant effect on entrepreneurial intention (Adjusted $R^2 = 0.366$, $p < 0.05$), while personal skills also significantly influenced entrepreneurial intention (Adjusted $R^2 = 0.121$, $p < 0.05$). The study concludes that the development of personal, technological, and managerial skills is essential in enhancing students' entrepreneurial intention. Consequently, it recommends that polytechnics should strengthen entrepreneurship education by incorporating training programs, seminars, and practical sessions aimed at improving students' entrepreneurial competencies.

Keyword: Entrepreneurship skill acquisition, Entrepreneurial intention, Managerial skill, Technical skill and Personal skill

1.0 Introduction

The rise in global demand as a result of technological advancement and economic instability has brought about increase in unemployment among students in Nigerian tertiary institutions. As such, entrepreneurial intention served as factors that stimulate students' willingness to engage in entrepreneurial activities (Adebisi, 2018). Entrepreneurial intention refers to an individual's conscious state of mind that directs attention, experience, and action toward starting a new business (Hassan *et al.*, 2025). Entrepreneurial intention is widely regarded as the most reliable predictor of actual entrepreneurial behavior, as individuals are unlikely to engage in entrepreneurial activities without first forming a strong intention to do so (Akinkuolie *et al.*, 2024).

Students' entrepreneurial intention plays a crucial role in economic development, particularly in countries such as Nigeria where the labor market is unable to absorb the growing number of

graduates (Hassan *et al.*, 2025). When students develop strong entrepreneurial intentions, they are more likely to establish small and medium-scale enterprises that generate employment, stimulate innovation, enhance productivity, and contribute to sustainable economic growth (Akinkuolie *et al.*, 2024). As tertiary institutions produce graduates who are job creators rather than job seekers, entrepreneurial intention among students becomes a vital tool for addressing unemployment, poverty, and economic dependence (Adeyemi and Olabosinde, 2022).

Despite its importance, students' entrepreneurial intention in many Nigerian tertiary institutions remains relatively low (Salau *et al.*, 2024). Several challenges hinder the development of entrepreneurial intention among students, including inadequate practical exposure to entrepreneurship, limited access to startup capital, fear of business failure, poor entrepreneurial mindset, insufficient institutional support, and overreliance on paid employment after graduation (Okafor *et al.*, 2018; Sayeed and Samuel, 2024; Akinkuolie *et al.*, 2024). Additionally, entrepreneurship education in many institutions is often theoretical, with limited emphasis on skill-based and experiential learning, which reduces students' confidence and readiness to pursue entrepreneurial careers (Hassan *et al.*, 2025).

In response to these challenges, entrepreneurial skill acquisition has been identified as a critical mechanism for strengthening students' entrepreneurial intention (Usman and Markus, 2024). Entrepreneurial skill acquisition involves the development of practical competencies, knowledge, and abilities required to identify opportunities, mobilize resources, and successfully manage business ventures (Adeyemi and Olabosinde, 2022). Specifically, managerial skills equip students with the ability to plan, organize, lead, and control business operations, thereby increasing their confidence to manage enterprises (Ahmad and Ahmad, 2021). Technical skill enhances students' capacity to leverage modern technologies for innovation, production, and digital business operations, making entrepreneurship more attractive and feasible (Santoso, 2024). Personal skills, such as creativity, risk-taking, self-confidence, and problem-solving, help students develop a positive entrepreneurial mindset and resilience necessary for entrepreneurial pursuits (Blaique *et al.*, 2023).

Although several studies have examined entrepreneurship education and entrepreneurial intention (Do Nguyen and Nguyen, 2023; Kolade *et al.*, 2023), empirical evidence on the specific role of entrepreneurial skill acquisition particularly its managerial, technological, and personal dimensions remain limited within the context of Kwara State Polytechnic, Ilorin, despite its strategic role in technical and vocational education. This gap in the literature necessitates need to investigate the effect of entrepreneurial skill acquisition and student's entrepreneurial intention in Kwara state Polytechnic, Ilorin with the following specific objectives:

- i. To evaluate the effect of managerial skill on student's entrepreneurial intention in Kwara State Polytechnic, Ilorin.
- ii. To examine the impact of technical skill on student's entrepreneurial intention in Kwara State Polytechnic, Ilorin.
- iii. To investigate the effect of personal skill on student's entrepreneurial intention in Kwara State Polytechnic, Ilorin.

The following null hypotheses were formulated in line with the specific objectives above:

- i. Managerial skill does not have any significant effect on student's entrepreneurial intention in Kwara State Polytechnic.
- ii. There is no significant impact of technical skill on student's entrepreneurial intention in Kwara State Polytechnic.

- iii. Personal skill does not have any significant effect on student's entrepreneurial intention in Kwara State Polytechnic.

2.0 Literature Review

Entrepreneurial skill acquisition

According to Hassan *et al.*, (2025) entrepreneurial skill acquisition is a process of learning or acquiring a particular skill, knowledge or the needed behaviour to succeed in business. These entrepreneurial skill acquisition helps to identify and exploit an entrepreneurial opportunity for the purpose of job creation. Entrepreneurial skills are those skills that will enable an entrepreneur to manage an enterprise successfully with sound and updated knowledge (Jimoh *et al.*, 2017). Entrepreneurial skill acquisition is the process of acquiring business skill which enables potential entrepreneurs to function well in dynamic business environment. Entrepreneurial skills are equally important because it entails sets of skills that are required by an entrepreneur to successfully run a business and add value to work, these skills must be available and used in the right format (Salau *et al.*, 2024). Furthermore, entrepreneurial skills can be acquired through entrepreneurship training session, seminars, workshops, conferences and presentations (Sayeed and Samuel, 2022). This implies that when any of these methods are employed by undergraduates, it will help them acquire the necessary skill needed to develop entrepreneurial intention (Shaw, 2022). Exploiting a particular opportunity depends largely on human capital. The skills could be in form of managerial skills, personal skills and technical skills.

Managerial skills

Managerial skills involved the ability of individual to plan, communicate, coordinate, set goals and make decisions (Akinkuolie *et al.*, 2024). These skills are basic management function exhibited by business owner in order to realize the set objectives (Sayeed and Samuel, 2022). Managerial skills are essential in day-to-day running of the business. Additionally, managerial skills are expected to contribute to how effective an individual will be in managing an enterprise successfully. The managerial skills will enhance managerial effectiveness and also promote entrepreneurial intention (Usman and Markus, 2024).

Technical skills

Technical skills are set of skills necessary to develop knowledge and attitudes needed for development of innovative goods and service (Hassan *et al.*, 2025). This skill is paramount because it teaches individuals how to make use of technical tools necessary for activities in every business line, as every business activity relies on using different programs, tools or a unique way of doing things. Technical skills enable entrepreneurs to have competitive advantage because it develops expertise in choosing business area (Lazear, 2019). Furthermore, technical skills are concerned with expertise and technical know-how in specific field of knowledge or tasks related in a particular sector or industry (Salau *et al.*, 2024). Technical skills are acquired through technical training, practical session, and formal education that are essential for entrepreneurs to effectively carry out their tasks and responsibilities (Singh, 2021).

Personal skills

Personal skills refer to the set of skills that individual possess that will be of assistance in making such a person a successful entrepreneur. These skills are risk taking, locus of control, pro-activeness and innovativeness (Hassan *et al.*, 2025). Personal skills involve knowledge, attitudes, and behaviours that enable an entrepreneur to spot business possibilities, foster innovation, and turn concepts into practical and profitable activities for a long-term existence

(Akinkuolie *et al.*, 2024). The skills include; analytical aptitude, good communication, sound reasoning, creativity, good judgment, foresight, intuition and originality.

Entrepreneurial intention

Entrepreneurial intention is defined as readiness of individuals to practice entrepreneurship by involving in entrepreneurial action to gain independence and launch a new business (Adebisi, 2018). Patricia and Silangen (2016) expressed entrepreneurial intention as the drive to begin or own a venture. It can also be seen as individual's desire to start an entrepreneurial business in the future (Patricia and Silangen, 2016). Entrepreneurial intention according to Bux and Honglin (2015) is the state of mind which determines and directs the actions of the individual towards the development and implementation of a new business venture. Certain factors influencing the entrepreneurial intention, these factors are individual factors and the contextual factors (Akinkuolie *et al.*, 2024). Individual factors includes; psychological traits, demographic factors, individual skills and prior knowledge, individual network and social ties while contextual factors includes; environmental support, environmental influences and organizational factors.

Entrepreneurial intention is expected to influence the decision to start a new business by mostly young individuals who have acquired certain entrepreneurial skill. This orientation and readiness to engage in entrepreneurial behaviour help in pursuing suitable career path and also assist in achieving personal goals and financial rewards (Hassan *et al.*, 2025).

Theoretical Review

This section provides a review of need for achievement theory as the theory underpinned relationship between the independent variables and dependent variable of the study.

Need for achievement (David McClelland, 1961)

The need for achievement theory was developed McClelland (1961). The theory is based on the assumption that need for achievement is one of the strongest psychological factors influencing entrepreneurial behaviour of individuals. Individuals with high need for achievement/success have a strong desire to be successful and they are more likely to develop entrepreneurial mindset (McClelland, 1961). Adebisi (2018) also suggested that individuals who possess a strong need for achievement are more likely to solve problems by themselves, set challenge goal, and strive to achieve it by their own efforts. Individuals with high need for achievement will contribute more in entrepreneurial activities because they discover innovative ways to enhance their performance. Need for achievement is very crucial in enhancing entrepreneurial intention as it determines how far an individual will go and the level of investment in entrepreneurship business (Usman & Markus, 2024). This theory is relevant this study because it is observed that high need for achievement will contribute effectively to the decision of acquiring entrepreneurial skills (managerial skills, personal skills and technical skills) will enable them to have varieties of skill necessary for success in their choosing entrepreneurial path (Salau *et al.*, 2024). It is also believed that people with high need for achievement will strive in acquiring similar skills as successful entrepreneurs does and this will automatically promote superior predisposition to promote high entrepreneurial intention than people who do not possess such skills.

Empirical Review

Hassan *et al.*, (2025) determined the impact of entrepreneurship education on the entrepreneurial intention and skills acquisition of tertiary institutions students in North-Eastern, Nigeria. A mixed-methods research design was employed and 269 Students were sampled using structured questionnaires and interviews. The study revealed that entrepreneurship

education significantly influenced students' technical competencies and shaped entrepreneurial intentions, including students' desire to start businesses and develop leadership and opportunity-recognition skills. The study concludes that entrepreneurship education is one of the catalysts for job creation, self-reliance, and national development.

Akinkuolie *et al*, (2024) examined the influence of entrepreneurial skills on entrepreneurial intention of business education undergraduates in South-West, Nigeria. Proportional sampling techniques was used and 642 Business education undergraduates Students were selected for the study. Therefore, the findings indicated that Students possess both financial management skills and marketing skills and these skills significantly influenced entrepreneurial intention of the selected undergraduate Students. The study furthered recommended that stakeholders should develop and grow entrepreneurial skills and attitudes with the aim of sustaining entrepreneurial intention among undergraduates.

Salau *et al* (2024) studied the relationship between entrepreneurial skills acquisition and employment generation intention in Kwara state. The study employed qualitative method to explore the research objectives in IVTEC Ajase-Ipo. Face-to-face interviews were conducted for 12 alumni of the selected institution across different regions of Kwara State. The findings revealed entrepreneurial skills were acquired through hands-on training, real-world projects, industry internships, interactive learning, mentorship, and extracurricular activities which also enhance job creation intention. The recommends that institution should prioritize practical entrepreneurial skills acquisition program in educational curriculum, establishing entrepreneurship centers, facilitating industry internships, raising awareness about skill acquisition and entrepreneurship, and providing ongoing support for entrepreneurs.

Consequently, after the review of related empirical, it is observed that reviewed studies focused on majorly on the general knowledge of entrepreneurship rather than looking at specific areas of knowledge in entrepreneurship. It is also obvious that previous studies focused on Students in Universities and Colleges of education who offers entrepreneurship courses not students in technical institutions like polytechnic. However, this study used personal skill which is observed to be individual skill as one the proxies and also this study filled a particular gap by limiting the population to the students in technical institutions (Polytechnic) to have conclusions on how entrepreneurial skills acquired by the students affect their entrepreneurial intentions.

3.0 Methodology

The study employed cross-sectional survey design to study the population at a specific time and to understand the difference between individual groups within the population studied. The study population comprised of the entire students of Kwara State Polytechnic, Ilorin. However, for the purpose of clarity and ease access of data, the study was limited to HND 1 students in the institute of financial and management studies only. The total population of the entire HND 1 student for 2024/2025 academic session is 4198 across the six (6) different departments of the institute of financial and management studies, Kwara State Polytechnic, Ilorin according to Examination office. These departments include; the department of Business Administration and Management, Public administration, Marketing, Accountancy, Banking and Finance and Procurement and supply chain management. The sample size of 351 was determined using Krejcie and Morgan sample size determination table and self-administered questionnaire was used to elicit data from the sampled students. Therefore, simple random and stratified sampling techniques were used to select respondents while multiple linear regression analysis was used to analyse the data collected.

4.0 Result and Discussions

Table 1: The effect of managerial skill on entrepreneurial intention

Managerial skill	Standard coefficient	Significance (p)
Adjusted R ² =0.382	.520	0.000

F=222.187

Source: Researcher's field survey (2025)

Table 1 indicates that, managerial skill regression coefficient of 0.382 shows a positive relationship between managerial skill and Student's entrepreneurial intention. This implies that a unit increase in managerial skill will yield to 38% units increase in Student's entrepreneurial intention. The result is therefore, statistically significant with a p-value of 0.000*** at $P < 0.05$ significant level. Based on this result, the study rejects the null hypothesis, and therefore accept the alternate hypothesis which states that, managerial skill has significant effect on Student's entrepreneurial intention in Kwara State Polytechnic, Ilorin.

Table 2: The Impact of Technical Skills on Entrepreneurial Intention

Technology skill	Standard coefficient	Significance (p)
Adjusted R ² =0.366	.517	0.000

F=217.776

Source: Researcher's field survey (2025)

Table 2 indicates that, technical skill regression coefficient of 0.366 shows a positive relationship between technical skill and Student's entrepreneurial intention. This implies that a unit increase in technical skill will yield to 36.6% units increase in Student's entrepreneurial intention. The result is therefore, statistically significant with a p-value of 0.000*** at $P < 0.05$ significant level. Based on this result, the study rejects the null hypothesis, and therefore accept the alternate hypothesis which states that, technical skill has significant effect on Student's entrepreneurial intention in Kwara State Polytechnic, Ilorin.

Table 3: The effect of Personal Skills on Entrepreneurial Intention

Personal skill	Standardized Coefficients	Significance (p)
	Beta (β)	
Adjusted R ² =0.121	0.361	0.000

F=54.666

Source: Researcher's field survey (2025)

Table 3 indicates that, personal skill regression coefficient of 0.121 shows a positive relationship between personal skill and Student's entrepreneurial intention. This implies that a

unit increase in personal skill will yield to 12% units increase in Student's entrepreneurial intention. The result is therefore, statistically significant with a p-value of 0.000*** at $P < 0.05$ significant level. Based on this result, the study rejects the null hypothesis, and therefore accept the alternate hypothesis which states that, personal skill has significant effect on Student's entrepreneurial intention in Kwara State Polytechnic, Ilorin.

Tables 4: The effect of entrepreneurial skills acquisition on Entrepreneurial Intention

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	T	Sig.
(Constant)	1.569	.116		11.380	.000
Managerial skill	.122	.020	.220	5.043	.000
Technical skill	.162	.026	.275	5.011	.000
Personal skill	.289	.030	.408	8.970	.000

Source: Researcher's field survey (2025)

The table above shows that managerial skills significantly predicts 40.8% variation in entrepreneurial intention ($\beta=0.408$ $p=0.000$), followed technical skills which predicts 27.5% ($\beta=0.275$, $p=0.000$), lastly personal skills which predicts 22.0% variation in entrepreneurial intention ($\beta=0.220$, $p=0.000$).

Discussion of Findings

The result of finding above revealed that managerial skill has an effect on entrepreneurial intention such that a unit increase in perceived managerial skill caused about .220 unit decreases in perceived entrepreneurial intention scores which were statistically significant at 5% going by the p value (.000). Based on the result, the null hypothesis is rejected while the alternative hypothesis is accepted, thus, managerial skill has a significant effect on entrepreneurial intention.

Also, that technical skill has a significant impact on entrepreneurial intention such that a unit decrease in technical skill induced about .275 unit rise in entrepreneurial intention scores which was statistically significant at 5% going by the p value (.000). Based on the result, the null hypothesis is rejected and this implies technical skill has a significant impact on entrepreneurial intention.

Lastly, the study revealed that personal skill has an effect on entrepreneurial intention such that a unit increase in perceived personal skill caused about .030 unit decreases in perceived entrepreneurial intention scores which were statistically significant at 5% going by the p value (.000). Based on the result, the null hypothesis is rejected while the alternative hypothesis is accepted, thus, personal skill has a significant effect on entrepreneurial intention.

5.0 Conclusion and Recommendations

The study concludes that the ability to promote entrepreneurial intention depends on the possession of entrepreneurial skills such as managerial, technical and personal. Therefore, it is important to build an atmosphere that will promote entrepreneurial mindset which is essential in preparing and motivating young graduates to have entrepreneurial intentions and also enable students to become job creators rather job seekers and to develop human intellectual capacity to become better and best in building viable economy for the nation.

However, managerial skills are seen as the most important skills because it determines the level at individual is equipped with needed management style to manage and run business successfully. In addition, entrepreneurial skills can also be acquired through online and physical training courses, seminar and conference. These teaching means contribute to better understanding and shape entrepreneurial intention among undergraduate students in Nigeria especially in Polytechnics.

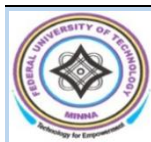
The following recommendations were made in line with the study objectives:

- i. Higher Institutions should adopt instructional methods that will equip students with business management skills, technical and personal as these instructional methods will ensure that students become disciplined and creative individuals who are change oriented and resilient.
- ii. Furthermore, there is need for the schools to enhance the entrepreneurial intention of students via different mediums such as training courses, seminars and practical sessions
- iii. The duration and intensity of the entrepreneurship education and skill acquisition should be increased beyond a semester course for a better impact on undergraduate students.

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Leadership Styles and Small Enterprise Performance: A Systematic Review

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Abstract

Leadership styles remain a central theme in organizational research, yet existing studies are fragmented across contexts and methodologies which limit theoretical integration. This study aims to systematically review recent research to identify dominant themes, methodological orientations, and regional patterns in leadership studies. Using the SQAT approach, seventy-three peer-reviewed articles published between 2015 and 2024 were systematically selected and analyzed. Five leadership styles including transformational, transactional, autocratic, strategic, and laissez-faire are seen as the most recurrent. The findings indicate that survey and case study designs dominate empirical research, with notable regional concentration in the United States, China, and India, while Africa and Latin America remain underrepresented. Research activity peaked between 2019 and 2021 which reflect high scholarly attention during the COVID-19 pandemic. The review concludes that despite the prominence of transformational and strategic leadership paradigms, conceptual coherence and methodological diversity are limited. It recommends inclusion of developing regions, adoption of mixed-method designs, and stronger theoretical alignment to advance leadership research.

Keywords: Leadership styles; Methodological trends; Organisational research; Systematic review; Transformational leadership.

1.0 Introduction

Small and medium-sized enterprise (SME) performance has continued to attract scholarly and policy attention due to its central role in employment generation, innovation, and economic stability (Olowookere *et al.*, 2021; Mamudu and Aliu, 2022). However, sustaining high performance among SMEs depends largely on the quality of leadership that guides decision-making, resource utilization, and employee motivation. Leadership styles therefore constitute a critical determinant of enterprise outcomes, influencing productivity, growth, and adaptability in competitive environments. Across sectors from business and education to healthcare and the public service, scholars have long sought to understand how various leadership styles shape decision-making processes, organizational culture, and strategic outcomes (Eisenbeiss *et al.*, 2020; Jensen *et al.*, 2021). While early leadership theories focused on traits and behavioral patterns, contemporary research has expanded to encompass relational, contextual, and adaptive dimensions which reflects the increasing complexity of work environments and institutional governance.

In recent years, global disruptions such as the COVID-19 pandemic, digital workplace transformation, and heightened socio-political uncertainties have reignited scholarly interest in leadership as both a practical function and an evolving theoretical field. Questions about the efficacy of hierarchical control, the ethics of influence and the nature of remote leadership have gained salience, prompting a re-evaluation of longstanding models such as transformational, transactional, and autocratic leadership (Wong and Giessner, 2018). Simultaneously, newer paradigms including strategic and distributed leadership have gained traction, reflecting a shift towards more fluid, collaborative, and future-oriented approaches.

Despite this resurgence of interest, the leadership literature remains methodologically and thematically fragmented. Much of the existing research is context-specific, with limited synthesis across disciplines, sectors, or geographic settings. Empirical studies tend to dominate, particularly those using cross-sectional survey methods (Zainol *et al.*, 2018; Samson and Ilesanmi, 2019; Simić *et al.*, 2020), while conceptual and critical contributions remain comparatively underdeveloped. Moreover, leadership research continues to be unevenly distributed globally, with substantial contributions from the United States, China, and India, and limited representation from Africa, Latin America, and parts of Eastern Europe. This geographic imbalance restricts the generalisability of theoretical models and hinders the development of culturally responsive leadership frameworks.

This systematic review addresses these gaps by examining the evolution of leadership style research between 2015 and 2024. The study maps trends in thematic orientation, methodological preferences, and regional distribution. Specifically, it aims to (i) identify the dominant leadership styles that structure research agenda, (ii) assess the methodological approaches employed, and (iii) highlight underexplored contexts and directions for future research. Unlike prior reviews that focus on singular leadership models, this study offers a comprehensive synthesis of leadership styles as a field in transition shaped by crises, driven by organisational complexity, and increasingly responsive to the demands of diverse workforces and changing institutional landscapes.

2.0 Methodology

This study employed the Systematic Quantitative Assessment Technique (SQAT), a framework developed by Pickering and Byrne (2014) to ensure a rigorous and transparent review process. SQAT systematically screens, assesses, and synthesizes peer-reviewed journal articles, emphasizing methodological clarity, replicability, and high academic standards. The technique focuses exclusively on original, peer-reviewed research, thereby maintaining the quality and credibility of the evidence base (Pickering and Byrne, 2014). A distinctive strength of the SQAT framework lies in its ability to reveal important geographic, scalar, theoretical, and methodological gaps in the existing body of literature. In doing so, it goes beyond traditional narrative reviews that often lack transparency in article selection and synthesis. Rather than relying on subjective criteria, SQAT follows a structured and logical sequence that can be easily replicated in future studies (Umar, 2025). This repeatability is crucial for producing systematic reviews that are both robust and defensible.

Table 1: SQAT Methodology

S/N	Step	Application in current study
1	Define topic	Leadership Style (LS) articles published between 2014 - 2024
2	Formulate research questions	Five research questions: 1. What is the time distribution of LS articles? 2. In which countries were these articles written? 3. What kinds of ST articles were published (conceptual vs. Empirical) 4. What are the prevalent methodologies in literature? 5. What are the specific themes these articles examined, and what were the major findings?
3	Identify key words	“Leadership Style”
4	Identify and search databases	1. Five databases utilised: Taylor and Francis, Wiley, Elsevier, Springer, Sage. 2. “All in title search” using the phrase “Leadership Style”
5	Read and assess publications	1. Abstracts of articles found were read to ensure that they were dealing with LS. 2. Literature reviews, book chapters

Source: Pickering and Byrne (2014).

Table 2: LS journal publication (2015 - 2024)

S/NO	PUBLISHER	NUMBER OF ARTICLES
1.	Taylor and Francis	23
2.	Wiley	19
3.	Elsevier	12
4.	Springer	12
5.	Sage	7
	TOTAL	73

Source: Authors’ Review, 2025

3.0 Results and Discussion

This section presents the descriptive findings of the systematic review on leadership style literature published between 2015 and 2024. The analysis draws on 73 peer-reviewed articles selected based on quality, relevance, and disciplinary alignment. The discussion is structured across three dimensions: temporal distribution, country of publication, methodology and article type.

3.1 Time Distribution of LS Articles

The temporal trend over the ten-year period reflects both continuity and disruption in scholarly engagement with leadership style. As shown in Figure 3.1, research output between 2015 and 2017 was relatively moderate, ranging from 4 to 6 articles annually. This may suggest a period of steady but limited attention, likely shaped by existing saturation in classical leadership theories such as transformational, transactional, and servant leadership.

A gradual expansion is observable from 2018, with article counts rising to 7 in that year and reaching 9 by 2019. The significant jump between 2019 and 2021, peaking at 11 articles in 2020, coincides with the COVID-19 pandemic. This surge likely reflects the renewed interest in crisis leadership, adaptive strategies, and emotional intelligence in times of organisational uncertainty. Notably, 2020 and 2021 together account for over a quarter of the total output, underscoring the heightened relevance of leadership discourse during global disruption.

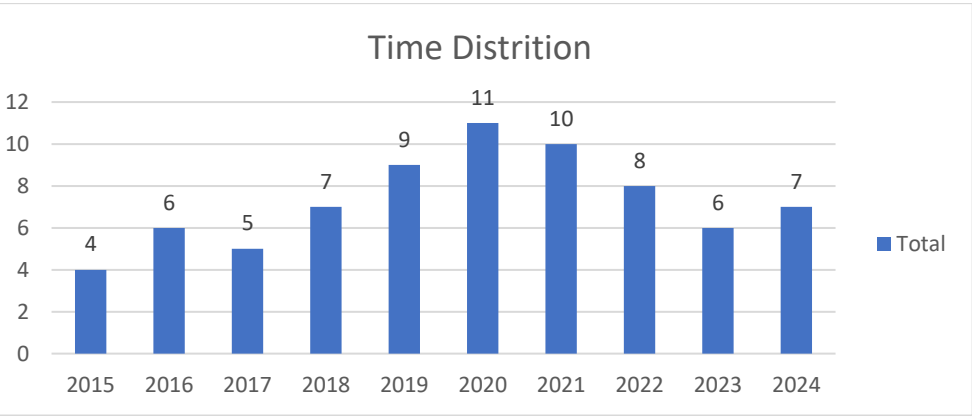


Figure 3.1: Time Distribution
Source: Authors, 2025

However, post-pandemic years record a modest decline, with only 8 articles in 2022, followed by 6 in 2023. The slight rebound in 2024 with 7 articles suggests a return to thematic

equilibrium, where leadership style continues to be studied but within more focused or specialized subdomains such as remote work management, inclusive leadership, and digital-era leadership. Taken together, the time distribution illustrates that leadership style remains a dynamic and policy-relevant area of research, with its visibility shaped in part by external socio-economic triggers.

3.2 Geographic Distribution of LS Articles

The geographic pattern of publication reveals a notable concentration of research within a handful of countries. The United States leads with 18 articles, followed by China (15), India (13), and the United Kingdom (12). Spain and Italy contribute 8 and 7 articles respectively. This distribution reflects both the institutional strength of management and organisational psychology in Anglo-American scholarship and the expanding academic capacity in Asian contexts.

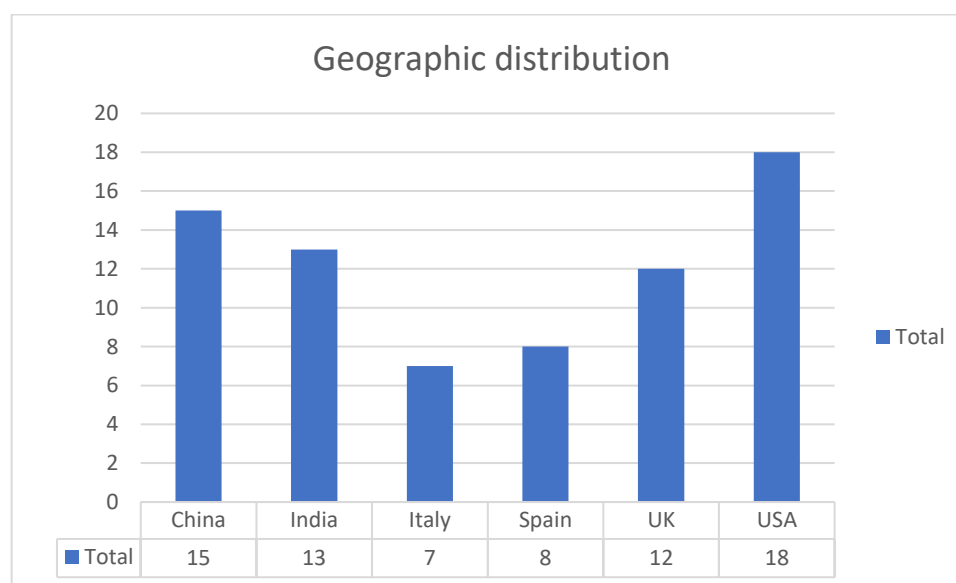


Figure 3.2: Geographic Distribution

Source: Authors, 2025

China's output is driven by the integration of leadership research into human resource management, public administration, and education sectors, often framed within the Confucian leadership tradition or hybridized Western models. India's contribution is similarly anchored in the public sector and small enterprise contexts, with a growing interest in leadership under resource constraints. The UK and US outputs remain theoretically rich, focusing on leadership development, diversity, and ethical leadership.

Spain and Italy, though smaller contributors, present contextually grounded studies often linked to public administration, higher education, or crisis response. The presence of these European contributions suggests an ongoing effort to localise leadership theory beyond Anglo-Saxon traditions. Notably, the absence or minimal representation of African and Middle Eastern countries indicates a regional imbalance and suggests potential gaps in global inclusivity in leadership research.

3.3 Prevalent Methodologies

The methodological orientation of the leadership style literature reviewed reveals a strong empirical emphasis, with studies employing a diverse range of research designs. As shown in Figure 3.3, survey-based studies dominate, accounting for 28 out of the 73 articles which reflect a prevailing preference for structured, large-sample data collection within organizational and institutional contexts. This aligns with the tendency in leadership research to statistically test relationships between leadership styles and outcomes such as employee engagement, team cohesion, and organizational performance.

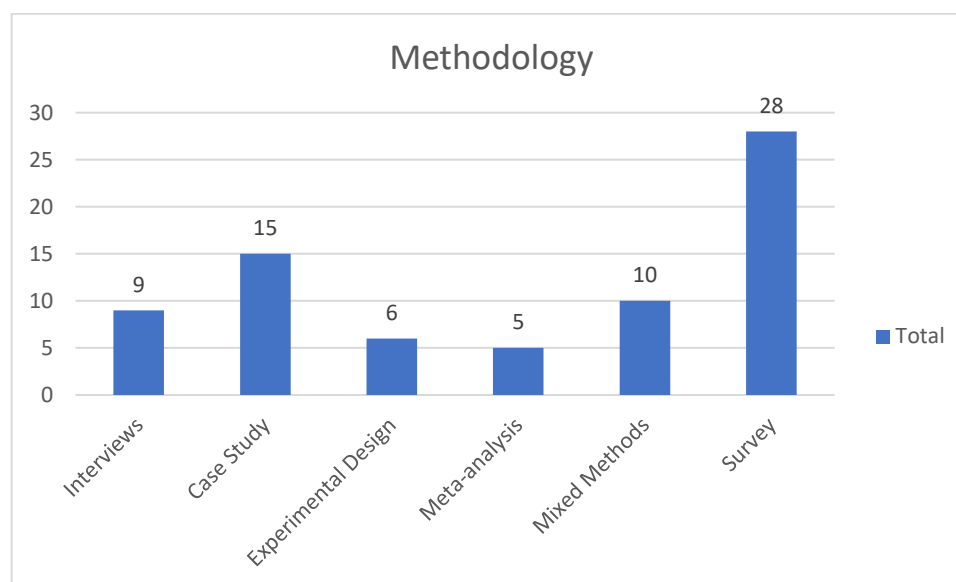


Figure 3.3: Prevalent Methodologies

Source: Authors, 2025

Case study approaches are the second most prevalent, with 15 studies adopting this design. These articles typically explore leadership behaviours within specific organizations or sectors, offering rich contextual insights into leadership dynamics during change, crisis, or strategic transformation. The use of mixed methods in 10 articles indicates an increasing willingness to combine quantitative and qualitative data sources to capture both the breadth and depth of leadership phenomena.

Qualitative interviews were employed in 9 studies, often focusing on leadership identity, perception, and experience from the standpoint of followers or leaders themselves. While these studies provide valuable interpretive depth, they remain underrepresented relative to quantitative designs. Experimental designs appear in 6 articles, usually involving controlled settings to assess the causal effects of different leadership styles on decision-making, motivation, or group dynamics. Lastly, meta-analyses, though fewer in number (5 articles), serve as critical contributions by synthesising existing empirical findings and drawing attention to patterns, gaps, and inconsistencies in the literature.

3.4 Article Type

Of the 73 articles reviewed, 63 adopted empirical approaches while only 10 were conceptual. This strong empirical orientation highlights the increasing operationalisation of leadership style

through field-based research, experimental studies, and mixed-methods designs. The predominance of surveys (28 articles) and case studies (15 articles) suggests a preference for applied research settings, particularly within organisational, educational, and healthcare institutions.

Empirical studies have examined leadership style in relation to outcomes such as employee motivation, team performance, change readiness, and decision-making under pressure. Methodologically, these studies employed regression analysis, structural equation modelling, and increasingly, multi-level modelling to capture leadership effects across hierarchical settings.

The relatively smaller number of conceptual studies points to a narrowing space for theory development within the leadership field. These articles tended to engage with critiques of leadership typologies, the cultural adaptability of popular frameworks, or integrative models that attempt to bridge traditional and emerging leadership paradigms. While empirical work remains dominant, the presence of conceptual reflection ensures that foundational questions about what constitutes leadership and how it should be studied remain on the agenda.

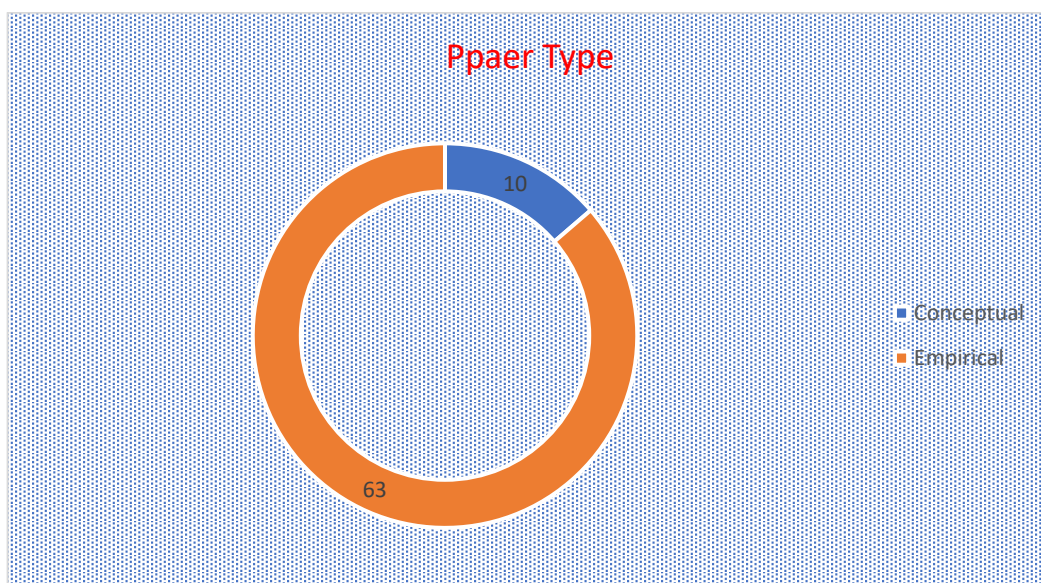


Figure 3.4: Paper Type
Source: Authors, 2025

4.0 Thematic analysis

The thematic categorization of the 73 reviewed articles reveals five dominant leadership styles that have framed scholarly inquiry over the past decade including transformational, transactional, autocratic, strategic, and laissez-faire. Each theme reflects distinct theoretical roots and empirical orientations, yet together they indicate the multiplicity of approaches used to explain leadership behaviors and outcomes in varied institutional and cultural settings.

Table 3: Thematic analysis

Leadership Style	Authors	Core Research Focus
Transformational	Ghasabeh <i>et al.</i> , (2015); Ellen, (2018); Manu, (2022); Cetin and Kinik (2015); Eisenbach <i>et al.</i> , (2019)	Motivation, innovation, emotional intelligence, follower development
Transactional	Afshari and Gibson (2016); Khan, (2017); Jaqua and Jaqua (2021); McCarthy <i>et al.</i> , (2018); Rowold (2019);	Performance incentives, compliance, task-structure, reward systems
Autocratic	Chukwusa (2018); Van-Vugt <i>et al.</i> , (2020); De Hoogh <i>et al.</i> , (2021); Hogg (2021); Schoel <i>et al.</i> , (2020)	Top-down control, authority, crisis decision-making, military/police leadership
Strategic	Davies (2015); Jaleha and Machuki (2018); Ireland and Hitt (2019); Carter and Greer (2022); Norzailan <i>et al.</i> , (2016)	Vision alignment, long-term planning, change leadership, organizational renewal
Laissez-faire	Khan and Tidman (2021); Hundie and Habtewold (2024); Skogstad <i>et al.</i> , (2015); Wong and Giessner (2018); Lundmark <i>et al.</i> , (2022); Breevaart and Zacher (2019)	Passive leadership, absence of intervention, team autonomy, negative workplace outcomes

Source: Authors, 2025

4.1 Transformational Leadership Style

This theme represents the most frequently studied leadership model in the reviewed literature, with 22 articles exploring its influence across various performance and behavioral outcomes. Studies typically emphasize the role of transformational leaders in fostering employee motivation, organizational citizenship behavior, and innovation outcomes (Nguyen *et al.*, 2022). A recurring focus is the mediating role of emotional intelligence, trust, and psychological empowerment in linking transformational behaviors to team effectiveness. For instance, some articles investigate how transformational leadership mitigates burnout in healthcare workers (Zhu *et al.*, 2017), while others assess its contribution to adaptive learning and institutional change in education (Keskes *et al.*, 2018). The underlying assumption is that transformational leaders mobilize shared vision and intrinsic commitment through inspirational and developmental strategies. The prominence of this theme across regions suggests its cross-sectoral relevance and continued theoretical traction in contemporary leadership studies.

4.2 Transactional Leadership Style

Several articles in this category examine transactional leadership as a task-oriented model built on conditional reinforcement and performance monitoring. The literature often contrasts it with transformational leadership, portraying it as efficient in rule-bound or routine-intensive environments such as banking, logistics, and public administration (Jaqua and Jaqua, 2021). Key topics include the effectiveness of contingent rewards in improving task performance, the management of short-term goals, and leader-follower clarity in operational roles (Afshari and Gibson, 2016; MacKenzie *et al.*, 2017). However, several studies caution against over-reliance on transactional leadership, noting its limited capacity to inspire creativity or manage complex change. Despite its mechanistic orientation, transactional leadership remains valuable for ensuring compliance, accountability, and productivity within structured systems, particularly in contexts where stability is prioritised over innovation.

4.3 Autocratic Leadership Style

This theme captures the use of directive and centralised decision-making often associated with traditional or crisis-bound organisational cultures. Ten articles fall under this category, with studies examining autocratic leadership in sectors such as security, education administration, and crisis response (Maseti and Gumede, 2015). A common finding is that while autocratic styles may enhance speed and clarity in decision-making, especially during emergencies or low-autonomy contexts, they also tend to suppress employee morale, participation, and innovation. Several authors highlight the association between autocratic leadership and increased staff turnover, low trust, and resistance to change (Hogg 2021; Schoel *et al.*, 2020)). Nonetheless, a few studies argue that in high-stakes or mission-critical environments such as disaster management or military institutions, autocratic leadership can provide the decisiveness and discipline required to ensure coordination and goal achievement.

4.4 Strategic Leadership Style

Strategic leadership appears in 15 articles which indicates growing scholarly attention to leaders who shape organisational direction through vision, foresight, and alignment of resources. This theme spans corporate governance, nonprofit strategy, and higher education management (Kıyak *et al.*, 2020). The literature commonly investigates how strategic leaders navigate environmental uncertainty, lead organisational transformation, and drive innovation (Carter and Greer, 2022; Norzailan *et al.*, 2016)). Several studies link strategic leadership with enhanced change readiness, organisational learning, and long-term performance metrics. Unlike transactional or autocratic styles, strategic leadership is framed as a hybrid model, combining analytical rigour with people-centred approaches. Articles in this category often call for enhanced leadership training programs to equip leaders with both tactical and visionary competencies needed in complex, fast-evolving sectors.

4.5 Laissez-faire Leadership Style

Twelve articles address the dynamics of laissez-faire leadership, a style generally described as passive, non-interventionist, or absent leadership. Studies commonly frame it as the least effective style, particularly in service delivery, education, and health contexts (Ahsan and Khalid, 2023; Wong and Giessner, 2018). Negative outcomes associated with laissez-faire leadership include poor role clarity, diminished team cohesion, low morale, and conflict escalation (Donkor and Zhou, 2020). However, a few articles offer more nuanced views, suggesting that in high-autonomy environments such as tech start-ups or creative industries, a degree of leader detachment may support self-direction and innovation. Nevertheless, the prevailing conclusion across the literature is that laissez-faire leadership tends to undermine accountability and psychological safety, especially in hierarchical or compliance-driven organizations.

5 Conclusion and Recommendation

This systematic review set out to examine the trajectory of leadership style research over the past decade, drawing from 73 peer-reviewed journal articles published between 2015 and 2024. The review analysed trends across time, geography, methodology, and thematic orientation. Five dominant leadership styles emerged: transformational, transactional, autocratic, strategic, and laissez-faire. The findings show that while transformational and strategic leadership have gained prominence for their relevance in contexts requiring innovation, adaptability, and long-term vision, transactional and autocratic leadership styles continue to be studied for their

functional applicability in rule-bound and crisis-driven environments. Laissez-faire leadership, although generally perceived negatively, remains a recurring theme in discussions around leadership failure, passive management, and employee disengagement.

Temporally, research output peaked between 2019 and 2021, reflecting a surge in scholarly interest possibly triggered by global disruptions such as the COVID-19 pandemic, which brought leadership practices under intense scrutiny. Geographically, the review highlights a concentration of studies in the United States, China, and India, pointing to the institutional maturity of leadership research in these countries. Methodologically, the literature is dominated by empirical designs, particularly survey-based and case study approaches, suggesting a field focused on applied insights rather than theoretical innovation. While this empirical strength enhances the practical relevance of the literature, it also signals a relative underdevelopment of conceptual frameworks that could better integrate diverse leadership phenomena.

In view of the above, the following recommendations are proposed to enhance the depth, diversity, and global relevance of leadership style research. First, future studies should invest more deliberately in theoretical development and conceptual clarity. Although leadership models such as transformational and strategic leadership have been widely adopted, their conceptual boundaries are often applied inconsistently across studies. Researchers should strive to refine constructs and clarify overlaps, particularly when studying hybrid or emergent styles. More integrative frameworks that situate leadership within broader organizational, cultural, and temporal contexts will be crucial for advancing the field. Second, methodological diversification is needed. While surveys and case studies have provided valuable insights, there remains a gap in longitudinal, experimental, and mixed-method research designs that can test causality and capture dynamic leadership processes over time. Future research should also embrace underutilized tools such as behavioral observation, diary studies, and digital ethnography, especially in contexts involving remote work, virtual teams, or digital leadership.

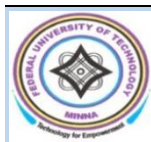
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Dynamic Capabilities and Business performance of Small and Medium Scale Enterprises in Edo State, Nigeria

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Abstract

Small and Medium Enterprises (SMEs) in Edo State operate in an increasingly volatile business environment marked by competition, technological changes, and unstable economic conditions. To survive and grow, SMEs must develop *dynamic capabilities that come in forms of* the ability to sense opportunities and threats, seize them, and reconfigure resources to enhance their overall business performance. There is no consensus on the ability of SMEs in Edo State to adapt quickly to market and environmental changes. Also, their dynamic capabilities to facilitate their competitiveness and effectively leverage opportunities for growth are still subject of research. The study focused on how dynamic capabilities influence business performance among SMEs in Edo State. The independent variable – dynamic capabilities – is decomposed into sensing, seizing, reconfiguration and learning capabilities. The study adopted survey (cross sectional) research design was adopted, relying upon a structured questionnaire as the data collection instrument. The population comprised all SMEs in Edo State. The method of data analysis was descriptive and inferential statistics (multiple regression). The study found that the performance of SMEs in Edo state is positively and significantly related to their capabilities within the environment in which they operate. Also, both sensing and learning dynamic capabilities are seen to be positive and significant to performance, while seizing and reconfiguration capability is not significant. The study therefore recommends that SMEs in Edo State must understand specific prevailing environmental conditions that may affect their performance within their immediate environment.

Keywords: SMEs, dynamic capabilities, business performance, business environment and Edo State.

1.0 Introduction

The increasing level of globalisation coupled with competitive edge owned by small and medium scale (SMEs) determine the ability of the SMEs to identify prevailing environment conditions within their immediate business environment (Lawal and Oguns-Obasohan, 2025). This argument was supported by Garbellano and Da Veiga (2019) that unfavourable market conditions do not provide better opportunities for business to develop ways to improve their performance. Most business firms including SMEs need to develop appropriate frameworks to improve their ability to identify these prevailing environmental conditions within their immediate business environments. These frameworks are identified as the Porter five model, balanced scorecard, value disciplines, Ansoff Matrix, SWOT analysis, BOSTON consulting Group and dynamic capabilities. However, this study address issue around dynamic capabilities and how firms can use them to improve their performance. The work of Teece, et. al., (1997) provides dynamic capabilities explore key path-dependent activities that may enhance capacity for firms to identify key environmental conditions within their business with focus on integrating available resources to improve their market niche. In Nigeria, SMEs help to diversify the economic activities through production for key final users for consumption and subsequently improving their standard of living. Notably, SMEs are seen as important especially in developing nations like Nigeria and other Africa country that depend solely on oil

as their major source of foreign exchange (Joseph, et al., 2021). Furthermore, SMEs are crucial component and driver for economic growth, development and sustainability that provides opportunities for innovation, empowerment, employment and creativity.

Prior studies such as Patricio, et al., (2022) establish relationship between dynamic capabilities and business performance of SMEs in developed nations like UK and Portugal but these studies often lack specific focus on the variable that may influence the dynamic capabilities of SMEs in developing country like Nigeria. Also, there are paucity in term of knowledge-based evidence that exist on studies that establish SME-specific which focused on mostly large institutions other than SMEs with limited focus. As part of this, empirical studies review that there is huge neglect in terms of the current challenges and opportunities facing SMEs as most prior studies focused on large organisation (Adewale and Okoro, 2021). This research gap requires adequate attention as there is need for specific SMEs studies that can constantly investigate dimensions of SMEs dynamic capabilities. It is important to note that prior studies based their arguments on the underlying assumptions that dynamic capabilities may not be the only factor responsible for improving SMEs performance (Olanrewaju and Abdulrahman, 2022). This findings from this study will improve the quality of information that SMEs will have about their business environment. It will help SMEs to have adequate information on how to develop processes that can integrate and build their capabilities to improve their business model. Based on this, the study examines how dynamic capabilities influence business performance of SMEs in Edo State with specific focus on SMEs current trends, opportunities and challenges. The research hypotheses are stated as follows: H₁, H₂, H₃; & H₄: *There is no significant relationship between independent variable (dynamic capabilities- sensing, seizing, reconfiguration and learning) and dependent variable (employee performance)*. The research objectives are established below:

- (i) ascertain the effect of sensing capabilities on business performance in Edo State.
- (ii) examine how seizing capabilities influence business performance in Edo State.
- (iii) examine the influence of reconfiguration capabilities on business performance in Edo State.
- (iv) determine the effect of learning capabilities on business performance in in Edo State.

2.0 Literature Review

This section presents the conceptual, theoretical and empirical reviews of the work. This is in a bid to find relevant research gaps and fashioning ways to fill the same.

2.1 Overview of SMEs in Nigeria

SMEs are considered and seen as key instrument for any nation to foster their economic growth, as prior studies have review that the pervasive nature and contribution of SMEs cannot be underrated as indicated among scholars and professionals (Gbandi & Amissah, 2014) In Nigeria, SMEs are seen as key instrument for improving growth, employee opportunities and creativity as over 40% of the country GDP and 70% employment from SMEs contribution. In the opinion of Kowo and Akanmu (2018), 87% of the overall economic growth which accounted for 61% GDP are from manufacturing and industrial unit of SMEs. The significance of SMEs includes improved standard of living, employment opportunities, improve foreign exchange, poverty reduction and income redistribution (Tobora, 2014).

2.2 Performance of SMEs

The concept of business performance is deeply rooted in the assumption that firm is a business unit that ensure the effective utilisation of the available resources to ensure that specific of the

organisation are achieved. Firm performance relates to the ability of the firm to defined critical opportunities to achieve their prevailing corporate goals within their environment. In support of this, business performance relates to the ability of the firm to acquire and ensure the effective utilisation of the available resources to achieve specific goals and direction. Li and Liu (2014) cite that firm performance include different components that defined specific tasks in such a way that key processes are employed in carrying out activities to improve organisational efficiency. In support of this, Ogunsanwo (2019) opine that business performance enhances organisational capacity, internal business processes, effective workforce management and conductive work environment.

This implies that firm performance develops strategies for business to plan and examine their overall corporate goals and objectives. SMEs performance is best conceptualised as a holistic construct that integrates financial results, operational efficiency, innovation capacity, and strategic adaptability. This broader understanding captures the realities of resource-constrained SMEs operating in environments that demand continuous improvement and responsiveness. Li and Liu (2014) argue that performance encompasses components such as innovation, market responsiveness, and product development, which collectively determine how well a firm competes in its environment. Non-financial indicators such as customer satisfaction, workforce productivity and organisational learning also contribute significantly to performance by supporting long-term sustainability (Saunila, 2016).

2.3 Dynamic Capabilities

The concept of dynamic capabilities is essential in identifying key prevailing conditions for SMEs to know the level of information available in response to possible changes within their business environment. It identifies key competencies, competitiveness and integrating key driving activities (Akenroye, et al., 2020). Scholars and professionals argue that dynamic capabilities is unique to firm to identify their peculiarities on how to identify key conditions that may influence their performance and distinguish clearly from their competitors in the market. In the work of Teece, (2023), the theory of dynamic strategic activities that are considered as important for creating and acquiring appropriate capabilities for developing ways to reconfigure new innovative ideas that can resolve business challenges within their business environment.

In essence, dynamic capabilities reveal an organisation's proficiency in attaining innovative competitive advantages guided by specific path dependencies and market positions (Teece, 2023). The efficacy of a company's dynamic capabilities determines the speed and extent to which its resources can adjust its business model according based on customer needs and aspirations which can be achieved through periodic opportunity assessment and proactive cultural shifts to address new threats and opportunities in business development (Teece, 2016). It functions as the company's ability to collaborate with partners, coordinating resources and alliances to effect changes in the market and business environment (Kapoor and Aggarwal, 2020). Dynamic capabilities determine the extent to which the firm available resources influence how firm interact with market and available resources within their business. These research gap provides the need to establish appropriate structure that can answer pending questions on how capabilities can influence performance (Teece, 2016).

2.3.1 Dimensions of Dynamic Capabilities

(i) Sensing Capabilities

Sensing capabilities are described as the process of gathering and filtering information from the environment to form hypotheses about the probable developments in technologies,

customer needs, and market responses (Teece, 1997). It involves the proper identification of opportunities by vigilantly observing the environment for potential opportunities within or outside the company's boundaries. The rapid changes in the environment and market present a challenge in predicting and identifying future development paths and difficulties in identifying new ideas, information, and knowledge that can lead to development opportunities (De Carvalho, 2021). For a firm to achieve sustainable competitive advantage, it must be able to reconfigure its resource base by effectively sensing shifts in the environment and responding accordingly as this may enhance capacity for improving performance. There is relationship between sensing and performance since sensing capabilities pertain to an organisation's ability to consistently observe and analyze its surroundings which involves appropriate monitoring of both internal and external technological advancements that may influence their performance (Teece, 2007).

(ii) Seizing Capabilities

Seizing capabilities can help SMEs to identify key resources and knowledge to improve their competitive advantage and performance (Kump et. al., 2019). Rashidirad et. al. (2014) stated that there is need for SMEs to identify capacity to drive resources and identify opportunities that can improve both internal and external knowledge and their corporate existence on the longrun. Once it is recognized that there is a need to make decisions and investments to address market needs with new products, processes, or services (Teece, 2016), it has the potential to reach public acceptance and to shape or create a sustainable market. An organization exhibits a high seizing capacity, according to Singh et al. (2013), when it is able to recognize the potential value of information, transform that information into tangible business opportunities that complement its strengths and weaknesses, and make decisions appropriately. Perceptive abilities and seizing capacities are related since identifying prospects or potentialities requires using creative products, processes, or services to increase performance.

(iii) Reconfiguration Capabilities

Reconfiguration capabilities provides an organisational structure that integrates the skills and competencies that differentiate products and services from those of their rivals in the market (Girod and Whittington, 2017). SME's ability to ensure it achieve reconfiguration is the key to sustained growth and appropriate requirements for creating and capturing value (Teece, 2016). Reconfiguration capability has relationship with performance since it empowers firm to reject or reconstruct specific organisational routines and practices to enhance their operational efficiency and improve their performance (Mora et al., 2008). The importance of reconfiguration capabilities is demonstrated by their critical roles in correcting gaps in a firm's resource base, developing new resources, and realigning available resources with new framework (Yeow, et. al., 2018). More significantly, reconfiguration is necessary in quickly shifting market conditions because it is regarded as a crucial component in assessing the performance of SMEs (Helfat & Peteraf, 2015).

(iv) Learning Capabilities

Prior studies review that knowledge articulation, new thinking and creative solutions that can improve performance are some of the examples of learning processes. Learning capacity is necessary to gain and absorb knowledge to drive support for business model and adaptability to enhance capacity for driving goals. Learning capability may be especially useful in the work of Akpan et al., (2022) because increased adaptability should allow SMEs to benefit from changes in their resource base and make it easier for them to reap the resource-related advantages that such changes may generate, which could improve SMEs' performance.

Protogerou, Caloghirou, and Karagouni (2014) opine that learning process improve how firm react to their environment and achieve their goals. Lin et al. (2016) believe that learning can be achieve through effective training programs and other knowledge-based processes that can increase capacity for improvement. As a result, it is considered a crucial source of knowledge and experience that SMEs require to continuously increases and sustain their competitiveness within their business environment (Morgan et al., 20211).

2.4 Theoretical Review and Framework

The study is based on resource-based theory and the underlying assumptions of this theory is that there are several managerial resources that the firm refused to utilise as this may serve as the main driver to achieve sustainable expansion within the limit of the business. In the work of Penrose (1959) as cited by Ruivo, et al., (2015), it is noted that it is possible for business to continuously achieve competitive advantage when they consider their resources and integrate with their capacity to achieve result. This implies that it is important for firm to develop capacity to effectively manage their resources (tangible and intangible) in order to achieve diversification, competitiveness and productive capacity. The theory takes into account the idea of resource immobility, which postulates that the persistence of resource disparities is a result of the complexity of resource trade between enterprises. This theory's use is justified by the fact that it assists businesses in locating and utilising their uncommon, precious, unique, and non-replaceable resources in order to obtain a competitive edge and enhance operational efficiency.

2.5 Empirical Review

Sharfaei et al. (2023) did a study on the effect of dynamic capabilities on the performance of international SMEs in Iran. The study examined that developing countries such as Iran face many challenges that can impact international small and medium-sized enterprises (SMEs) to a larger extent due to their limited resources and bargaining power. Furthermore, the study investigated how competitive advantage mediates the impact of dynamic capabilities and firm performance. The authors argued that international SMEs are confronted by a number of challenges such as how to develop the dynamic capabilities needed to help them attain a high level of performance. The study method of data analysis was a partial least square technique through the use of a self-administered questionnaire survey. Based on this, the study obtained 166 responses from the SMEs, the study revealed that dynamic capability does not have a significant impact on international SME performance. Also, that competitive advantage does not mediate the relationship. The study recommended that there is a need for SMEs to leverage comprehensive knowledge of dynamic capabilities and competitive advantage to enhance their performance in developing markets. Bett and Anene (2023) investigated how dynamic capabilities influence performance among SMEs in Nairobi, Kenya. The study population consisted of 129 Food and Beverage SMEs based in Nairobi as listed in the Kenya Association of Manufacturers' 2022/2023 database. The study adopted a random sampling method in order to identify the appropriate sample size using systematic random sampling. A sample size of 96 was determined using the formulae for determining sample size from a finite population. The study adopted a random sampling method in order to identify the appropriate sample size using systematic random sampling. A sample size of 96 was determined using the formulae for determining sample size from a finite population. A pilot test was done to determine the validity and reliability of the instruments. Data was analysed using both descriptive and inferential statistics. Descriptive statistics were used to provide a summary of survey data and summary statistics of the objectives. The study found that dynamic capabilities (sensing, seizing, innovation, and learning) play a crucial role in the performance of small and medium-sized enterprises in Kenya.

Beigi et al. (2023) investigated the relationship between dynamic capabilities and knowledge management in Tehran. This study aimed to investigate the effect of knowledge management (KM) and dynamic capabilities (DCs) on the improvement of the performance of knowledge firms through the mediating role of sustainable competitive advantage (SCA). The study applied descriptive correlational techniques to interpret and present data collected from the respondents. The findings revealed that KM and DCs enhanced the performance of knowledge firms by strengthening SCA. The current study extends the literature on management by bridging the research gap. The study recommended that creating and applying KM and DCs simultaneously, through SCA, can provide the essential setting for the significant improvement of knowledge firms' performance and assist managers and policymakers in understanding how to improve firm performance (FP) in dynamic environments. The work of Dejardin, et al., in 2023 did a study on the impact of dynamic capabilities on SME performance during COVID-19 in Portugal. The study provided that dynamic capabilities (DCs) are a growing field of research within the scope of theoretical structures based on resource and strategic management. The study adopted structural equation model (SEM) with a focus on 209 SMEs. The study revealed that DCs positively affect company performance both prior to and during the pandemic. However, we also verify that while prior to the pandemic companies placed greater emphasis on the search for new opportunities, following the onset of the pandemic the focus shifted to getting their products to the market.

Usman (2023) did a study on organizational agility and performance of SMEs in Bauchi State, Nigeria. The study explored organizational agility as the independent variable as been dimension of dynamic capabilities and ICT adoption, leadership, and resource fluidity as the dependent variable. The study adopted the cross-sectional survey and self-administered questionnaire as the main research instrument. The study adopted a simple random sampling technique. Data generated were analysed and presented using both descriptive and inferential statistical techniques. The hypotheses were tested using Spearman's rank-order correlation statistics. The findings revealed a positive and significant relationship exists between organizational agility and the performance of SMEs. Also, the study recommended that recommends that flexible budgets should be used and a continuous change in environmental dynamics is maintained.

2.6 Research Gaps

Although several studies have examined the relationship between dynamic capabilities and firm performance, the existing empirical evidence remains inconsistent and context-specific. Sharfaei et al. (2023) found that dynamic capabilities had no significant effect on the performance of international SMEs in Iran, suggesting that the relationship may be influenced by contextual challenges such as limited resources and restricted bargaining power. Conversely, Bett and Anene (2023), in their study of SMEs in Nairobi, revealed that dynamic capabilities particularly sensing, seizing, innovation, and learning positively influenced performance, highlighting a contrasting outcome within an African context. Further studies such as Beigi et al. (2023) and Dejardin et al. (2023) demonstrated that dynamic capabilities improve performance when mediated by factors such as sustainable competitive advantage or when influenced by crisis conditions. However, these studies are predominantly situated in foreign contexts such as Iran, Kenya, Portugal, and Tehran, with very limited evidence from Nigeria, particularly at the sub-national level. Existing Nigerian research, such as Usman (2023), focuses narrowly on organisational agility rather than the broader scope of dynamic capabilities, leaving a significant gap in understanding how sensing, seizing, reconfiguration, and learning capabilities jointly influence SME performance. More importantly, none of these studies examines SMEs in Edo State, a region experiencing unique economic, infrastructural, and competitive pressures. This geographical and conceptual gap underscores the need for an

empirical investigation into how dynamic capabilities shape SME performance within the unique business environment of Edo State, Nigeria.

3.0 Methodology

Survey (cross sectional) research design was adopted as the main research design. The study population comprises of all SMEs in Edo State which was obtained from Ministry of Business, Trade and Cooperatives, Edo State in collaboration with SMEDAN as at December, 2024 which stands at 898, 084. The research instrument was questionnaire and the source of data was primary which enable the study to obtain information from the respondents. The method of data analysis was descriptive statistics and inferential statistics with 5% level of significance using Statistical Packages for Social Sciences (SPSS) version 24. The validity of the research instrument was carried out by giving the questionnaire to experienced faculty member in the field for evaluation and all suggestions are appropriately incorporated, thus enriching the quality of the instrument for the study. The reliability was conducted through pilot study sampling 40 questionnaire to participants who were not member of the sample for this study. The data collected were tested with a construct composite reliability co-efficient (Cronbach's alpha) value for each latent variable are: sensing (0.938), seizing (0.910), reconfiguration (0.845); learning (0.938) while business performance (0.949) which indicates that those values 0.70 bracket are considered to be acceptable and those reliability less than 0.60 are considered to be poor. The samples size was determined based on the Taro Yamani formula and the data reflect that the sample size was 400. Filtering sampling method is a process of selecting a subset of respondents or data from a larger population based on specific criteria or "filters. Filtering sampling method was used as the sampling method in order to achieve and meet up with the condition of homogeneity of data collected. See below:

$$\frac{N}{1 + N(e^2)}$$

Where, n = sample size; N = Population (898, 084); e =significance level (0.05%)

$$\frac{N}{1+N(e^2)} = \frac{898,084}{1+ 898,084 (0.05^2)} = 400$$

The model was adopted from these works: Teece et al. (1997); (2007) and (2017) and Bett and Anene (2023) and is stated as follows:

$$PERSME = f(ENTORI, CUSSAT, QUPRSER, EMPSAT)..... 1$$

$$PERSME = f(SENC, SEIC, RECC, LEAC).....2$$

$$PERSME_i = \beta_0 + \beta_1 SENC_i + \beta_2 SEIC_i + \beta_3 RECC_i + \beta_4 LEAC_i + e_i..... 3$$

Where:

PERSME_i = Performance of SMEs; SENC_i = Sensing Capability; SEIC_i = Seizing Capability; RECC_i = Reconfiguration Capability; LEAC_i = Learning Capability

β_i = regression parameters or coefficients to be estimated; 1....4

e_i = Stochastic error term and a priori expectations: β₁, β₂, β₃, β₄ > 0

4.0 Results and Discussions

4.1 Correlation Analyses

Table 4.1: Correlation Analysis

Bivariate Pearson correlation coefficients were conducted on the data

		PERSME	SENC	SEIC	RECC	LEAC
PERSME	Pearson Correlation	1	0.487**	0.421**	0.466**	0.729**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	394	394	394	394	394
SENC	Pearson Correlation	0.487**	1	0.343**	0.019	0.398**
	Sig. (2-tailed)	0.000		0.000	0.713	0.000
	N	394	394	394	394	394
SEIC	Pearson Correlation	0.421**	0.343**	1	0.178**	0.427**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	394	394	394	394	394
RECC	Pearson Correlation	0.466**	0.019	0.178**	1	0.691**
	Sig. (2-tailed)	0.000	0.713	0.000		0.000
	N	394	394	394	394	394
LEAC	Pearson Correlation	0.729**	0.398**	0.427**	0.691**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	394	394	394	394	394

Source: Researcher Fieldwork (2025)

The Pearson's correlation coefficients between each pair of variables are shown in the Table. Based on the above, there is none of the correlation coefficients that is up to 0.80. This shows that serial correlation is not present in the dataset. The results further show that SMEs performance (PERSME) is related to sensing, seizing, reconfiguration and learning capabilities.

4.2 ANOVA Results

Table 4.2: ANOVA results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	38.084	4	9.521	137.329	0.000 ^b
Residual	26.970	389	00.069		
Total	65.054	393			

a. Dependent Variable: PERSME

b. Predictors: (Constant), LEAC, SENC, SEIC, RECC

The F-statistic of 137.329 is significant at $p < 0.05$. This indicates that the dynamic capabilities and business performance factors collectively have a statistically significant connection. Additionally, the F-statistic value of 137.329 shows the significance of the difference between SMEs' performance and dynamic capacities as well as the ratio of variance.

4.3 Regression Results

Table 4.3: Regression Results

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.7470	0.2140	-	3.4920	0.0010
SENC	0.2300	0.0390	0.2330	5.9720	0.0000
SEIC	0.0930	0.0370	0.0940	2.5330	0.0120
RECC	0.3530	0.0410	0.0640	8.6098	0.0001
LEAC	0.4300	0.0440	0.5520	9.8450	0.0000

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.765 ^a	0.585	0.581	0.2633067	2.155

a. Predictors: (Constant), LEAC, SENC, SEIC, RECC

b. Dependent Variable: PERSME

The table reveal that SMEs performance is positively and significantly related to all the dynamic capabilities dimensions except reconfiguration capabilities that is not statistically. The details of the relationship between the dependent variable and independent variable as shown in the table above.

The result shows that the coefficient of determination (R^2) is 0.585, implying that the independent factors collectively account for 58.5% of the changes in the dependent variable, with Adjusted R^2 being 0.581.

4.4 Hypotheses Testing

Based on the results above, the following inferences are drawn on the hypotheses.

H₁: sensing capabilities has no relationship with performance of SMEs with this, we reject the null hypothesis.

H₂: Seizing capabilities has not relationship with performance of SMEs with this, we reject the null hypothesis.

H₃: Reconfiguration capabilities has not relationship with performance of SMEs with this, we reject the null hypothesis.

H₄: Learning capabilities has not relationship with performance of SMEs with this, we reject the null hypothesis.

4.5 Discussion of Findings

Going by the outcome of the first hypothesis, as shown in the Table 4.5, the first null hypothesis was rejected which implies that sensing capabilities have positive and significant relationship with performance of SMEs in Edo State. To this extent, SMEs that engage in sensing capabilities holding other variables constant are strongly associated with high business performance. Researcher like Rothaermel (2017) also corroborated the above view that sensing capabilities has a way to help SMEs discover potential opportunities to enable them respond to competitive positions to improve their sustainability and performance in the market. In support of this, Helfat and Peteraf (2015) supported finding and even previous empirical investigations that when firms identify new opportunities, sensing capability not only helps them understand which technologies to explore but also enable them to identify target market segments and make reasonable profit in the market. These studies support the current finding on the impact of sensing on business performance. The outcome of the second hypothesis test shows seizing capabilities has positive and significant relationship with performance of SMEs in Edo State.

Thus, the null hypothesis (H_{02}) was rejected as shown in the Table 4.3 and also predict the apriori expectation of a positive relationship. However, Teece (2007) supported this finding that seizing capabilities are interconnected with perceptive abilities since identified or potentialities must be dealt with through innovative products and services to improve competitiveness and performance. Yeow, et al. (2018) argued that the ability of SMEs to seize opportunities and enhance their performance is vital for economic growth and innovation. By fostering an environment that supports market sensing, SMEs can better navigate challenges and capitalize on new opportunities. Similarly, Atiku and Abatan (2021) provided that the ability to mobilize resources efficiently is another critical aspect of seizing capabilities

As regards the third hypothesis test, the results showed that there is positive and significant relationship between reconfiguration capabilities and performance of SMEs in Edo State. This result also corroborates with Girod and Whittington (2017) who opined that reconfiguration capabilities develop structure for SMEs to combines abilities and competencies to produce goods and services for their target market. Research such as Leemann and Kanbach (2022) indicates that reconfiguration capabilities significantly impact the performance of SMEs by enhancing their ability to adapt and innovate in response to changing environments. These capabilities are part of dynamic capabilities, which involve the reconfiguration, integration, and renewal of resources to achieve better performance outcomes. However, other scholars such as Warner and Wager (2019) supported the study result that reconfiguration capabilities are vital for SMEs to navigate technological advancements and market changes. Similar to the above tested hypotheses, the fourth hypothesis (H_{04}) revealed that there is positive and

significant relationship between learning capabilities and performance of SMEs in Edo State. Thus, the null hypothesis (H_{04}) was rejected as shown in the Table 4.3 which implies that SMEs with strong learning capabilities build new thinking to enhance their existing resources to exploit existing knowledge to improve their business model. In support of this result, Vazquez et al. (2015) opine that learning capability is required to acquire to assimilate knowledge to facilitate the creation and modification of a firm's capabilities and resource base to influence performance. Amarakoon et al. (2018) opine that learning capabilities is crucial for acquiring, sharing and utilizing knowledge which are essential for SMEs to enhance their competitiveness and performance.

5.0 Conclusion and Recommendations

5.1 Conclusion

Dynamic capability is an approach that promotes a better understanding of how the business can approach changes within their business environment and develop ways to identify critical conditions that can influence their competitiveness and performance. The researcher ensure that all the data collected from the questionnaire are presented accordingly and the result found out that there is positive relationship between dynamic capabilities and business performance in Edo State. Sensing capabilities refers to the ability of SMEs to identify potential business opportunities by vigilantly observing the environment within or outside the company's boundaries. The relationship found in the study between and business performance suggests that there is need for SMEs to develop capacity for gathering information about specific source of opportunities within their business. The study further concluded that reconfiguration capabilities have a significant and positive relationship with all the dimensions of performance of SMEs. Finally, the study found out that learning has significant relationship with business performance and this highlights the significance of knowledge sharing and quality training process to enhance performance.

5.2 Recommendations

Based on the findings, the following recommendations are proffered:

- (i) There is a need for SMEs to invest heavily in strategic flexibility, enabling rapid adjustments to strategy in response to changing market conditions that can influence their performance. Also, SMEs in Edo State must continuously monitor and assess the nature of dynamic capabilities they possessed, identifying areas for improvement and investing in their development as this can improve their competitiveness, sustainability and performance. This may include ways of having understanding of their agility, resilience and flexibility.
- (ii) SMEs should invest in systems and practices that allow them to continuously scan the market for new opportunities, customer needs, and emerging trends. This can include market research, competitor analysis, and customer feedback mechanisms. Also, since seizing capabilities often involve exploiting opportunities for innovation, SMEs should encourage the development of new products, services, or business models to maintain competitiveness.
- (iii) SMEs should regularly review and adjust their organizational structures, processes, and workflows to respond effectively to changing market conditions and internal challenges. Also, businesses should focus on reallocating resources financial, human, and technological efficiently to support new strategic priorities, ensuring optimal utilization and responsiveness.
- (iv) SMEs should foster an environment where employees regularly acquire new skills, share insights, and learn from both successes and failures to improve organizational performance. Also, implement structured training, workshops, and mentorship programs to enhance

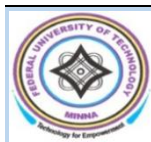
employees' competencies, keeping them aligned with evolving market demands and technological changes.

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Tax Education and Tax Compliance in Nigeria

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Abstract

Inadequate tax compliance remains a major challenge that hinders revenue collection and national development in Nigeria. Despite government reforms, many eligible tax payers still evade their responsibilities, primarily due to lack of tax education and awareness. Therefore, this study examines the influence of tax education on tax compliance (filing, reporting, and payment dimensions) in Nigeria, focusing on three forms of tax education: formal education, informal education, and professional certification. The study employed a quantitative research design using a sample of 400 taxpayers. Primary data was gathered from the respondents using questionnaire (google form). The collected data were analysed using descriptive statistics and Ordinary Least Squares (OLS) regression technique. The findings reveal that formal education has a significant positive effect on tax compliance, indicating that structured learning enhances taxpayers' understanding and adherence to tax obligations. Informal education also exhibited a significant positive effect on compliance, suggesting that unstructured learning through social interactions and media is capable of improving tax compliance behaviour. Surprisingly, professional education was found to have a significant negative effect on tax compliance, indicating likely issues such as misuse of technical knowledge for aggressive tax avoidance strategies. Overall, the study concludes that tax education plays a pivotal role in promoting tax compliance in Nigeria and there is a need to reassess the content and ethical emphasis of professional certification programs. Based on these findings, the study recommends integrating tax education into formal curricula, enhancing the quality of informal tax education through reliable information dissemination, and restructuring professional certification programs to emphasise ethical standards and social responsibility thereby shaping professionals' attitudes toward honesty and civic duty.

Keywords: Formal tax education, Informal tax education, Professional tax certification, Tax compliance

1.0 Introduction

Taxation plays a significant role in the economic development of any country, providing the essential funds for public services such as healthcare, education, and infrastructure development (Ewa et al., 2020). In Nigeria, tax revenue represents a substantial portion of the government's income, although the country has struggled with low tax-to-GDP ratios. According to Okon (2024), Nigeria's tax-to-GDP ratio in 2023 stood at approximately 9.4%, which is a fall from the 10.86% reported in 2021 by the National Bureau of Statistics (NBS) and significantly lower than the African average of 16% (OECD/ATAF/AUC, 2024), indicating a considerable revenue gap. This shortfall is largely attributed to non-compliance, which is a major challenge in Nigeria's tax system.

Tax compliance is the extent to which taxpayers meet their tax obligations as mandated by law, encompassing timely filing of returns, accurate reporting of income, and prompt payment of taxes (Alawode & Adegbe, 2022). In the words of Sopekan et al. (2025), tax compliance is the "willingness of individuals and other entities to act within the spirit and letter of tax laws and regulations". Tax compliance in Nigeria faces numerous obstacles that extend beyond

merely understanding tax regulations. These obstacles include limited tax understanding among the populace, complex and redundant tax framework at various government levels, along with a weak administrative capacity characterised by inefficiency and corruption (Oladipo et al., 2025). Additionally, widespread skepticism towards the government, stemming from ineffective use of revenues, undermines voluntary compliance. Also, the prevalence of the informal sector, inadequate enforcement strategies, and pervasive poverty exacerbate the issue, as numerous individuals and businesses function outside formal tax systems or do not have the resources to comply (Enoch et al., 2025; Olaoye & Ekundayo, 2019). According to Adekoya (2019) and Hidayati et al. (2023) improving the knowledge capacity of tax payers via tax education and awareness programmes can help boost tax compliance. Consequently, this study investigates the nexus between tax education and tax compliance within the context of the Nigerian tax system.

Researches have demonstrated that tax education is a significant scheme that can be employed by the relevant tax authorities to increase tax compliance (Hidayati et al., 2023). Tax education improves compliance in Nigeria by deepen the understanding of tax regulations, and obligations. When individuals and enterprises comprehend how taxation functions and its significance, they are more likely to file correctly and make timely payments. It builds confidence in the tax system by reducing fear and uncertainty. According to Adekoya (2019), formal education improves tax compliance by elevating individuals' financial knowledge and comprehension of tax regulations, which nurtures favourable attitudes toward meeting tax responsibilities. Informal education through public campaigns, media outreach, and community engagement enhances understanding of the significance of taxation and reduces evasion by influencing social norms related to compliance (Adekoya et al., 2020) while professional certification enhances tax compliance by guaranteeing that accountants, auditors, and tax practitioners have current technical knowledge and ethical standards essential for precise tax reporting and advisory services (Awotimi, 2022). These types of education complement each other creating a holistic framework that enables individuals at various levels of society to understand their tax obligations and embrace voluntary tax compliance

Numerous research efforts have investigated how tax education influences tax compliance, consistently reinforcing its positive influence. For instance, Simanullang et al. (2024) in Indonesia found that technology enhanced tax education fosters compliance by improving tax literacy. Oloyede and Nwachukwu (2021) similarly demonstrated that public awareness campaigns have enhanced tax compliance in the informal sector, while Oladipupo and Obazee (2016) highlighted the role of tax knowledge and penalties in shaping compliance behaviour among small and medium-sized enterprises in Nigeria. Onuoha et al. (2019) focused on the role of tax education in driving tax revenue growth, and Mohammed and Tangl (2023) in Hungary emphasised how education reduces taxpayers' perception of tax as punitive. These studies have integrated variables such as taxpayer awareness, penalties, and the quality of tax services in their analysis. However, this study distinguishes itself by exploring formal education, informal education, and professional/certification education as distinct variables of tax education. Furthermore, most existing studies in Nigeria have focused on specific regions, such as Lagos and Kaduna States (Oloyede & Nwachukwu, 2021; Mustapha et al., 2015), without taking a holistic approach of the entire country. Consequently, this study extends its scope of investigation beyond state boundaries and looks at how tax education affects tax compliance as a country.

Against the backdrop, this study examines the influence of tax education on tax compliance within the context of Nigeria, providing new insights into how educational interventions can improve tax compliance in this under-researched region. Specifically, the study examines if

formal education, informal education, and professional education have significant effects on tax compliance in Nigeria. The remaining aspect of this paper is divided into sections. Immediately after the introduction is the review of empirical and theoretical literature. Next is the methodology section and thereafter, the results and discussions of findings section. Lastly, the study closes with the conclusion and recommendation section.

2.0 Literature Review

The literature review in this section comprises of a conceptual review, a theoretical framework, and then an empirical review. Together, these components provide a holistic perspective concerning the subject matter of tax education and tax compliance.

2.1 Tax Compliance

The conceptualisation of tax compliance has been captured from various descriptions to include voluntary compliance, enforced compliance, administrative compliance, filing compliance, reporting compliance, and payment compliance (Kirchler, 2009; OECD, 2014; Okello, 2014; Sopekan et al., 2025; Tusubira, 2018). Specifically, tax compliance is the extent to which taxpayers adhere to established tax laws by accurately declaring income, submitting returns, and paying their tax obligations (Alm, 2019). Hartmann et al. (2020) see tax compliance as a behaviour influenced by both voluntary motivations and external enforcement, wherein individuals fulfill their tax responsibilities either willingly or under coercion. In contrast, Khozen and Setyowati (2023) argue that tax compliance extends beyond legal conformity, emphasising the role of perceptions of fairness, trust in governmental institutions, and the perceived value of public goods funded by taxes. Collectively, these perspectives suggest that tax compliance involves more than meeting legal requirements; it represents a dynamic interplay between individual behaviour, societal norms, and institutional enforcement. In addition, it suggests that the concept of tax compliance can be deconstructed into several core components, which include registration compliance, timely filing of returns, accurate income reporting, and payment compliance. According to Sopekan et al. (2025), numerous studies in both developed and emerging economies have investigated the factors that affect the extent of tax compliance among different entities and among these factors, the issue of tax education ranks high (Hidayati et al., 2023).

2.2 Tax Education

Tax education has been widely explored as a critical tool for enhancing taxpayer compliance, with scholars offering various definitions of the concept. Mpangile (2023) define tax education as the systematic dissemination of knowledge and understanding regarding tax systems, obligations, and benefits, aimed at increasing taxpayer literacy and compliance. Similarly, Clercq (2023) emphasises that tax education involves not only the transmission of factual knowledge about tax laws but also fostering a sense of civic responsibility and ethical behavior toward tax compliance. On the other hand, Bawa and Boachie (2024) describe tax education as an intervention mechanism designed to bridge the knowledge gap between taxpayers and complex tax systems by providing accessible information on tax regulations, thus improving voluntary compliance. These definitions converge on the premise that tax education goes beyond mere information dissemination to encompass behavioural transformation and awareness-building. They collectively underline the multifaceted nature of tax education as both an informative and normative tool that addresses taxpayers' cognitive and behavioural challenges. In this study, tax education is represented by formal, informal, and professional/certification education. Formal tax education is usually provided within organized teaching setting, such as high schools, colleges, and various academic establishments, where individuals receive systematic instruction on the principles, policies, and responsibilities related to taxation (Othman et al., 2020). Informal tax education refers to the unstructured, non-formal

ways of learning that happen through social interactions, media channels, and community involvement (Obashoro-John & Findsen, 2023). It significantly influences taxpayers' attitudes and behaviours, often serving as a complement to formal education. Professional or certification education focuses on providing tax professionals with in-depth knowledge, technical expertise, and ethical guidelines needed for roles in tax advisory and compliance (Mulhollen, 2024). This factor is vital since tax professionals act as intermediaries between taxpayers and tax authorities, playing a significant role in shaping compliance behaviour.

2.3 Theoretical Framework

The Fischer Tax Compliance Model, developed by Carol Ann Fischer in 1993, serves as a foundational framework in understanding the behavioral factors influencing tax compliance. Fischer, alongside her colleagues, proposed a model that integrates economic, psychological, and demographic variables to explain why taxpayers either comply with or evade taxes. Unlike earlier compliance models that predominantly focused on economic deterrents such as penalties and audits (Allingham & Sandmo, 1972), Fischer's model integrates psychological, demographic, and systemic factors, making it more adaptable to the complexities of developing economies like Nigeria.

The significance of this model to this study stems from its recognition of the crucial impact that education has on influencing taxpayer behavior. The model's integration of demographic factors, such as education, facilitates a detailed examination of how socio-economic inequalities in Nigeria affect tax behavior. For example, a considerable share of Nigeria's economy is represented by the informal sector, which frequently lacks a clear understanding of tax responsibilities (Ariyo, 2015). By focusing on both individual and systematic issues, the Fischer's model offers a thorough framework for comprehending how targeted tax education efforts can address compliance challenges within Nigeria's environment. This flexibility and relevance render the model not only theoretically sound but also practically useful for creating policies that improves tax compliance through educational initiatives and systematic changes (Oyedele, 2016).

2.4 Formal tax education and Tax compliance

The study by Oladipupo and Obazee (2016) examined the effects of tax knowledge and penalties on tax compliance among small and medium-sized enterprises (SMEs) in Nigeria. Using a survey research design, data were gathered through questionnaires and analysed using the Ordinary Least Squares (OLS) regression technique. The findings revealed that tax knowledge had a significant positive impact on tax compliance, while tax penalties, although positively correlated, had an insignificant effect. The study concluded that increasing taxpayers' knowledge about tax obligations is more effective in promoting compliance than reliance on punitive measures.

In their research, Ogoun and Ekpulu (2020) examined the connection between educational level and tax compliance in Nigeria. Using an ex post facto research design, the research analysed data collected over 17 years (2002–2018) to investigate how government expenditure on education affects tax revenue, which served as a proxy for compliance. The findings demonstrated a positive relationship between government investment in education and tax compliance, suggesting that higher educational attainment fosters an understanding of tax obligations and promotes voluntary compliance. The study concluded that prioritizing education funding could serve as an indirect mechanism for improving tax compliance and enhancing public revenue collection.

Oladipupo et al. (2022) explored the effects of tax fairness and tax knowledge on the tax compliance behaviour of listed manufacturing companies in Nigeria. The study employed the Laffer Curve Theory and utilised a survey research method to collect data from 400 manufacturing companies across the consumer and industrial goods sectors. Analytical tools such as Correlation Analysis, ANOVA, and Multiple Regression Analysis were used to analyze the data. The results showed a significant positive relationship between taxpayers' perception of fairness and their willingness to comply, with a p-value of 0.006. Similarly, tax knowledge significantly influenced tax compliance, with a p-value of 0.000. Flowing from the literature and theoretical framework, the study asserts that formal tax education has a significant effect on tax compliance in Nigeria (H1).

2.5 Informal tax education and Tax compliance

Oloyede and Nwachukwu (2021) assessed the role of taxpayer education in enhancing tax compliance among operators in Nigeria's informal sector. Employing a survey research approach, the study gathered data from 400 individuals within a population of 19,383,447 spread over 12 states, with the sample size calculated using the Taro Yamane formula. The results indicated a positive correlation between taxpayer education levels and compliance. The research highlighted that regular educational and awareness initiatives by state tax authorities could enhance compliance rates within the informal sector, which frequently lacks understanding of tax responsibilities.

The study by Ogaluzor and Edori (2023) focused on the relationship between tax education and compliance among informal sector operators in Abia and Rivers States, Nigeria. Utilising a survey approach, the researchers distributed 120 questionnaires, of which 114 were retrieved and analysed using Pearson correlation. The findings indicated a notable connection between tax education, particularly electronic taxpayer education, stakeholder awareness initiatives, and educational programs through print media, as well as compliance measures such as timely filing, registration, and prompt payment of liabilities. The study concluded that improved taxpayer education positively influences compliance behaviour and recommended that tax authorities invest in diverse educational programs to boost awareness and compliance within the informal sector.

Ellawule et al. (2024) investigated the moderating effect of tax knowledge on the relationship between tax rates and tax compliance among micro, small, and medium enterprises (MSMEs) in Nigeria. Using a sample of 304 respondents, drawn from an initial 500 distributed questionnaires, stratified and proportional sampling techniques were applied to ensure adequate representation. The research revealed that an understanding of taxation enhanced the connection between tax rates and compliance, highlighting the critical role of literacy in influencing taxpayer behavior. Additionally, tax rates and tax knowledge, on their own, had notable positive impacts on compliance. Flowing from the literature, the study asserts that informal tax education has a significant effect on tax compliance in Nigeria (H2).

2.6 Professional education and Tax compliance

Adekoya (2019) examined the relationship between taxpayer education and tax compliance in Lagos state, Nigeria. A cross sectional survey was conducted on a sample of individual tax payer in the state. Primary data was collected using a questionnaire with a five-point likert scale. The data collected was presented with the use of descriptive statistics, while both simple linear and multiple regressions were used in the estimation of the regression models developed. The results from the analyses revealed that taxpayer education has a significant positive effect on tax compliance. Awotomilusi (2022) examined the effect of tax administrator's professional skills and tax audit on voluntary compliance taxpayers in Nigeria. The survey research design was used in the study. The population of the study consisted of 120 staff in the FIRS Abuja.

The whole population purposively used as sample. Data was collected through the use of questionnaire. The result revealed that when tax audit and tax administrators' professional skills are used, the level of voluntary compliance by taxpayers increases in Nigeria. Also, it was revealed that there is statistically significant relationship between tax administrator's professional skills, tax audit and tax compliance. Flowing from the literature and theoretical framework, the study asserts that professional education has a significant effect on tax compliance in Nigeria (H3).

2.7 Gaps in Literature and Research Justification

Despite the plethora of studies investigating the determinants of tax compliance in Nigeria, a critical review of the extant literature reveals specific conceptual, contextual, and methodological gaps that this study addressed.

A significant conceptual gap exists regarding the decomposition of tax education. While prior studies such as Oladipupo and Obazee (2016) and Ellawule et al. (2024) established the relevance of "tax knowledge" and "taxpayer education," they largely treated these concepts as monolithic variables and focused narrowly on general awareness. Although few studies like Ogoun and Ekpulu (2020) and Oloyede and Nwachukwu (2021) have systematically disintegrated tax education into distinct dimensions, none of these studies integrates these three distinct educational streams into a single holistic framework to determine which mode of education most significantly drives voluntary compliance. Furthermore, there is a notable geographical and contextual gap in existing empirical evidence. The majority of studies on tax compliance in Nigeria are geographically restricted or sector-specific. For example, Adekoya (2019) and Ogaluzor and Edori (2023) limited their investigations to specific sub-national entities like Lagos, Abia, and Rivers States, respectively.

Similarly, studies by Oladipupo et al. (2022) and Oloyede and Nwachukwu (2021) restricted their scope to specific economic sectors, such as listed manufacturing companies or the informal sector. These restricted scopes limit the generalizability of findings to the broader Nigerian tax system. This study addressed this limitation by adopting a country-wide approach, extending the scope of investigation beyond state boundaries to provide a more macroeconomic perspective on how tax education influences compliance across Nigeria. More so, methodological gaps exist regarding the measurement of variables. Some existing studies, such as Ogoun and Ekpulu (2020), relied on ex post facto designs using secondary data (government expenditure on education) as a proxy for tax compliance behaviour. This indirect measurement often fails to capture the behavioral and psychological nuances of the taxpayer. By employing a primary data approach that assesses formal, informal, and professional education as direct independent variables, this study offers a more robust and direct assessment of the behavioral nexus between education and tax compliance in Nigeria.

3.0 Methodology

This section comprises of the research design, sampling technique, sample size, model specification and data analysis techniques.

3.1 Research Design and Sampling

This research adopts a cross-sectional survey research design. In cross-sectional studies, researchers examine a subject matter across widely dispersed respondents at a specific point in time, which makes this method appropriate for the present study. The population of this study is infinite and consists of tax payers in Nigeria. The Cochran's (2005) sampling technique was utilized to determine the minimum sample size of 384 respondents. However, to account for attrition, 400 copies of questionnaires were distributed to respondents using goggle form.

According to Saunders et al. (2016: 283) one way to address attrition in responses is for the researcher to “estimate the likely response rate – that is, the proportion of cases from your sample who will respond or from which data will be collected – and increase the sample size accordingly”.

3.2 Model Specification

This study’s model was adapted from the study of Oladipupo and Obazee (2016).

Their model was:

$$TCOMP = \alpha_0 + TKNOW\beta_1 + TPEN\beta_2 + \varepsilon \text{ ----- (1)}$$

The modified model of this study is stated in equation (2);

$$TCOMP_i = \beta_0 + \beta_1 FEDU_i + \beta_2 IEDU_i + \beta_3 PEDU_i + \beta_4 GEN_i + \varepsilon \dots \dots (2)$$

Where; TCOMP = Tax Compliance, FEDU = Formal Education, IEDU = Informal Education, PEDU = Professional, GEN = Gender (control), β_0 – Slope, $\beta_1, \beta_2, \beta_3, \beta_4$ - Coefficients, ε – Error term

3.3 Method of Data Analysis

This study employed both descriptive and inferential analyses. The descriptive comprised of descriptive statistics and correlation while the ordinary least squares regression technique formed the substance of the inferential analysis. To ensure robustness of result, the classical diagnostic tests were conducted. In addition, the ordered regression technique was used as a secondary tool for inferential analysis. The measurements of the variables used in this study are presented in Table 1.

4.0 Results and Discussions

Table 2 Descriptive Statistics

	TCOMP	FEDU	IEDU	PEDU	GEN
Mean	3.892	3.528	3.449	3.397	0.583
Median	4.000	3.600	3.600	3.400	1.000
Minimum	1.400	1.000	1.000	1.000	0.000
Maximum	5.000	5.000	5.000	5.000	1.000
Std. Dev.	0.841	0.892	0.886	0.907	0.494
Jarque-Bera (Prob.)	0.000	0.010	0.023	0.026	0.000
TCOMP = Tax Compliance; FEDU = Formal Education; IEDU = Informal Education; PEDU = Professional Education; GEN = Gender					

Source: Extraction from Eviews 10

The descriptive statistics presented in Table 2 provides insights on the characterization of variables. The mean value for TCOMP (3.892) is approximately 4, suggesting a general consensus among the respondents on their moderate extent of compliance with tax obligations. Among the independent variables, FEDU has the highest mean (3.528), followed by IEDU (3.449) and PEDU (3.397). Collectively, these statistics indicate that formal education is perceived to contribute more to tax compliance than informal education and professional education. The mean for gender (GEN) is .583. Since this is a categorical variable, this value indicates that 58.3% of the respondents are women, making the proportion of men 41.7%. These show a near-balanced gender distribution for the respondents.

In terms of variability, PEDU exhibits the highest standard deviation (0.907), reflecting greater dispersion in responses regarding professional education, while TCOMP has the lowest (0.841), indicating a relative more consistent view of tax compliance among respondents. Lastly, the probability values of the Jarque-Bera statistics does not support the assumption of normality of the variables and with p-values less than the 0.05 threshold, there is significant

deviation from normality, necessitating the use of spearman rho correlation (Schober et al., 2018).

Table 3 Correlation Matrix

	TCOMP	FEDU	IEDU	PEDU	GENDER
TCOMP	1.000				
FEDU	0.528*	1.000			
IEDU	0.417*	0.784*	1.000		
PEDU	0.338*	0.734*	0.820*	1.000	
GENDER	-0.235*	-0.006	0.095**	0.019	1.000
VIF	NA	2.911	4.558	3.623	1.034

* Sig @ 1%; ** Sig @ 10%;

Source: Extraction from Eviews 10

The correlation analysis presented in Table 3 reveals that TCOMP exhibits a positive correlation with FEDU, $r_s(398) = .528$; IEDU, $r_s(398) = .417$; PEDU $r_s(398) = .338$; but a negative association with GEN $r_s(398) = -.235$. Inferring from the correlation coefficients and in conjunction with the interpretation table in Schober et al. (2018), TCOMP's correlation with FEDU and IEDU can be described as moderate while the correlation with PEDU and GEN can be viewed as weak. These values indicate that there is a consistent relationship between tax compliance and all the explanatory and control variables, wherein an increase in tax compliance levels corresponds with a rise in the levels of formal, informal, and professional education respectively. Additionally, strong inter-correlations exist among the independent variables, particularly between IEDU and PEDU ($r_s = .820$), FEDU and IEDU ($r_s = .784$), and FEDU and PEDU ($r_s = .734$) suggesting that different forms of education and training are closely linked in shaping respondents' tax compliance behavior. Furthermore, none of the variables have a coefficient value greater than 0.90, indicating the absence of any serious multicollinearity problem (Kim, 2019). This is equally buttressed by the results of the variance inflation factor test with values ranging from 4.558 to 1.034.

Table 4 OLS Regression without Robust Std. Error

Variable	Coef.	Std. Error	t-Stat.	Prob.
FEDU	0.549	0.064	8.592	0.000
IEDU	0.173	0.080	2.156	0.032
PEDU	-0.212	0.070	-3.025	0.003
GENDER	-0.400	0.069	-5.815	0.000
C	2.311	0.148	15.639	0.000
R-squared	0.377			
Adjusted R-squared	0.371			
F-statistic	59.876			
Prob. (F-statistic)	0.000			
Breusch-Godfrey Serial Correlation LM (Prob.)	0.000			
Breusch-Pagan-Godfrey Heteroskedasticity Test (Prob.)	0.000			
Ramsey RESET Test (Prob.)	0.411			

Source: Extraction from Eviews 10

In Table 4, the result shows that the joint relationship among the variables is statistically significant $F(4, 396) = 59.876$, $p < .001$, R squared = .377 and indicating that 37.7% of the systemic variation in tax compliance is explained by the independent and control variables in this study. This slightly reduces to 37.1% when adjusted for the degree of freedom. However, based on the significant p-values of the Breusch-Godfrey test for serial correlation and the Breusch-Pagan-Godfrey test for heteroskedasticity, this study concludes that higher order

autocorrelation is present and that the residuals are not homoscedastic. Consequently, to ensure reliance of the regression estimation, the regression has to be redone using robust standard errors.

Table 5 OLS Regression with Robust Std. Error

Variable	Coef.	Std. Error	t-Stat.	Prob.
FEDU	0.549	0.066	8.354	0.000
IEDU	0.173	0.084	2.069	0.039
PEDU	-0.212	0.077	-2.764	0.006
GENDER	-0.400	0.091	-4.399	0.000
C	2.311	0.320	7.213	0.000
R-squared	0.377			
Adjusted R-squared	0.371			
F-statistic	59.876			
Prob. (F-statistic)	0.000			
Wald F-statistic	70.187			
Prob. (Wald F-statistic)	0.000			

Source: Extraction from Eviews 10

Having corrected for serial correlation and heteroskedasticity using robust standard error option, from Table 5, the Wald statistics result shows that the joint relationship among the variables is statistically significant $F(4, 396) = 70.187, p < .001$, hence, the outcomes can be used for policy recommendations. Focusing on the effect of the individual variables, Table 5 also reveals that formal education ($\beta = 0.549; p < .001$), informal education ($\beta = 0.173; p = .039$) and professional education ($\beta = -0.212; p < .01$) have significant effects on tax compliance. Specifically, both formal and informal education have statistically significant positive effect on compliance while professional education has a negative significant effect on compliance. The control variable (gender) equally exhibited a significant negative effect on compliance. Conclusively, all the hypotheses of a significant effect are accepted in this study at the 5% significance level because none of the probability values are greater than .05.

Table 6 Robustness Test using Ordered Logistics Regression

Variable	Coefficient	Std. Error	z-Statistic	Prob.
FEDU	0.754	0.099	7.613	0.000
IEDU	0.251	0.113	2.207	0.027
PEDU	-0.263	0.110	-2.383	0.017
GENDER	-0.658	0.119	-5.548	0.000
Pseudo R-squared	0.157			
Schwarz criterion	2.200			
Hannan-Quinn criter.	2.152			
LR statistic	155.164			
Prob(LR statistic)	0.000			

Source: Extraction from Eviews 10

The results from the ordered logistics regression in Table 6 are not significantly different from the results from the OLS regression. Both results show that both formal and informal education have statistically significant positive effect on compliance while professional education has a negative significant effect on compliance. The control variable (gender) equally exhibited a significant negative effect on compliance. Therefore, the findings from this study are robust, reliable, and not by chance.

4.2 Discussion of Findings

The findings reveal that formal education significantly enhances tax compliance, underscoring the importance of structured learning environments in fostering taxpayer awareness and responsibility. This aligns with findings by Bodea and LeBas (2016); Othman et al. (2020), who highlight that integrating tax education into the school curriculum has the potential to inculcate a culture of tax compliance from an early age.

Informal education showed significant effect, suggesting that unstructured learning through social interactions and media is capable of improving tax compliance behaviour. This finding aligns with the positions of Emmanuel et al. (2023) and Mascagni et al. (2024) that found that taxpayers exposed to targeted education campaigns displayed higher levels of compliance, with evidence suggesting an increase in voluntary tax payments in regions where such initiatives were implemented. In addition, the finding on the effect of informal education on tax compliance is supported by the study of Ogaluzor and Edori (2023) that focused on the relationship between tax education and compliance among informal sector operators in Abia and Rivers States, Nigeria and discovered a notable connection between tax education and compliance, particularly electronic taxpayer education, stakeholder awareness initiatives, and educational programs through print media.

Professional education was found to have a significant negative effect on tax compliance, indicating potential issues such as overconfidence among certified professionals or misuse of technical knowledge for aggressive tax avoidance strategies. This finding is at variance with the study of Oladipupo et al. (2022) that explored the effects of tax fairness and tax knowledge on the tax compliance behaviour of listed manufacturing companies in Nigeria and found amongst others that tax knowledge significantly influenced tax compliance positively, with a p-value of 0.000.

5.0 Conclusion and Recommendations

5.1 Conclusion

The study concludes that tax education plays a pivotal role in promoting tax compliance in Nigeria and there is a need to reassess the content and ethical emphasis of professional certification programs. Furthermore, the study recommends integrating tax education into formal curricula, enhancing the quality of informal tax education through reliable information dissemination, and restructuring professional certification programs to emphasise ethical standards and social responsibility.

5.2 Recommendations

This study makes a significant contribution to the body of knowledge on tax education and compliance by offering a nuanced understanding of how different forms of tax education influence taxpayer behaviour in Nigeria. The study equally expands existing literature by revealing the nature and interplay between tax education types and compliance behaviour. Future studies may consider expanding the scope of this study by focusing on a comparative study across various states or between urban and rural areas which could provide deeper insights into regional differences in tax education and compliance. Additionally, Future studies might consider using a mixed-methods strategy that integrates quantitative surveys with qualitative methods like interviews or focus group discussions to achieve a deeper insight into the reasons and obstacles related to tax compliance behaviors.

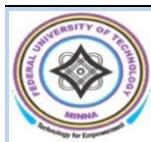
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Remittances, Exchange Rate Shocks, and Balance of Payments Stability in Nigeria

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Abstract

Nigeria's balance of payments (BoP) has remained persistently unstable, exposed to recurrent external shocks driven by volatile remittance inflows, erratic exchange rate movements, and overreliance on oil revenues. Despite being one of Africa's largest remittance recipients receiving over US\$20 billion in 2022 Nigeria continues to grapple with foreign exchange shortages, trade imbalances, and macroeconomic fragility, raising critical questions about the effectiveness of these inflows in stabilizing the external sector. This study examines how remittances and exchange rate shocks jointly influence BoP stability in Nigeria over the period 1981–2022. It is anchored on a robust macroeconomic theoretical framework including the Purchasing Power Parity (PPP), the research employs the Autoregressive Distributed Lag (ARDL) model and Wald test to capture both short- and long-run dynamics. Empirical results reveal that remittance inflows significantly enhance BoP stability $\{0.938013 (0.0397)\}$ by boosting foreign exchange reserves, while exchange rate volatility exerts a complex, nonlinear impact: initial depreciation worsens the BoP due to rising import costs, but improves it over time by enhancing export competitiveness. The Wald test confirms that exchange rate shocks jointly and significantly affect BoP fluctuations. The study also finds foreign direct investment to be a robust stabilizer $\{1.6225(0.0217)\}$, whereas external debt shows no significant short-run effect $\{-1.2636(0.5547)\}$. These findings underscore the urgent need for coordinated macroeconomic policies that harness remittances for productive investment, stabilize exchange rate expectations through a managed float regime, diversify the export base, and strengthen institutional frameworks for financial inclusion.

Keywords: Remittances, Exchange Rate Shocks, Balance of Payments Shocks, Autoregressive Distributed Lag.

1.0 Introduction

The Balance of Payments (BoP) is a critical macroeconomic indicator that reflects a nation's financial transactions with the rest of the world (Udoett, 2015). It serves as a comprehensive record of trade in goods and services, financial transfers, and capital flows between domestic and foreign entities. Theoretically, the BoP should be balanced, meaning that total inflows (credits) and outflows (debits) are equal. However, in practice, persistent surpluses or deficits often emerge due to economic shocks, structural imbalances, and macroeconomic policy inconsistencies (Heakal, 2024). Nigeria's BoP has experienced significant fluctuations over the years, largely driven by external factors such as oil price volatility, exchange rate fluctuations, remittance inflows, inflationary pressures, trade imbalances, and monetary policy shifts.

From the late 1990s to the mid-2000s, Nigeria's BoP improved steadily due to rising crude oil prices, peaking around 2008 before being adversely affected by the 2008–2009 global financial crisis. Subsequent fluctuations continued, with a sharp deterioration observed during the 2015–2016 oil price crash, which led to foreign exchange shortages, capital flight, and an economic recession. These trends highlight the vulnerability of Nigeria's external sector to exogenous shocks, necessitating a deeper understanding of the key factors influencing BoP stability.

One of the most significant factors influencing Nigeria's external balance is remittance inflows, which have grown substantially in recent decades and now represent a crucial source of foreign

exchange earnings (Olabisi and Ogbeide, 2020). Figure 2 illustrates the trend in personal remittance inflows to Nigeria from 1981 to 2022, showing a notable increase after 2005. Increased migration, improved financial infrastructure, and policy reforms that facilitated cross-border money transfers drove this surge.

Prior to 2005, remittance inflows remained relatively stable, but they experienced exponential growth in the following years, reflecting Nigeria's rising diaspora population and their increasing contribution to household income. However, remittance flows have also exhibited periodic fluctuations, particularly after 2015, largely due to exchange rate volatility, global economic crises, and domestic policy shifts. The COVID-19 pandemic (2020–2021) significantly impacted remittance inflows, as widespread job losses and mobility restrictions in host countries reduced the ability of Nigerian migrants to send money home. Despite this, remittances rebounded in 2022, with over US\$20.13 billion recorded through formal financial channels (World Bank, 2025), underscoring their resilience and importance in Nigeria's economy.

Although remittances provide a stable source of foreign exchange, their impact on BoP stability remains ambiguous. While they can offset trade deficits, support foreign exchange reserves, and boost household consumption, they may also fuel inflationary pressures, increase demand for imports, and contribute to exchange rate distortions (Mbadiwe and Egesimba, 2024). Consequently, a deeper examination of their interaction with exchange rate movements, inflation, and trade openness is necessary to fully understand their role in Nigeria's external sector.

Similarly, exchange rate shocks often triggered by global oil price fluctuations, monetary policy shifts, and speculative activities pose a major threat to Nigeria's BoP stability. A sharp depreciation of the naira increases import costs, exacerbates trade deficits, and heightens inflationary pressures, whereas a sudden appreciation can reduce export competitiveness and limit foreign exchange earnings (Ojabello, 2024). Given Nigeria's heavy reliance on crude oil exports, exchange rate movements are closely tied to global oil price dynamics, making external stability highly uncertain.

In addition to remittances and exchange rate fluctuations, inflation, interest rates, trade openness, and foreign direct investment (FDI) are key determinants of BoP stability. Inflation affects the real value of remittances and exchange rate movements, influencing Nigeria's external position. Trade openness determines the extent of trade surpluses or deficits, while FDI inflows can enhance foreign exchange reserves and capital accumulation. Despite the interconnectedness of these variables, existing studies have largely examined them in isolation, leading to an incomplete understanding of how they jointly affect BoP stability.

Against this background, this study aims to find out the impact of remittances and exchange rate shocks on balance of payments stability in Nigeria. It seeks to identify if increases and decreases in remittances and exchange rate shocks are detrimental to balance of payments stability.

The research is driven by the following key questions: What is the impact of remittance inflows on Nigeria balance of payments stability? How does exchange rate shocks influence fluctuations in Nigeria's balance of payments? What are the direct and indirect effects of exchange rate shocks on Bop fluctuations? What policy strategies can be explored for enhancing Bop stability in Nigeria?

By answering these questions, this study fills an important gap in the literature on the macro determinants of balance of payment stability in Nigeria.

The rest of this study is organized as follows: section 2 dealt with literature review, section 3 focused on methodology, section 4 presents the result while section 5 concludes the paper.

2.0 Literature Review

2.1 Conceptual Review

This subsection sheds light on the conceptual foundation for the study.

2.1.1 Concept of Remittance

Remittances refer to the money that migrants send back to their home country, often to support family members. In Nigeria, remittances are a significant source of foreign exchange, particularly from Nigerians living abroad. These funds contribute to household income and can help support consumption, education, and healthcare in Nigeria. Remittances also play a crucial role in economic stability, as they can cushion against economic shocks and provide a steady flow of foreign currency (Akighiri and Atswan, 2023).

Remittances can be money sent as payment for a bill. However, most remittances involve sending money to relatives. They are often sent by foreign workers to family members in their home countries. The most common way of making a remittance is by using an electronic payment system through a bank or an electronic money transfer service such as Western Union. People who use these options are generally charged a fee. Transfers can take as little as ten minutes to reach the recipient. Remittances play an increasingly large role in the economies of small and developing countries. They also play an important role in disaster relief, often exceeding official development assistance (ODA). They help raise the standard of living for people in low-income nations and help combat global poverty. In fact, since the late 1990s, remittances have exceeded development aid and in some cases make up a significant portion of a country's gross domestic product (GDP). (Mbadiwe & Egesimba, (2024). Ojabello (2024) observed that exchange rate shocks can have significant impact on a country's economy, affecting trade balances, inflation and overall economic stability.

2.1.2 Concept of Exchange Rate Shocks

Exchange rate shocks refer to sudden or unpredictable changes in the value of a country's currency relative to other currencies. In Nigeria, exchange rate fluctuations are often influenced by factors like oil prices (since Nigeria is heavily reliant on oil exports), global economic conditions, and domestic policies. A depreciation of the Naira (Nigeria's currency) can lead to higher import costs, inflation, and reduced purchasing power, which negatively affects the economy. On the other hand, an appreciation of the Naira can benefit importers but may harm exporters who earn in foreign currencies (Nnamdi, 2021).

Exchange rate shocks have a significant impact on inflation, interest rates, and trade, just to name a few. Rate shocks is a term used to describe when the value of one currency spikes relative to another in an extremely short period of time. Beyond directly influencing different economic channels, exchange rate shocks have policy implications which are not as easily understandable. If an incident causes a change in import prices or domestic inflation, then subsequent monetary policies should be enacted to counter them. That said, economic theory doesn't always match up to what happens in the real world (Ojabello, 2024).

2.1.3 Concept Balance of Payment Stability

Balance of payment (Bop) stability refers to a country's ability to meet its external financial obligations and maintain a stable exchange rate. It involves managing the flow of foreign exchange and maintaining a balance between exports and imports.

A stable balance of payments is crucial for economic growth as it attracts foreign investment maintained exchange rate stability, ensures debt repayment and support economic policy-making.

Achieving balance of payment stability is crucial for the country's economic health as it impacts its ability to finance imports, service debt, and maintain a stable exchange rate. (International monetary fund, 2023). Gomes (1990) & Heakel (2024) stated that Bop stability is crucial for a country's economic health, reflecting its ability to meet external financial obligations and maintain exchange rate stability.

2.2 Theoretical Review

This study utilizes the Balance of Payments Theory, Purchasing Power Parity (PPP) and exchange rate theory to analyze how macroeconomic variables particularly remittances, exchange rate, External Debt foreign direct investment impact balance of payments stability in Nigeria.

2.2.1 The Balance of Payments Theory

The BoP theory suggests that a country's external account reflects the economic transactions between its residents and the global market (Heakal, 2024). A stable Balance of Payments (BoP) is crucial for macroeconomic stability, as persistent deficits or surpluses can indicate structural weaknesses or imbalances. Exchange rate movements and remittance inflows significantly impact the BoP by influencing trade balances, capital flows, and reserve accumulation (Gomes, 1990). Remittances boost the current account by increasing foreign exchange reserves, while exchange rate shocks can disrupt trade and capital flow patterns, potentially destabilizing the external account.

2.2.2 Purchasing Power Parity (PPP) and Exchange Rate Theory

A popular macroeconomic analysis metric, purchasing power parity (PPP), compares economic productivity and living standards between countries. PPP involves an economic theory that compares different countries' currencies through a "basket of goods" approach. To buy the same amount of a large group of products, one nation's currency is converted into another at PPP. This notion posits that two currencies are in equilibrium at par when a basket of products is priced identically in both nations, considering the exchange rates (Investopedia Team, 2024). Exchange rate shocks, whether depreciation or appreciation, directly affect the trade balance and, consequently, the BoP. In Nigeria, exchange rate depreciation could potentially boost import costs and enhance export competitiveness, potentially enhancing the trade balance. Conversely, sudden exchange rate appreciation may adversely affect the BoP by increasing import demand and reducing export competitiveness. The relative version of significantly impact the Bop by influencing trade balances, capital flows/ and reserve accumulation (Gomes, 1990). Remittances boost the current account by increasing foreign exchange reserves, while exchange rate shocks can disrupt trade and capital flow patterns, potentially destabilizing me external account.

2.3 Empirical Review

The literature on Nigeria's macroeconomic dynamics, remittances, and exchange rates reveals several interrelated themes and findings:

Mbadiwe and Egesimba (2024) examine the relationship between remittances (REM), Overseas Development Assistance (ODA), and Nigeria's economic growth from 1986 to 2021. Using the Error Correction Model (ECM), they find that remittances and Gross Fixed Capital Formation (GFCF) positively impact Real Gross Domestic Product (RGDP), while the exchange rate (EXR) has a negative effect. Interestingly, ODA shows no significant impact on economic growth, underscoring the critical role of remittances in Nigeria's development.

Aja Okorie (2024) highlight the significant contribution of diaspora remittances to Nigeria's GDP and socio-economic welfare. Applying the push-and-pull theory of migration, the study identifies challenges such as brain drain in critical sectors like health and education and calls

for optimizing remittance benefits and improving living standards to mitigate skilled worker emigration.

Akighir and Atswam (2023) investigate the relationship between remittance inflows, foreign exchange, exchange rates, and exports using a Structural Vector Autoregressive (SVAR) model. They find that remittance inflows increase foreign exchange reserves, which, in turn, raise exchange rates. However, this exchange rate appreciation negatively impacts the competitiveness of export-oriented sectors. Similarly, Osigwe and Madichie (2015) analyze the relationship between remittance inflows, monetary aggregates, exchange rates, and domestic price levels using Johansen co-integration and Granger causality techniques. The results reveal a long-run relationship among the variables and unidirectional causality from money supply to remittance inflows at lag one, but no evidence of causality between inflation and remittance inflows.

Usman and Bukar (2023) investigates the relationship between economic growth, trade openness, remittances, exchange rates, and agricultural output in E7 economies from 1990 to 2020. The study reveals no causal relationship between GDP and agricultural output but identifies unidirectional causality from agriculture to economic growth, suggesting agriculture as a key driver of growth. Imam Kpodar & Oloufada & Gammadifgbe (2024) examine the relationship between uncertainty and remittance flows, finding that uncertainty in remittance-sending countries negatively affects remittance inflows. In recipient countries, high private investment ratios reduce remittances, while low public spending on education and health increases them.

Akeerebari (2022) investigates diaspora cash remittances' impact on Nigeria's macroeconomic stability using ECM, Granger causality tests, and VAR techniques. Findings reveal that personal remittances and exchange rates influence unemployment rates in both the short and long term, while outward remittances help reduce unemployment. However, remittances and exchange rates have limited exogenous influence on future GDP per capita growth. Similarly, Nnamdi (2021) uses the Vector Error Correction Mechanism (VECM) to assess exchange rate impacts on Nigeria's balance of payments. The findings show a positive relationship between the balance of payments and exchange rates, with significant causality between exchange rate fluctuations and balance of payments adjustments.

Similarly, Ogbeide Olarinde and Obadeyi (2022) analyze the impact of remittance inflows on Nigeria's economic performance from 1962 to 2020. Using correlation analysis, the General Method of Moments (GMM), and Johansen co-integration techniques, they find that remittance inflows positively influence economic performance, particularly through interactions with exchange rates and inflation rates.

3.0 Methodology

This section details data sources, model specifications, and econometric techniques used to analyze the relationship between remittances, exchange rate shocks, and balance of payments stability in Nigeria. The Autoregressive Distributed Lag model was used to examine short- and long-run dynamics, while a Wald test was used to analyze the effects of exchange rate shocks.

3.1 Data Sources: The study employs time-series for Nigeria spanning the period from 1981-2022 obtained from the CBN statistical bulletin 2025.

3.2 Model Specification

This study examines the impact of remittances on Nigeria's BoP stability, as they increase foreign exchange reserves and expand the domestic money supply. It also examines how exchange rate fluctuations affect Nigeria's BoP, and how the Central Bank of Nigeria responds

through monetary policies, such as interest rate adjustments or foreign exchange interventions, to mitigate the negative impacts of these factors. The Monetary Approach to the Balance of Payments (MABP) is used in this study to show that imbalances in the balance of payments are mostly caused by changes in money flows, such as remittances and changes in the exchange rate.

The MABP aligns with the ARDL model, allowing for analysis of short-run and long-run effects on Nigeria's BoP, assessing the influence of remittances and exchange rate shocks.

The functional relationship is expressed as:

$$BoPGDP_t = f(REM_t, EXR_t, RGDPG_t, EDBT_t, FDI_t)$$

The econometric model is specified as:

$$BoPGDP_t = \beta_0 + \beta_1 REM_t + \beta_2 EXR_t + \beta_3 RGDPG_t + \beta_4 EDBT_t + \beta_5 FDI_t + \varepsilon_t$$

Where:

β_0 : Intercept, Bop GDP = Balances of payment, REM = Remittances, EXR = Exchange rate, RGDPG = Real GDP Growth, EDBT External Debt and FDI = Foreign Direct Investment

ε_t : Error term

4.0 Results and Discussion

4.1 Preliminary Results

4.1.1 Unit Root Test

Unit root tests are utilized in time series analysis to establish the stationarity of variables, ensuring constant statistical properties over time. These results guide the selection of an appropriate econometric model, such as the ARDL model, which can accommodate variables at different levels I(0), or I(1).

The following is a summary of the ADF and PP test outcomes in table 2 for each variable in the model. The test statistics and P-values for each test are provided along with the conclusion about the stationarity of the series.

The unit root test results, as depicted in Table 2 below:

Table 1: Unit Root Tests Results

Variables	ADF Test Statistic		PP Test Statistic	
	Level	1st Diff	Level	1st Diff
Balance of Payment (BoP)	-2.72	-5.99*	-2.65	-8.38*
Remittances (REM)	-0.94	-6.53*	-0.94	-6.53*
Exchange Rate (EXR)	2.84	-4.23*	3.24	-4.16*
Real GDP Growth (RGDPG)	-3.20*	-10.55*	-4.33*	-10.94*
External Debt (EDBT)	-5.85*	-10.25*	-5.85*	-33.80*
Foreign Direct Investment (FDI)	-3.72*	-9.85*	-3.67*	-12.37*

Source: Authors computation using Eviews 12 (2025)

The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests in Table 1 show that Balance of Payment (BoP), Remittances (REM), and Exchange Rate (EXR) are non-stationary at levels but become stationary after differencing, confirming their I(1) status. Real GDP

Growth (RGDPG), External Debt (EDBT), and Foreign Direct Investment (FDI) are stationary at levels, indicating $I(0)$, making the ARDL model suitable for this study.

4.1.2 Bounds Testing for Cointegration

The Bounds Test for Cointegration presented in table 3 is a statistical method used to determine the existence of a long-run relationship among variables. It can be a null hypothesis (H_0) or an alternative hypothesis (H_1). If the F-statistic is greater than the upper bound, it rejects H_0 (cointegration exists), lower than the lower bound, or between bounds, it is inconclusive.

Table 2: F-Bounds Test for Cointegration

F-Bounds Test	Null Hypothesis: No levels relationship			
	Test Statistic	Value	Sign.	I(0) I(1)
F-statistic		4.099225	10%	2.08 3
K		5	5%	2.39 3.38
			2.5%	2.7 3.73
			1%	3.06 4.15

Source: Eviews 12 (2025)

The null hypothesis presented table 2 is rejected due to the F-statistic (4.975922) surpassing the upper bound ($I(1)$) at both 5% and 10% significance levels. This proves that remittances, exchange rates, balance of payment, and other variables that help explain things are linked over a long period of time, which means that either the ARDL or NARDL model is correct.

4.2 Long-run Estimation

Once the ARDL Bounds Test confirms the existence of a long-run relationship among the variables, the next step is to estimate the long-run coefficients of the model. This estimation helps to determine how remittances and exchange rate shocks impact the balance of payments (BoP) over time.

Table 3: Long run Results

Selected Model: ARDL(2, 0, 3, 4, 1, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
BOP(-1)	0.902034	0.163448	5.518779	0.0000
BOP(-2)	-0.699568	0.160030	-4.371487	0.0004
REM	0.938013	0.423051	2.217260	0.0397
EXR	-0.091669	0.034437	-2.661921	0.0159
EXR(-1)	0.141927	0.045309	3.132414	0.0058
EXR(-2)	-0.143295	0.044250	-3.238285	0.0046
EXR(-3)	0.086932	0.034981	2.485133	0.0230
RGDPG	0.089752	0.156039	0.575191	0.5723
RGDPG(-1)	-0.183292	0.154249	-1.188283	0.2502
RGDPG(-2)	0.443300	0.146193	3.032282	0.0072
RGDPG(-3)	0.225417	0.149633	1.506460	0.1493
RGDPG(-4)	-0.348513	0.165023	-2.111902	0.0489
EDBT	-1.263631	4.050960	-0.311934	0.7587
EDBT(-1)	-3.773834	3.572225	-1.056438	0.3047
FDI	1.622486	0.645335	2.514178	0.0217

FDI(-1)	0.010160	0.649515	0.015643	0.9877
FDI(-2)	-0.490477	0.682655	-0.718485	0.4817
FDI(-3)	1.184823	0.710831	1.666814	0.1129
FDI(-4)	-2.635420	0.827664	-3.184166	0.0051
C	-15.71257	7.182794	-2.187528	0.0421
R-squared	0.889980			

Source: Eviews 12 (2025)

Based on the ARDL model, ARDL(2,0,3,4,1,4), model, presented in table 3, the first lag of the Balance of Payments (BoP) is positive and significant, indicating a strong influence of past BoP values on current BoP, while the second lag has a negative coefficient, indicating a reversal effect. The coefficient for REM is 0.938013 with a p-value of 0.0397, positive and statistically significant, indicating that an increase in net inflows of remittances improve the Balance of Payments (BoP) by about 94%. Studies such as those of Mbadiwe and Egesimba (2024) and Ogbeide et al (2022) confirm that remittance drive economic growth, whereas Akighir and Atswam (2023) emphasize their potential to appreciate exchange rates, thereby reducing export competitiveness.

The first lag of the exchange rate (EXR(-1)) presented in table 3 is positive and statistically significant, indicating that previous exchange rate depreciation can improve the BoP in subsequent periods. The second lag (EXR(-2)) is negative, suggesting that continued exchange rate volatility harms the BoP. The third lag (EXR(-3)) is positive, implying that past exchange rate fluctuations have a mixed effect on the BoP. This finding is corroborated by Sani et al (2019) and Jubril (2019) who identify exchange rate fluctuations as a key determinant of trade performance while Usman and Buker (2020) argue that exchange rate depreciation can negatively impact balance of payment Bop stability if not properly managed.

The coefficient for current real GDP growth (RGDPG) is 0.0898 with a p-value of 0.5723, which is insignificant, indicating that short-run GDP growth does not significantly affect the Balance of Payments (BoP). The second lag of GDP growth (RGDPG(-2)) is positive and statistically significant, suggesting that economic growth from two periods ago improves the BoP. The fourth lag of GDP growth (RGDPG(-4)) is -0.3485 with a p-value of 0.0489, negative and significant, meaning that in the long run, higher GDP growth may worsen the BoP, potentially due to increased imports. The coefficient for external debt to GDP (EDBT) is which is insignificant, indicating that external debt does not directly influence the Balance of Payments (BoP) in the short run. The first lag of external debt to GDP (EDBT(-1)) is -3.7738 with a p-value of 0.3047, also insignificant, but the negative sign suggests that increasing debt could worsen the BoP over time. The coefficient for the ratio of Foreign Direct Investment to GDP (FDI) is 1.6225 with a p-value of 0.0217, positive and statistically significant, indicating that FDI inflows improve the Balance of Payments (BoP). The fourth lag of FDI to GDP (FDI(-4)) is -2.6354 with a p-value of 0.0051, negative and significant, suggesting that after four periods, FDI could lead to capital outflows or repatriation of profits, which may reduce the BoP. The R-squared value is 0.8899, meaning that the model explains 88.99% of the variations in the Balance of Payments (BoP), indicating a very strong fit.

4.3 Short-run Estimates

The Error Correction Model (ECM) is a statistical model that accurately reflects the short-run and long-run dynamics of the Balance of Payments (BoP) relationship, correcting any disequilibrium at a specific speed. Table 4 presents the short-run results of Equation 5, highlighting the immediate and lagged effects of independent variables on Nigerian BoP.

Table 4: Short-Run Results

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BOP (-1))	0.699568	0.126578	5.526761	0.0000
D(EXR)	-0.091669	0.023339	-3.927668	0.0010
D(EXR(-1))	0.056362	0.023796	2.368601	0.0292
D(EXR(-2))	-0.086932	0.021556	-4.032814	0.0008
D(RGDPG)	0.089752	0.105235	0.852871	0.4049
D(RGDPG(-1))	-0.320203	0.102210	-3.132797	0.0058
D(RGDPG(-2))	0.123096	0.103257	1.192134	0.2487
D(RGDPG(-3))	0.348513	0.091396	3.813229	0.0013
D(EDBT)	-1.263631	2.099110	-0.601984	0.5547
D(FDI)	1.622486	0.433967	3.738733	0.0015
D(FDI(-1))	1.941074	0.536562	3.617610	0.0020
D(FDI(-2))	1.450597	0.542975	2.671571	0.0156
D(FDI(-3))	2.635420	0.547570	4.812941	0.0001
CointEq(-1)*	-0.797534	0.128938	-6.185421	0.0000
R-squared	0.828314			

Source: Eviews 12 (2025)

The change in the exchange rate (D(EXR)) presented in table 4 is -0.0917 with a p-value of 0.0010, indicating a significant negative impact on the Balance of Payments (BoP) in the short run. Currency depreciation worsens the BoP immediately, likely due to higher import costs. The first lag of the exchange rate (D(EXR(-1)) is 0.0564 with a p-value of 0.0292, positive and significant, suggesting that after one period, a weaker currency may improve exports and remittances, leading to an improvement in the BoP. The second lag of the exchange rate (D(EXR(-2)) is -0.0869 with a p-value of 0.0008, again negative, implying that exchange rate fluctuations have mixed effects on the BoP, depending on the timing of adjustments. The change in real GDP growth (D(RGDPG)) is 0.0898 with a p-value of 0.4049, which is insignificant in the short run. The first lag of real GDP growth (D(RGDPG(-1)) is -0.3202 with a p-value of 0.0058, negative and significant, suggesting that higher GDP growth in the previous period could worsen the Balance of Payments (BoP), possibly due to increased imports. The third lag of real GDP growth (D(RGDPG(-3)) is 0.3485 with a p-value of 0.0013, positive and significant, meaning that after a few periods, economic growth positively contributes to the BoP, likely through enhanced exports and greater foreign investment.

The change in external debt to GDP (D(EDBT)) is -1.2636 with a p-value of 0.5547, which is not significant in the short run. This suggests that external debt does not have an immediate effect on Balance of Payments (BoP) fluctuations. The change in Foreign Direct Investment to GDP (D(FDI)) is 1.6225 with a p-value of 0.0015, positive and significant, indicating that FDI inflows improve the Balance of Payments (BoP). The first lag of FDI to GDP (D(FDIGDP(-1)) is 1.9411 with a p-value of 0.0020, showing an even stronger positive impact after one period. The third lag of FDI to GDP (D(FDI(-3)) is 2.6354 with a p-value of 0.0001, reflecting a very strong positive impact after three periods. This confirms that FDI has both an immediate and delayed effect on BoP improvement.

The coefficient for the Error Correction Term (CointEq(-1)) is -0.7975 with a p-value of 0.0000, which is highly significant and negative. This indicates that the model corrects 79.75% of the

disequilibrium in each period. In other words, if the Balance of Payments (BoP) deviates from its long-run equilibrium, about 80% of the deviation is corrected within one year. The high magnitude and significance of this coefficient confirm a strong long-run relationship among the variables.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study investigated how remittances and exchange rate fluctuation have impacted Nigeria balance of payments BoP stability. The study provides strong evidence that remittances serve a critical source of foreign exchange, contributing positively to economic growth, foreign reserve accumulation and consumption smoothening. The paper also concludes that relationship between exchange rate volatility and balance of payment further underscore the complexity of Nigeria's external sector dynamics.

5.2 Policy Recommendations

The Central Bank of Nigeria (CBN) should implement policies to reduce excessive exchange rate volatility, such as a managed float exchange rate system, to maintain BoP stability. Additionally, expanding the foreign exchange reserve base through improved export performance and effective remittance utilization can enhance Nigeria's ability to respond to exchange rate shocks.

Nigeria should improve trade and balance of payments by diversifying its export base, promoting non-oil exports and value-added production in agriculture and manufacturing, implementing import substitution policies, and strengthening regional and international trade agreements. These measures can reduce pressure on the foreign exchange market and reduce vulnerability to external shocks.

The Monetary Approach to the Balance of Payments (MABP) suggests that excessive money supply growth can cause imbalances. The Central Bank should maintain a stable monetary policy to control inflation and support economic growth. Fiscal policies should reduce external borrowing and prioritize foreign direct investment and domestic revenue mobilization for development projects.

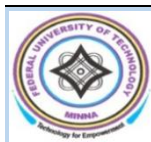
To promote macroeconomic stability, policies should encourage productive remittance use, such as investing in human capital development, entrepreneurship, and SMEs, and implement targeted social programs.

Nigeria should implement stronger anti-money laundering and counter-terrorism financing measures to regulate remittance flows and prevent illicit activities. Enhancing diaspora engagement policies and strengthening foreign exchange management institutions can boost remittance inflows and investment participation, while ensuring a stable and resilient external sector.

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Human Relation Competency and Employee Turnover of Bakery Firms in North Central Nigeria

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Abstract

Employee turnover has continued to pose significant challenges to organizational productivity, stability, and growth, particularly in dynamic work environments where skilled human capital is crucial to long-term success. Human relation competency, which encompasses communication, self-awareness, and relationship management, has been identified as a critical factor militating employee turnover and overall workplace harmony. Despite its relevance, limited empirical studies have examined how specific dimensions of human relation competency contribute to employee turnover rates. This study investigated the effect of human relation competency on employee turnover of bakery firms in North Central Nigeria. A quantitative survey design was adopted, and data were gathered from 317 respondents selected through stratified random sampling from a population of 1, 813. A structured questionnaire was used to collect the data which were analyzed using multiple regression analysis with the Statistical Package for Social Sciences (SPSS) version 26. Findings revealed a strong and significant relationship between human relation competency and employee turnover ($R = 0.742$, $R^2 = 0.551$, $p < 0.05$). The regression model indicated that communication ($\beta = 0.384$, $p = 0.000$), self-awareness ($\beta = 0.293$, $p = 0.000$), and relationship skills ($\beta = 0.241$, $p = 0.000$) each significantly contributed to predicting employee turnover. The study concludes that an entrepreneur with higher levels of human relation competency retains productive employees from leaving their organizations; as such competencies foster trust, collaboration, and job satisfaction. It is recommended that entrepreneurs prioritize the development of human relation competency through interpersonal relationships, communication channels, and leadership development initiatives to strengthen workplace relationships to mitigate employee turnover.

Key Words: Human Relation Competency, Employee Turnover, Communication Skills, Relationship Skills, Performance.

1.0 Introduction

Human relations competency has emerged as a pivotal factor in shaping organizational outcomes, particularly in addressing the persistent challenge of employee turnover. In today's dynamic and competitive business environment, organizations increasingly recognize that their success depends not only on technological advancement or financial resources but also on the quality of interpersonal relationships within the workplace (Adebayo & Nwosu, 2024). Human relations competency refers to an individual's ability to effectively interact, communicate, and manage relationships with others in a professional setting. It encompasses skills such as emotional intelligence, empathy, teamwork, conflict resolution, and interpersonal communication all of which are essential for creating a supportive and engaging organizational climate (Oladipo et al., 2025).

Employee turnover, on the other hand, refers to the rate at which employees leave an organization and are replaced by new ones. High turnover rates often indicate underlying issues such as poor leadership, lack of motivation, ineffective communication, and weak employee engagement (Okon & Eze, 2024). These issues can result in significant organizational costs,

including recruitment and training expenses, reduced productivity, and loss of institutional knowledge. The relationship between human relations competency and employee turnover has thus attracted growing scholarly attention, as effective interpersonal management can enhance job satisfaction, organizational commitment, and employee retention (Lawal & Thompson, 2025).

Managers and supervisors with strong human relations skills are more likely to foster a positive work environment where employees feel valued, understood, and supported (Adetunji, 2024). Such environments reduce work-related stress and enhance loyalty, leading to lower turnover intentions. Conversely, a lack of relational competency among leaders often breeds dissatisfaction, communication breakdown, and disengagement, prompting employees to seek better opportunities elsewhere (Ibrahim & Musa, 2025). Therefore, developing human relations competencies across all organizational levels is not merely a soft skill initiative but a strategic imperative for retaining talent and ensuring long-term organizational stability.

However, understanding the link between human relations competency and employee turnover, provides valuable insights for both practitioners and researchers seeking to design effective retention strategies. By prioritizing interpersonal skill development, organizations can build cohesive teams, enhance employee morale, and significantly reduce turnover rates, thereby gaining a sustainable competitive advantage in the modern workplace (Afolabi & Bello, 2024). This study therefore focused on investigating the effect of human relation competency on employee turnover of bakery firms in North Central Nigeria. It specifically explore the following specific objectives:

- i. To investigate the effect of Communication on employee's turnover of bakery firms in North Central, Nigeria.
- ii. To access the effect of self-awareness on employee's turnover of bakery firms in North Central, Nigeria.
- iii. To evaluate the effect of relationship skills on employee's turnover of bakery firms in North Central, Nigeria.

2.0 Literature Review

2.1 Conceptual Review

This section conceptualize the relevant variables included in this research. The concepts are reviewed as follows:

Human Relations Competencies

Relationship competency is about interactions, for instance, collaboration with environment by means of persuasive aptitude, communication and interactive skills. Drawing from Bird (1995), building relationship depicts entrepreneurial attachment with people, which involves making and reforming relationship. Furthermore, the establishment of cordial rapport with the customers and potential customers including the staff will help enhance the fortune of the firm. Relationship competence is vital and indisputable in this era of stiff and unending competition among firms. In a way to efficaciously secure corporate dealings with clients, entrepreneurs are engrossed in relationship actions, referred to as entrepreneurial tie that reflects building and restructuring relationships with important interested party such as customers, staff and suppliers (Emmanuel & Onuoha 2020).

Creating harmonious atmosphere in the work environment is the responsibility of the entrepreneur. If human resource management does not work effectively, various problems will arise that will disrupt the performance of the company (Khoiroh, 2012). One form of employee

behavior that often arises due to the failure of the company to manage its human resources is the desire to move work (turnover intention) which leads to the decision of the employee to leave their jobs. When the employee leaves the company, the ability of other employees to complete existing work will be disrupted (Fah et al., 2010). It is crucial for companies to identify early on things that cause the employee to have the desire to change jobs. The desire to shift work (turnover intention) is a very serious problem in the context of human resource management Fah et al., (2010). Human relations are: "human relations as relations with or between people, workplace or professional settings" (human relations are relationships that relate to people, workplaces, or professional arrangements). Regarding human relations, (Gundlach et al., 2006) put forward his opinion as follows: "Human relations is frequently used as a general term to describe how managers interact with their subordinates. When management and employees stimulate more and better work conditions, we have good human relations in the organization.

When morale and efficiency deteriorate, human relations in the organization are bad. To create good human relations, managers must have human relation skills to know why employees act as they do and what social and psychological factors motivate them". The human relations approach made relationships between employees and supervisors the most silent aspects of management. It advocates the training of people in behavioral sciences, such as clinical and social psychology to emphasize building collaborative and cooperative relationships between supervisors and workers. Two critical aspects of human relationships approach are employee motivation and leadership style. Based on the opinions of the experts, it can be concluded that human relations is the interaction between individuals who are informal structures such as work relationships, arranged functionally to achieve the stated goals of the company with persuasive communication in person to inspire excitement and work activities with enthusiasm productive, happy and satisfied cooperation on both sides.

Concept of Employees' Turnover

Employees' turnover has become a critical issue in today's organizations. The rate of employee turnover has been increasing from time to time due to a lot of factors. This review of previous studies is intended to consolidate previous research findings in order to establish a cohesive framework of employee turnover so that organizations are aware of the factors that might lead to turnover. Based on the review, seven common factors are found to be related to turnover; namely, organizational commitment, job satisfaction, training, perceived organizational support, perceived supervisor support, organizational climate, employees' benefits and opportunities and organizational justice. These factors have to be taken care of by the organizations to ensure that they can retain their employees especially those that can contribute significantly to the well-being of the organizations. Employee-organization link is considered as a reciprocal relationship. If the employees feel that they are taken care of by the organization, they will repay in terms of their loyalty to the organization.

Organizational justice can be described as a blend of fairness in procedures used by leaders to decide on outcome distributions or allocations, and the fairness of outcome distributions or allocations (Colquitt et al., 2001). In order to ensure that employees are satisfied, committed, and loyal, the organization needs to be fair in its systems regarding distributive, procedural, and interactional justice. When employees feel that they are treated fairly by the organization in every aspect, they are likely to show more positive attitude and behaviors such as job satisfaction (Karimi et al., 2013) and commitment (Malik & Naeem, 2011). Most of the employees remain with the organization if they receive motivating tools such as bonuses but yet remuneration is not the only thing that can motivate employees to remain with the organization (Anderfuhren-Biget et al., 2010; Masaiti & Naluyele, 2011). The biggest factor in attracting and most importantly retaining key employee is culture. It is important for employees

to feel like they are part of a team, they require a link to the vision and direction of the organization and their co-employees, and they require ways of working better together, which ultimately lead to more cooperation.

2.2 Theoretical Review

The theory that underpins this research is the Entrepreneurial Competency Theory. This is reviewed as the theoretical background that anchors the research.

Entrepreneurial Competency Theory

The competency theory was propounded by Boyatzis (1982) with contributions from Bird (1995) Lau et al. (1999); was developed based on the idea that there are certain clusters of skills and attitudes (also called capabilities/competencies) entrepreneurs require in order to enable them reap superior performance and competitiveness. At the rudimentary state, such skills that could foster enterprise success could be communication and oral presentation skills, human relations skills, and the ability to construct and defend a business plan before a large audience (Vesper and McMullan, 1988). Theory of Entrepreneurial Competency by Boyatzis (1992), says that entrepreneurs are very cautious of investing more into the business until they are sure of their competencies, using the due diligence modulator. If there is a signal that the start-up will fail, the due diligence modulator alerts the entrepreneur to go back to stage one (formulation stage). The theory further posits that entrepreneurs who may not have competences internal to the firm can enlist complementary competencies/capabilities through strategic alliances. The growth and competitiveness and success of the business largely depend on the effectiveness and velocity of deployment of the competences via these stages (Mishra & Zachary, 2014). Thus, this theory encapsulates this essence of having competencies as the basis for survival and sustenance of an enterprise. Emphasizing that competency spurs competitiveness as the live line for small and medium enterprises existence.

2.3 Empirical Review

Rony, et.al. (2024). Analyzing the impact of human resources competence and work motivation on employee performance: A statistical perspective. The type of research used by the author is explanatory research, Data collection techniques used in this study are: Questionnaire, namely primary data collection techniques. Validity test is used to determine the level of validity of statements in the questionnaire. Sample size of 86 from a population 159 of employees in Jakarta. Testings were done using correlation method using SPSS V.20.0 software for windows. If $r_{count} \geq r_{table}$ (sig. 0.05) then the instrument or question items have a significant correlation with the total score. The effect of resource development humans show that partially (t test) the results of the test are known significance show that there is mark t count as big $2,377 > t_{table}$ 1.992 and it is also known that the significance value (Sig.) is $0.020 < probability$ 0.05. Mark the can prove hypothesis accepted, which means that "there is influence which positive and significant between variable development source power man to performance employee". Viewed from coefficient determination (r square), development hr influential positive to performance employee with total influence as big 6.3%.

Zhang and Xing (2023) investigated Impact of entrepreneurial orientation and risk sharing on organizational performance influencing role of news media and public opinion. Study's objectives were to investigate the relationship between entrepreneurial orientation, risk sharing, and organizational performance; to determine whether or not news media fully or partially mediated this relationship; and to determine whether or not public opinion moderated the relationship between news media and organizational performance. In addition, the study sought to determine whether or not public opinion moderated the relationship between news media and organizational performance. Data were collected from managers of small and medium-

sized enterprises (SMEs) located this investigation made use of the Likert scale, which consists of five levels and ranges from 1 (which denotes “not at all”) to 5 (which denotes “very much”) to evaluate each component constructs. Cronbach’s alpha, roh-A, composite reliability, and average variance extract were utilized in this investigation in order to assess the degree to which the model could be relied upon. This study validated the model by using the partial least square structural equation modeling (PLS-SEM) method that is included in Smart-PLS 3.0. This method was used to analyze the data. According to the results of the research, there is a significant correlation between autonomy and organizational performance ($p = 0.008$), and this correlation is positively mediated by the news media. A connection exists between risk sharing and the performance of organizations, and that this connection is favorably mediated by the news media ($p = 0.042$).

Nururly, et.al. (2022), conducted a research titled influence of entrepreneurial competency, learning orientation, and entrepreneurial motivation on SME performance. This study uses a quantitative approach with explanatory survey methods to test the causality relationship. The population of this study is entrepreneurs / SMEs in Nusa Tenggara Barat (NTB). This study used a sample of 200 MSMEs from a population of 695 MSMEs from food and beverage industries have been established for more than 3 years. In this study, sampling was carried out using the Proportional Random Sampling technique. With this technique, all entrepreneurs/managers of SMEs food and beverage industries have been established for more than 3 years in a sampling frame are divided into regional groups. Then, within each region, a random sample was taken. The fore the study was analyzed using multiple regression data analysis to determine the relationship between independent and dependent variables, both partially and simultaneously. For survey data that is cross-section or data obtained from many respondents at the same time, the value of $R^2 = 0.354$ or 35.4% is good enough. From these values, it can be said that SME Performance is influenced by Entrepreneurial Competency (X1), Learning Orientation (X2), and Entrepreneurial Motivation (X3) by 35.4%. The remaining 64.6% is influenced by other factors that are not defined. Based on the results of the finding the researchers concluded that there is an influence of entrepreneurial competency on SME performance. The positive regression coefficient of X1 (entrepreneurial competency) means that the influence is positive (directly proportional); There is an influence of learning orientation on SME performance, or, in other words, learning orientation influences SME performance. The positive regression coefficient of X2 (learning orientation) means that the influence is positive (directly proportional).

Al Farisi Yasir (2021) examines the effect of entrepreneurial competencies (innovation, leadership, networking and risk taking) on the survival of SMEs in the Kingdom of Saudi Arabia. Stratified random sampling identified the respondents from the SMEs trading in KSA. The respondents were first clustered by their sector (production, wholesale or retail). Data were measured by means of normalization in real values. Validity and reliability analysis was conducted to test whether the collected data were valid and reliable. Cronbach's alpha assumes reliable data for all the variables, since all the indicators were above 0.7. The quantitative data analyzed were then evaluated using Version 24 of SPSS (the most recent version now available), using both linear and multiple regression tests. The data were analyzed using SPSS, and will be displayed in the form of descriptive statistics and inferential statistics (including Pearson correlations), along with the results of validity and regression analyses. Independent variables showed a significant relationship, with the significance levels below 5%. Innovations (0.039), risk (0.041), leadership (0.030) and networking (0.031) all have a direct relationship with financial performance. This study recommends SMEs to use innovation skills in order to enhance their success through management. SMEs may also increase their chances for business success through development of innovative product lines and adoption of various creative

concepts. SMEs are also expected to invest in new markets and encourage their employees to be more innovative to improve their performance and survival chances. The study indicate limitation of secrecy of some SME owners and the fact that they were not readily prepared to disclose certain information.

Sundah et al. (2018) carried out a study on “Developing entrepreneurial competencies for successful business model canvas in Indonesia. The empirical results show that entrepreneurial competencies which consist of managerial competencies, technical competencies, marketing competencies, financial competencies, human relations competencies, and the specific working attitude of entrepreneur has a positive and significantly effect on business model canvas. Additionally, the empirical cases and discussion with 2 groups of entrepreneurs support the quantitative result and it found that human relations competencies have greater influence in achieving successful business model canvas. The method used in this research is mixed method with sequential explanatory design. A self-designed questionnaire was used to gather the research data using 1-5 pointlikert scale by strongly agree/important to strongly disagree/not important on contextual condition related to business model. The method of analysis used in this research was both descriptive analysis and structural equation model (SEM) using SmartPLS software. The techniques of data collection by using the snowball sampling. Test of reality and validity were conducted on items. The result of all R-square values shows that all R-square values are greater than zero. This means that this research model meets the required Goodness of Fit.

Wijaya and Irianto (2018), investigated the Influence of Managerial Competencies, Technical Competencies, and Strategic Competencies on Firm Performance in Electrical Engineering Company in Bandung. Firm's performance can be formed of competencies that is unique, rare, irreplaceable, and difficult to imitate within the firm, one of them is the competence of the individual. According to a competency-based approach and the resource-based approach, individual competence that affect the performance of the firm is managerial competence, technical competence, and strategic competence. Questionnaire was built based on the dimensions of the firm's performance, managerial competence, technical competence, and strategic competence, they are analyzed using partial least squares application. The results indicates that managerial competence negatively impact firm's performance with weak ties. The technical competence and strategic competence positively affects firm's performance with moderate ties.

Jesinoski et al. (2017) examined the relationship between entrepreneurial human relations and organizational behavior. The authors established that there is great inter-sectionality between Human Resource Management (HRM), entrepreneurship, and organizational behavior. The way an entrepreneur handles aspects of HRM will determine the organizational behavior that is imbedded among employees. An entrepreneurial mindset in organizations greatly enhances the environment. An organization that promotes entrepreneurship is capable of creating, learning, and influencing the environment in positive ways. With the constant changes in modern society, entrepreneurs are always thinking about the next great product that customers will want. It is not easy for entrepreneurs to succeed and compete with large corporations. Entrepreneurs need to possess or accumulate the qualities of HRM and promote organizational behavior to build from the ground up a strategic, effective, and successful company.

Bendassolli et al. (2016) examined performance, self-regulation and entrepreneur's competencies of Brazilian creative industry. 295 experts of the Brazilian creative industry were covered. Both multivariate multiple linear regression and factor analysis was utilized in analyses. The result revealed that strategy and planning competencies were predictors of

performance with $R^2 = 0.20$. Social relationship and career predict performance with $R^2 = 0.24$.

In the same vein, Klepić and Klepić (2022) conducted a research titled “The influence of determination of the required competencies on the business performance of small and medium enterprises”. The study used cross sectional survey design, In order to test the hypotheses, a survey questionnaire was used as a research instrument with a Likert scale from 1 to 5 were offered. The survey questionnaire was submitted to 234 SMEs in the Federation of Bosnia and Herzegovina (FB&H) of which 67.55% are small companies with 10 to 49 employees, and 32.05% are medium-sized companies with 50 to 249 employees. The largest share of companies is from Canton Sarajevo (30.77%), Tuzla Canton (21.37%) and West Herzegovina Canton (10.36%). Cronbach’s alpha reliability coefficient, which is a measure of the internal consistency of statements or questions, for 12 statements from the questionnaire that express the determination of required competencies in the company is $0.938 > 0.7$. The analysis and testing of hypotheses and models obtained based on from a sample of 234 companies, it follows that the degree of determining the required competencies has a positive and significant effect on the performance of SMEs from four different perspectives (financial perspective; customer perspective; internal business processes perspective; and learning and growth perspective), observed both through the model with constructs obtained as variables averages and through the model with constructs obtained as variable factors. Even though the researcher didn’t state the sampling techniques used for the study. In the conclusion, the researcher confirm that the positive impact of the first phase of human resources competency management on business performance has been determined through all four perspectives, which will provide a quality foundation for SMEs in tourism and hospitality, as well as all other SMEs, to make further decisions on competency management activities in SMEs but also large enterprises, which can significantly raise competitiveness of enterprises in the field of tourism and hospitality and all other enterprises, and affect their business performance.

Zizile and Tendai (2018) carried out a study on “The importance of entrepreneurial competencies on the performance of women entrepreneurs in South Africa”. The study investigated the importance of entrepreneurial competencies on the performance of women entrepreneurs in South Africa. The objectives of this study were to identify key entrepreneurial competencies that influence the performance of women entrepreneurs, to establish a relationship between entrepreneurial competencies and the performance of women entrepreneurs and to suggest strategies that can be implemented to improve entrepreneurial competencies of women entrepreneurs. Both primary and secondary data were used to conduct this research. Primary data was collected using self-administered questionnaires. Data was collected from women who own SMMEs in East London, South Africa. The researchers used simple random sampling, a probability sampling technique. The sample size for the study was 200 respondents and was calculated using Raosoft (2011) sample size calculator. The researchers stated it categorically that all respondents were female. Of the respondents, 46% were black, 17% white, 17% coloured and other races constituted 20%. It can be said that most of the respondents in this study can be classified as black. 35% businesses had been operating for a period less than 5 years, 40% had been operating for a period between 5 to 9 years and 26% had been operating for 10 years or more. A Chi-square test was conducted to assess the association between owners’ innovation skills and the performance of women owned entrepreneurial ventures. A Chi-square value of 71.371 and a p-value of 0.000 were observed, for owner’s ability to generate ideas a Chi-square value of 66.429 and a p-value of 0.00 was found, for risk taking Chi-square value of 61.034 with a p- value of 0.00 was observed. Based on the results obtained from the study the authors concluded that there is a significant relationship between idea generation, innovative skills, envisioning opportunities, creativity

and risk-taking and the performance of women owned SMMEs in East London. Entrepreneurial competencies are also crucial for establishment and survival of SMMEs. It was recommended SMME owners and managers need to acquire skills that will improve their business performance. If women entrepreneurs intend to improve their entrepreneurial skills, they should always take advantage of skills development programmes offered by government agencies and institutions of higher learning.

3.0 Methodology

This study examined human relation competency and employee turnover. Probability sampling was adopted, using stratified random sampling techniques in selecting (317) bakery businesses in North Central Nigeria from one thousand eight hundred and thirteen (1, 813) study population. Primary data was utilized as source of data, questionnaire was utilized as a means for data collection. Inferential and descriptive statistics were utilized, regression analysis was conducted to test the degree of the relationship between the two constructs, (IBM SPSS 24.0) were tools utilized to conduct the regression test.

4.0 Results and Discussion

4.1 Testing of the Hypotheses

Multiple regression analysis provides an avenue of neutrally assessing the degree and character of the relationship between independent variables and the dependent variable (Sekaran & Bougie, 2010). The regression coefficient uses to show the relative importance of each of the independent variable in the prediction of the dependent variable. When independent variables are jointly regressed against the dependent variable in an attempt to explain the variance in it, the size of each (individual) regression coefficients will show how much an increase in one unit in the individual variable would affect the dependent variable, taking into cognizance all other individual variables and dependent variable cave in to multiple correlation coefficient (Sekaran & Bougie, 2010). Regression analysis was employed to test the hypothesis in this study; it is intended to investigate the relationship between predicting as well as the criterion variables respectively.

H₁: Human Relation Competency and Employee Turnover

Multiple regression analysis was conducted in determining the relationship between human relation competency and employee turnover

Table 1

Model Summary^b

Model	R	Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.742	0.551	0.547	3.218	.222

a. Predictors: (Constant), Human relation Competency

b. Dependent Variable: Employee turnover

The result presented in Table 1 (Model Summary) shows the strength and explanatory power of the regression model that examined the effect of human relation competency on employee turnover. The correlation coefficient ($R = 0.742$) indicates a strong positive relationship between human relation competency and employee turnover, suggesting that improvements in employees' interpersonal skills are associated with significant changes in turnover behavior. The R Square value of 0.551 implies that approximately 55.1% of the variance in employee turnover is explained by human relation competency dimensions such as communication, self-

awareness, and relationship skills. The adjusted R Square (0.547) confirms that even after adjusting for the number of predictors and sample size, the model still explains 54.7% of the variation in turnover, demonstrating good model fitness. The standard error of estimate (3.218) indicates that the model's predictions are fairly accurate. However, the Durbin–Watson statistic (0.222) suggests slight positive autocorrelation in the residuals, implying some correlation among error terms, although this is not uncommon in social science data. Overall, the model summary indicates that human relation competency is a strong and meaningful predictor of employee turnover.

Table 1.1: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3824.731	3	1274.910	122.98	0.000
Residual	3101.904	313	9.908		
Total	6926.635	316			

a. Dependent Variable: Employee turnover

b. Predictors: (Constant), Human relation competency

The result of the ANOVA test in Table 1.1 shows that the regression model is statistically significant. The F-statistic value of 122.98 with a corresponding p-value (Sig.) of 0.000 indicates that the overall model significantly predicts employee turnover. This means that the combined effect of communication, self-awareness, and relationship skills contributes significantly to explaining variations in employee turnover among the respondents. The total sum of squares (6926.635) represents the total variation in employee turnover, while the regression sum of squares (3824.731) shows the portion explained by the model. The residual sum of squares (3101.904) represents the unexplained variation. Since the significance value is less than 0.05, it is concluded that the regression model provides a statistically reliable explanation of the relationship between human relation competency and employee turnover.

Table 1.2: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
Constant	4.112	0.548	—	7.503	0.000
Communication	0.427	0.059	0.384	7.237	0.000
Self-awareness	0.316	0.067	0.293	4.716	0.000
Relationship skills	0.265	0.064	0.241	4.141	0.000

The coefficients table (Table 1.2) provides insights into the contribution of each independent variable to the prediction of employee turnover. The constant value ($B = 4.112$) represents the predicted value of employee turnover when all independent variables are held constant. Communication has a regression coefficient ($B = 0.427$, $\beta = 0.384$, $p = 0.000$), which implies that a one-unit increase in communication competence results in a 0.427 unit change in employee turnover, holding other factors constant. This effect is statistically significant at the 0.05 level, suggesting that communication plays a vital role in influencing employees' decision to remain or leave the organization. Similarly, self-awareness ($B = 0.316$, $\beta = 0.293$, $p = 0.000$) significantly predicts employee turnover, implying that employees who are more self-aware are more likely to have stable organizational commitment. Relationship skills ($B = 0.265$, $\beta = 0.241$, $p = 0.000$) also exhibit a significant positive influence, meaning that individuals with stronger interpersonal relationships experience lower turnover tendencies. Among the three predictors, communication shows the strongest standardized effect, followed by self-awareness and relationship skills.

Discussion of Findings

The findings of this study reveal that human relation competency has a significant and positive effect on employee turnover. The regression analysis showed that communication, self-awareness, and relationship skills jointly explained about 55.1% of the variance in employee turnover, indicating that these human relation dimensions are substantial predictors of employees' turnover/retention behaviour. This aligns with the assertion of Adebayo and Nwosu (2024) that employees who experience positive interpersonal relations and supportive communication from their supervisors are less likely to leave their organizations. The strong correlation ($R = 0.742$) found in this study further emphasizes the importance of human interaction and relational management in shaping employees' attachment to their workplaces.

The result specifically revealed that communication competence had the strongest predictive effect on employee turnover ($\beta = 0.384$, $p < 0.05$). This finding is consistent with Lawal and Thompson (2025), who reported that effective organizational communication fosters trust, transparency, and a sense of belonging, which consequently reduces voluntary turnover. Communication facilitates understanding, minimizes workplace conflict, and enhances employee engagement. When employees perceive open and constructive communication, they are more committed to organizational goals and less likely to seek employment elsewhere.

Similarly, self-awareness was found to significantly influence employee turnover ($\beta = 0.293$, $p < 0.05$). This outcome supports the position of Oladipo et al. (2025), who explained that employees with higher emotional intelligence and self-awareness are better equipped to manage work-related stress, align personal values with organizational culture, and sustain long-term commitment. Self-aware employees understand their strengths and limitations, which enables them to build stronger professional relationships and exhibit higher job satisfaction both of which are critical to retention. The study also found that relationship skills significantly predict employee turnover ($\beta = 0.241$, $p < 0.05$). This result agrees with Adetunji (2024), who argued that the ability to maintain healthy interpersonal relationships in the workplace contributes to psychological safety and team cohesion, reducing the likelihood of turnover. Employees who maintain positive workplace relationships tend to experience higher morale, stronger identification with the organization, and improved cooperation with supervisors and peers. These social bonds often act as informal retention mechanisms, as employees are less inclined to leave environments where they feel supported and valued.

The overall model significance ($F = 122.98$, $p < 0.001$) confirms that the dimensions of human relation competency jointly contribute to reducing employee turnover. This supports the findings of Okon and Eze (2024), who emphasized that organizations investing in relational skills development through leadership training, interpersonal communication workshops, and team-building program tend to experience lower turnover rates. Furthermore, Afolabi and Bello (2024) highlighted that retention strategies rooted in relational competence not only reduce employee exits but also enhance organizational performance through improved collaboration and motivation.

In summary, the findings demonstrate that human relation competency particularly communication, self-awareness, and relationship skills play a critical role in reducing employee turnover. The results underscore the need for organizations to integrate relational competence into managerial practices, training, and performance appraisals. By doing so, organizations can foster a supportive and emotionally intelligent work environment that enhances employee satisfaction, commitment, and long-term retention.

5.0 Conclusion and Recommendations

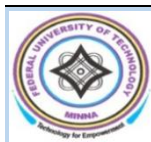
The study examined the influence of human relation competency on employee turnover, focusing on three major dimensions: communication, self-awareness, and relationship skills. The findings revealed that all three dimensions had significant and positive effects on employee turnover, jointly explaining turnover behavior. Specifically, communication emerged as the strongest predictor, followed by self-awareness and relationship skills. This indicates that employees who experience effective communication, possess strong emotional awareness, and maintain positive workplace relationships are more likely to remain in their organizations. The study therefore concludes that human relation competency is a vital determinant of employee retention and organizational stability. Strengthening these competencies across all organizational levels can reduce turnover, improve job satisfaction, and enhance employee commitment.

The study recommended that organizations place deliberate emphasis on developing human relation competency across all levels of the workforce as a strategic approach to reducing employee turnover. This involves equipping employees and managers with interpersonal skills such as effective communication, empathy, emotional intelligence, and conflict resolution. Organizations should create continuous learning opportunities, including workshops, coaching, and leadership training that foster mutual respect, trust, and understanding within the workplace. By promoting open dialogue, active listening, and cooperative problem-solving, employees are more likely to feel valued and connected to their organization. Strengthening human relation competency not only enhances teamwork and job satisfaction but also builds a positive organizational climate that discourages voluntary turnover and promotes long-term employee retention.

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The Effect of Technological Innovation on Airport Operations and Passengers' Experience at Nnamdi Azikiwe International Airport Abuja, Nigeria

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Abstract

Nnamdi Azikiwe International Airport, Abuja, has recently implemented several advanced technological innovations. However, despite these advancements, operational inefficiencies and passenger dissatisfaction continue to persist. This raises concerns regarding the actual effectiveness of these innovations in improving operational efficiency and passenger satisfaction at the airport. The study examined the effect of technological innovation on airport operations and passenger experience at Nnamdi Azikiwe International Airport, Abuja, Nigeria. The sample size of the study is 2758 passengers. Stratified random sampling was used to select a sample of 380 passengers and structured questionnaire was to collected data from the respondents. The data were analyzed using both descriptive and inferential statistical techniques, guided by the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The findings revealed that there is a weak correlation between technological innovation and passenger perception and satisfaction, based on an overall evaluation of the airport ($r = .015$, $p = .776$) and with respect to security and safety ($r = .002$, $p = .972$). Similarly, the results for operational staff ($r = .051$, $p = .322$) indicated a weak and statistically insignificant negative relationship between technological innovation and airport operations. These results suggest that there is no strong relationship between technological innovation, airport operations, and passenger perceptions at Nnamdi Azikiwe International Airport. The study concludes that the effective implementation of technological innovations depends largely on the inclusion of operational staff in the adoption process, regular staff training, and continuous stakeholder engagement to overcome barriers to technology adoption. It recommends that frontline staff should be actively involved in the selection and implementation of new technologies to promote seamless operational efficiency and enhance passenger satisfaction.

Keywords: Technology, Innovation, Airport, Operations, Passengers

1. Introduction

Technological innovations have significantly transformed airport operations worldwide, enhancing efficiency, security, and passenger experience (Budd & Ison, 2020). Aviation industry holistically as evolved and improved across the globe with significant technological transformations aimed at improving operational efficiency and service delivery. It is projected that the value of the overall travel industry will grow at an annual compound rate of 3.9% (Oluwole *et al.*, 2021), it is then expected for the airport to have adequate technological innovations to enhance performance. These advancements in the developed airports ranges from automated check-in systems, biometric verification, and baggage handling systems to air traffic management (ATM) systems, which Nnamdi Azikiwe International Airports in Nigeria is yet to tap fully into the technological advancement. Typical examples of the technological advancement in the developed countries are the automated check-in kiosks and mobile check-in options which have reduced the time passengers spend in queues, improving the overall flow within airport terminals globally IATA (2019). Similarly, the implementation of advanced baggage handling systems has minimized the incidence of lost luggage, ensuring that passengers' belongings are handled more efficiently ACI (2020).

Passenger experience is a critical aspect of airport operations, influencing customer satisfaction, airport reputation, and overall passenger throughput. The deployment of technology in airports has a profound impact on the passenger journey, from the moment they arrive at the airport to their departure. Technological innovations such as self-service kiosks, mobile applications, and digital way finding systems have empowered passengers to take control of their travel experience, providing them with greater flexibility and convenience SITA (2018).

Del Rio *et al.*, (2016) studies indicated that deploying technological systems such as automated check-in, RFID-assisted baggage handling, e-gates, and biometric border control significantly enhance airport operational efficiency, reduce costs, and improve passenger experience thus enabling airports to compete globally. For instance, applying Six Sigma methods to baggage handling in a Middle East international airport led to reductions of baggage handling time by about 10-19%, improving throughput and cutting delays (Al-Qatawneh, *et al.*, 2025). Similarly, research on automated border control (ABC) e-gates and facial recognition in European/Schengen airports shows that these systems alleviate congestion at immigration, speed up identity verification, and deliver more predictable processing times under rising passenger volumes. Studies from (El Fkharany, 2022), in Egypt during the COVID-19 pandemic demonstrated that biometric technologies reduce traveler touchpoints, accelerate identity verification, and improve acceptance among passengers. In the context of Sub-Saharan Africa, a study at Jomo Kenyatta International Airport in Nairobi showed that adoption of biometric facial recognition, fingerprint recognition, and automated passport control correlates positively with improved security and operational control (Adago, 2021). Technological innovations are not just convenience, but a strategic necessity for meeting rising passenger volumes and expectations.

Nnamdi Azikiwe International Airport (NAIA), located in the capital city of Nigeria, is combined with both domestic and international terminals. As one of the busiest airports in the country, NAIA has undergone significant upgrades to accommodate the increasing demand for air travel and to improve service delivery. The Federal Airports Authority of Nigeria (FAAN) has been at the forefront of implementing technological solutions to enhance airport operations and the passenger experience at NAIA (FAAN, 2021). The international Civil Aviation organization (ICAO) audited the airport and certified it safe and secure for flight operations, with 96 percent score in 2018. Researchers have limited work done on how NAIA has integrated technological advancements into its operations. Understanding the impact of these innovations is crucial for improving service delivery and maintaining competitiveness in the aviation sector (Okeudo *et al.*, 2021).

Research indicates that the adoption of advanced technologies in airport operations can lead to improved efficiency, reduced wait times, and enhanced passenger experiences (Okechukwu, 2021). However, there is limited empirical evidence on how these technologies have impacted operations at NAIA specifically. Although Nnamdi Azikiwe International Airport (NAIA) has adopted several technologies such as self-check-in kiosks, CCTV, baggage-handling systems, and digital displays operational inefficiencies persist, including long queues, delay and mishandling of baggage's at the arrivals, and disruptions in power supply. This reflects a critical gap between technology adoption and effective utilization. While developed airports like Changi, Schiphol, and Heathrow have achieved measurable efficiency gains through integrated systems and process redesign (Tan & Masood, 2021; Miskolczi, 2021). Similarly, Ugo & Chigozie, (2022) found that despite visible infrastructure, passenger satisfaction remains low, while (Nwaogbe *et al.*, 2021) observed performance gaps in the areas of baggage and check-in efficiency how it makes operations seamless. Similarly, Adenigbo,

(2024) noted that security technologies depend on staff culture and compliance, highlighting human and institutional barriers in achieving operational efficiency.

The aim of the study is to examine the effect of technological innovation on airport operations and passenger experience, with a view to enhancing airport operational efficiency and improving passenger experience. The above aim was achieved through the objective: Examined the types of technological innovations implemented at Nnamdi Azikiwe International Airport and analysed the effect of these technological innovations on the efficiency of airport operations and passenger experience. The remainder of the study is structured as follows: Section 2 reviews of relevant literature; Section 3 presents the methodology; Section 4 discusses the findings; Section 5 concludes with implications for policy, management, and future research.

2. Literature Review

Conceptual Review

The conceptual review for this study was anchored on three key concepts; technological innovations, airport operations, and passenger experience.

Technological Innovations

Technological innovation refers to the process of introducing new or significantly improved products, processes, or services to enhance efficiency, productivity, and competitiveness, (Canton, 2021). Contemporary context, technological innovation extends to the integration automation, and data-driven systems that improve organizational efficiency (Schymanietz et al., 2022). The recently adopted technological innovation in the aviation sector promote efficiency, safety, and security in the operating process, and raise passenger satisfaction by better understanding their needs, preferences, and habits (Molchanova, 2022). Similarly, deployment of biometric systems, automated check-in counters, and self-service baggage systems exemplifies process and service innovations that directly influence operational performance and passenger satisfaction (Dsouza, 2024). Technological innovations facilitate deployment of advanced technological innovations provides seamless operational efficiency and enhances passengers travel experience at the Nnamdi Azikiwe International Airport (NAIA).

Airport Operations

Airport operations refer to the coordinated and systematic activities that ensure the safe, secure, and efficient movement of passengers, baggage, and aircraft within airport premises (Zografos et al., 2013). Airport technologies are expected to significantly impact future airport operations, requiring strategic challenges to ensure aviation security, passenger convenience, operational efficacy, and resource efficiency (Rajapaksha & Jayasuriya, 2020). Research shows IoT enhances airport operational efficiency, enhances traveller experience, and generates new revenue through digital technologies like blockchain, biometrics, and cloud computing (Yaqoobi, 2019). However, an evaluation on the terminal airspace system using safety, delay, and predictability metrics, it reveals high air incidences due to faulty equipment and lack of modern technological innovations at the airport for operational efficiency, (Ejem et al., 2020). In line with that, another research focuses on smart airport technologies including RFID tags, self-tagging, smart check-in, and automated baggage systems to demonstrate the potential for automation-driven operational efficiency, passenger delight, and security (Dias, 2024). Automated service data capture, innovative digital passenger services, big data, indoor navigation, and wearable technology in airport ground operations enables seamless operational activities (Kovynyov & Mikut, 2019). Contrary to that study, (Nwagwu & Adeleke, 2022) reveals that Nigeria's international airports primarily use conventional technologies like flight information display systems being the most familiar, while biometric

identification systems are less familiar. In a different opinion, a study indicated that autonomous mobile robots (AMR) were top-ranked technology, in efficiently integrating logistics operations, enhancing productivity, and ensuring high levels of data security and scalability. In addition to AMR, technologies such as the Internet of Things (IoT) and blockchain were identified as pivotal in improving operational processes in air cargo operations (Tadić *et al.*, 2024). Similarly observed by (Olajide & Musa, 2020) that the digital transformation of Nigerian airports as led to enhanced time management and customer satisfaction. Furthermore, the International Air Transport Association (IATA, 2021) highlighted that airports with high digital integration experienced fewer operational disruptions and increased passenger loyalty.

Airport operations conceptualized this study as the mediating factor through which technological innovations impact passenger experience. The assumption is that innovations enhance operational efficiency, and in turn, improve the quality of passenger experience.

Passenger Experience

Passenger experience is defined as the perception, and satisfaction that passengers experience from their interactions with airport staff, and technological innovations throughout their journey (Untaru *et al.*, 2024). A study on service quality (Humza & Hacıoglu, 2023), who suggested that technological preferences of travellers are significantly influenced by biometric technology, personal device usage, customization, and streaming and on-demand entertainment, (Adeniran & Fadeyi, 2019) concluded that there is a very strong relationship between passengers' satisfaction and the service quality. Similarly, a study explored machine learning techniques for improving passenger experience in the aviation industry, including self-service check-in, baggage claims processes, predictive analysis, and mixed reality, paving the way for touchless, seamless operations, (Jiang *et al.* 2023).

Effective communication is critical in the airport environment, where coordination among departments such as security, operations and customer service is essential for seamless operational activities. This corroborate the findings of (Ogunyemi & Alabi, 2020), who investigated the impact of automation and self-service options such as e-check-in kiosks and mobile boarding passes are significantly cutting down on the time passengers spend in queues. This enhances the passenger experience also improves staff productivity by reducing the burden of repetitive tasks. This findings is in line with the work of (Adepoju & Akinwale, 2019), who examined self-service technologies at Murtala Muhammed International Airport, Lagos. They found that digital check-in options led to a 50% reduction in average check-in time and increased passenger satisfaction due to shorter queues and less reliance on manual processes.

Passenger experience conceptualizes this study as the ultimate outcome of technological and operational efficiency within the airport environment. It reflects how passengers perceive and evaluate the quality of services mediated through technological and operational activities.

Conceptual Framework

Conceptual framework showing the relationship between dependent variable, mediating variable and independent variables.

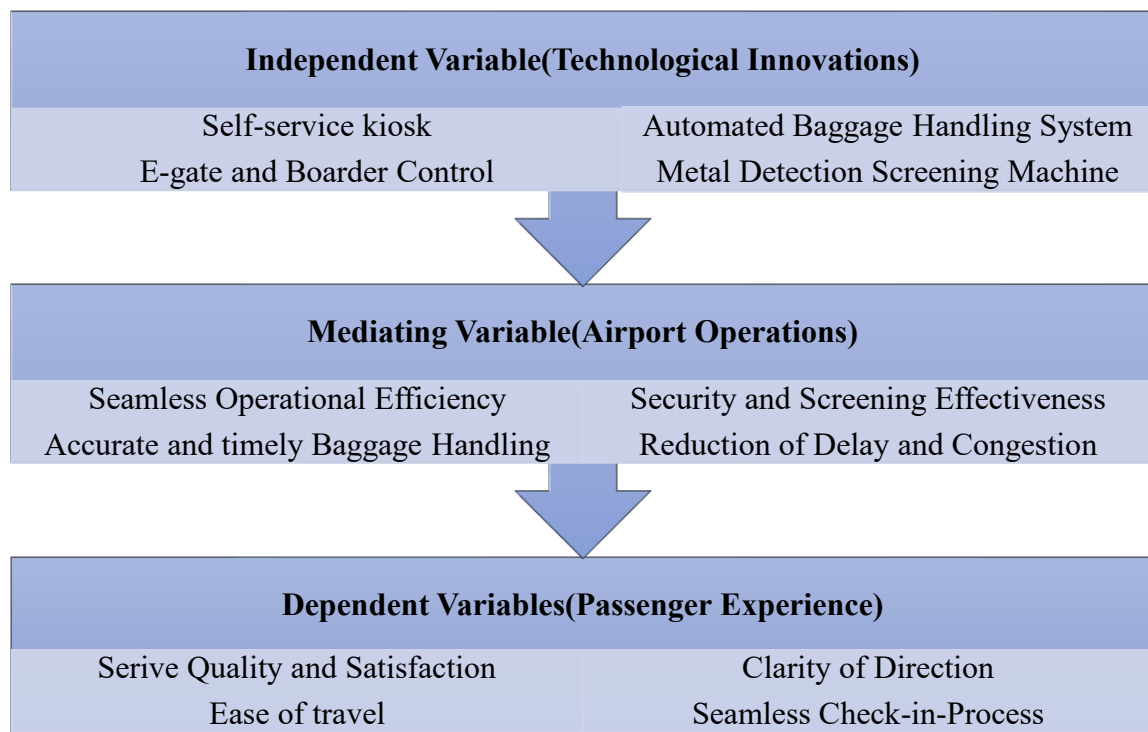


Figure 2.1: Conceptual Framework

Theoretical Review

The unified theory of acceptance and use of technology (UTAUT) is a technology acceptance model formulated by Venkatesh and others in user acceptance of information technology: Toward a unified view. The UTAUT aims to explain user intentions to use an information system and subsequent usage behaviour. The theory holds that there are four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, 4) facilitating conditions.

UTAUT helps explain how and why different stakeholders adopt technology at the airport. By understanding these factors, airport management can improve the introduction of new systems, ensure smooth implementation, and enhance user satisfaction for both staff and passengers. The Unified Theory of Acceptance and Use of Technology (UTAUT) is highly relevant to analyzing the effect of technological innovation on airport operations and passenger experience at Nnamdi Azikiwe International Airport, Abuja.

Empirical Review

This review of the literature concentrates on empirical results from research that utilize different studies to analyse the effect of technologies on airport operation and passengers experience, included are reviews of literature and empirical research from peer-reviewed journal papers on the dependent, mediating and independent variables.

Humza & Hacioglu, (2023), analyzed optimizing passenger experience: A technological preference analysis in Turkish Airports. The study employed purposive sampling with a sample size of 455. Various statistical techniques, such as regression, correlation, and descriptive statistics, was used to analyze data, results show that passenger satisfaction are significantly influenced by biometric technology, personal device use, and streaming and on-demand entertainment. Empirical gap, NAIA, Abuja, in a developing country, where technology is still struggling to be fully adopted passengers are yet to gain optimum satisfaction from the implemented technology.

Ali & Hasan, (2023) conducted a study on IoT-Based Smart Airport Check-In System Via Three-Factor Authentication (3FA), at Kurdistan Region. Iraq. Raspberry Pi 4B hardware was employed to analyze a smart airport check-in system using the Internet of Things, two cameras for scanning processing BCBP data, and a fingerprint reader for biometric authentication. The system is monitored using the KAA platform and ensures smooth, secure, and reliable check-ins. Tested on 100 travelers, the system significantly reduces check-in time compared to traditional methods, resulting in faster and more efficient check-ins. Empirical gap, NAIA lagging behind in adopting a similar technological advancement which can aid operational efficiency and enhance passenger's experience.

Ogbonna *et al.*, (2023) examined the sociological perspective on the impact of technology on airport management in Nigeria, the paper used a qualitative descriptive technique, tabulation, and graphic illustrations in its analysis. Findings indicated that technology has both positive and negative impacts on Nigeria's airport management, it helps airport personnel workflow convenience while also portending future job loss. Empirical gap, NAIA staff may feel threatened portending future job loss regardless of how technology enhances their jobs.

Bassey *et al.* (2024), examined Factors influencing adoption of service robots in Nigerian Airports. The study adopted cross-sectional survey design, and data were obtained from 241 airport staff using structured questionnaires. Hypothesized relationships were tested using multiple regression analysis. study suggested that, the majority of airport operators are rapidly using robotics into their service delivery infrastructure due to the requirement to increase prompt customer service delivery. In summary, empirical review of existing studies reveals that researchers have linked technological innovation with airport operations and passenger experience, few have examined the mediating role of airport operations within this context. Moreover, most previous studies were conducted in developed countries with limited empirical evidence from the developing countries. This creates a contextual gap that the present study addresses by examining how technological innovation affects both operational efficiency and passenger experience within the airport at Nnamdi Azikiwe International Airport, Abuja.

3. Methodology

Nnamdi Azikiwe International Airport is an international airport Abuja is located in Abuja the Federal Capital Territory of Nigeria, west Africa. study was conducted in the Federal Capital Territory (FCT) of Nigeria that covers a landmass of 7315km^2 latitude $8^{\circ}25'$ and $9^{\circ}20'$ N of the Equator and longitude $6^{\circ}45'$ and $7^{\circ}39'$ E of Greenwich Meridian With a total population of 3,840,000 (NPC, 2023), it lies in the Guinean forest-savannah mosaic zone of the West African sub-region. In Abuja, the wet season is warm, oppressive, and overcast, and the dry season is hot and partly cloudy. Over the course of the year, the temperature typically varies from 60°F to 93°F and is rarely below 54°F or above 100°F . It has four terminals, international wing, domestic wing, cargo wing, and General Aviation Terminal (GAT). A single runway of 3.6km serves all four terminals, respectively.

The sample size of the study was calculated with the Slovin's E 1960 formula of 95% confidence level, $100\% - 95\% = 5\%$ margin of error. The sample size for the study has been calculated as in total from both the passengers and the airport staff, six groups of respondents distributed using Slovin strata method among the six categories of respondents, which includes the domestic and international passengers in the category of passengers with four organizations in the categories of airport staff, namely; FAAN, SACHOL, NACHO and PATHFINDER respectively. The sample size of the passengers and the airport staff was calculated separately for clearer understanding and to get detailed insights. Therefore, both categories have 400

sample size. A total of 376 questionnaires from respondent was correctly answered from staff while a total number of 380 questionnaires was correctly filled by passengers from both wings. Stratified random sampling technique was employed which include four strata groups from airport operational staff and two strata groups international and domestic wings passengers.

Data was collected through a structured questionnaire from 756 respondents which includes the airport staff and passenger, descriptive, correlation and regression analysis was used to analyzed data collected with the aid of SPSS statistical software.

4. Results and Discussion

This section analyses the types, availability, and functionality of technological innovations implemented at Nnamdi Azikwe International airport, Abuja and to analyse these technological innovations on the efficiency of airport operations and passenger satisfaction.

Table 4.1. Instrument Validation and Reliability Analysis

S/N	Variable Name	Cronbach Alpha	No of Items
1.	Availability and functionality of TI	.906	24
2.	Effect of TI on Airport Operations	.783	10
3.	Passenger experience and satisfaction	.757	10
4.	Security and Safety	.962	10

Source: Author's Computation, 2025.

Table 4.1 shows the availability and functionality of Technological Innovation with a Cronbach's Alpha of 0.906, which is excellent. This suggests that the 24 items under this construct are highly consistent and reliable for measuring the concept, Effect of technological innovation on Airport Operations as well as Cronbach's Alpha of 0.783, which is as well excellent. Passenger experience and satisfaction with a Cronbach's Alpha of 0.757, Cronbach's Alpha with above 0.9 indicates excellent internal consistency (George & Mallery, 2024). the internal consistency is acceptable for reliability analysis. The table above shows there is a stable internal consistency among the variables to test for further analysis.

Table 4.2. Types, Availability and Functionality of Technological Equipment at NAIA

Types, Availability and Functionality of Technological Equipment	U	APF	AFF	M	STD D
Self-Service Check-In Kiosks	81(20.3%)	92 (23.0%)	229 (59.3%)	2.2 6	1.379
E-Gates / Automated Border Control	116 (29.0%)	50 (12.5%)	234 (58.5%)	2.9 8	1.332
Mobile Check-In	102 (25.5%)	75 (18.8%)	223 (55.8%)	2.9 8	1.332
Biometric Verification Systems	90 (22.5%)	81 (20.3%)	229 (59.3%)	2.9 8	1.332
Baggage Drop Stations	81 (20.3%)	92 (23.0%)	227 (56.8%)	3.1 5	1.178

Flight Information Display Systems (FIDS)	87 (21.8%)	82 (20.5%)	231 (57.8%)	3.1 5	1.194
Wayfinding Technologies / Interactive Maps	82 (20.5%)	95 (23.8%)	223 (55.8%)	3.1 3	1.177
Free High-Speed Wi-Fi	85 (21.3%)	83 (20.8%)	231 (57.8%)	3.1 5	1.197
CCTV Surveillance Systems	90 (22.5%)	87 (21.8%)	223 (55.8%)	3.0 9	1.217
Automated Security Screening Equipment	92 (23.0%)	79 (19.8%)	229 (57.3%)	3.1 1	1.215
Explosive and Metal Detection Systems	83 (20.8%)	95 (23.8%)	222 (55.5%)	3.1 2	1.178
Access Control Systems	90 (22.5%)	81 (20.3%)	229 (57.3%)	3.1 2	1.205
Emergency Alert Systems	81 (20.3%)	93 (23.3%)	226 (56.5%)	3.1 4	1.171
Automated Fire Detection and Suppression Systems	89 (22.3%)	80 (20.0%)	231 (57.8%)	3.1 3	1.202
RFID Baggage Tracking	84 (21.0%)	93 (23.3%)	223 (55.8%)	3.1 2	1.184
Automated Conveyor and Sorting Systems	90 (22.5%)	81 (20.3%)	229 (57.3%)	3.1 2	1.205
Baggage Reconciliation Systems	102 (25.5%)	75 (18.8%)	223 (55.8%)	3.0 5	1.252
Chatbots and Virtual Assistants	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304
Digital Feedback and Complaint Portals	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304
Multilingual Digital Displays and Audio Systems	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304
Smart Retail and Digital Payment Systems	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304
Automated Parking Systems	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304
Real-Time Public Transport Integration	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304
Ride-Hailing Integration Points	395 (98.8%)	2 (0.5%)	3 (0.8%)	1.0 3	.304

Source: Author's Computation, 2025.

Table 4.2 presents the availability and functionality of 24 technological equipment examined at Nnamdi Azikiwe International Airport (NAIA). The results were examined by the operational staff only, and findings were categorized into three sections: Unavailable (U), Available but Partially Functional (APF), and Available and Fully Functional (AFF). Out of the 24 technological equipment examined 16 was available while 8 of the equipment is unavailable, data then revealed several core technologies such as baggage drop stations, flight information display systems (FIDS), high-speed Wi-Fi, Metal detection screening machines and emergency alert systems with a mean score above of 3.10, indicated evenly deployed and perceived to function well. Then, technologies like self-service check-in kiosks ($M = 2.26$, $SD = 1.379$) are rated as only partially functional, suggesting a gap between availability and effective operational use of the equipment. Notably, more advanced digital systems chatbots, digital feedback portals, automated parking all has a mean score with 1.03, indicated they are virtually unavailable at the airport. This aligns with findings on airports adoption of digital

systems but struggle with post-adoption usability, maintenance, and integration (Wongyai *et al.*, 2024). Moreover, research on airport digital transformation emphasizes that organizational readiness and infrastructure significantly influence whether technology delivers anticipated benefits (Halpern *et al.*, 2021). Consequently, the results imply that NAIA's technological assets are unevenly functional, and many newer systems remain underutilized.

Automated Security Screening Equipment, Self-Service Check-In Kiosks, Mobile Check-In, Biometric Verification Systems, Explosive and Metal Detection Systems, Emergency Alert Systems, and Access Control Systems, Flight Information Display Systems (FIDS) and Wayfinding Technologies, each fall in the categories of AFF and ranges between (55-57%). This suggests strong implementation and user confidence in self-service and customer interface technologies at NAIA which aids seamless airport efficiency and passenger processing speed. Similarly, Baggage Drop Stations Automated Conveyor Systems also reflected that while automation is in place, maintenance and functionality still pose challenges. Efficient baggage handling is vital for operational efficiency and customer satisfaction (Ojo & Edeh 2023). Functionality of FIDS aligns with the findings of (Adeyemi & Gbadamosi, 2020) who observed that real-time information systems significantly improve passenger satisfaction and reduce anxiety caused by flight uncertainties in Nigerian airports. CCTV Surveillance Systems was the highest of all technologies surveyed. This suggests that the airport prioritises comprehensive surveillance coverage, which is essential for maintaining safety, monitoring passenger movement and responding swiftly to incidents. The high performance of these systems aligns with global standards in aviation security and enhances both passenger trust and institutional credibility. This aligns with the study of Okeke & Okechukwu, (2018), which stressed that security infrastructure is a key determinant of airport efficiency and traveller confidence in Nigeria. Their research found that well-implemented surveillance systems enhance safety, deter crime, and facilitate quicker incident response.

On the other hand, Chatbots and Virtual Assistants, Digital Feedback Systems, and Smart Retail and Digital Payment Systems, Multilingual Digital Displays, Automated Parking Systems, and Real-Time Transport Integration systems are (98%) unavailable at NAIA. Overall, the data reveals a moderate adoption of modern technologies at NAIA, with strong availability of smart technologies, further enhancement in critical operational systems and security infrastructure is still needed. However, the airport needs to prioritize maintenance and upgrades of foundational systems such as baggage handling, emergency alerts, and security detection to ensure seamless functionality and enhance overall service delivery.

Table 4.3 Correlation between Airport operations, Passenger perception and satisfaction on effect of Technological Innovation.

Variables	Technological innovations	Passenger, Perception and Satisfaction	Security and Safety
Technological innovation	1		
	376		
Passenger, Perception and Satisfaction	.015	1	
	.776		
	376	380	
Security and Safety	.002	.893**	1
	.972	.000	
	380	380	380

Source: Author's Computation, 2025.

Results show that technological innovation had a very weak and negative correlation with passenger perception and satisfaction ($r = .015$, $p = .776$) and with security and safety ($r = .002$, $p = .972$). These correlations are not statistically significant ($p > .05$), suggesting that the availability and functionality of technological innovations have not directly translated into improved passenger satisfaction and perceived security at the airport.

On the other hand, there was a strong positive and statistically significant correlation between passenger perception and satisfaction and security and safety ($r = .893$, $p < .001$). This indicates that higher levels of perceived security and safety are strongly associated with greater passenger satisfaction.

In summary, these findings suggest a technology performance paradox: despite the presence of technological innovations, their effectiveness in enhancing operational efficiency and passenger satisfaction remains limited. This aligns with recent research emphasizing that mere adoption of airport technology does not guarantee improved service outcomes unless supported by consistent functionality, staff training, and user awareness.

Variables	Technological Innovation	Airport Operations
Technological Innovation	1	
	376	
Airport Operations	-.051	1
	.322	
	376	376

Source: Author's Computation, 2025.

The result shows a weak negative correlation between technological innovation and airport operations ($r = -.051$, $p = .322$). This correlation is not statistically significant ($p > .05$), indicating that improvements in technological innovation have not translated into measurable gains in airport operational efficiency.

This implies that, although NAIA has implemented various technological innovations such as biometric verification systems, e-gates, and automated check-in kiosks, these technologies are not yet being fully utilized to enhance daily operational activities. The weak negative association suggests that operational performance may depend more on the effective use and maintenance of technology rather than its mere availability. This finding supports previous research by Nwasonuba & Okeudo, (2022), who emphasized that Nigerian airports face persistent operational inefficiencies due to inconsistent technological deployment, poor maintenance culture, and inadequate training of airport personnel. And lastly, a study which aligns with the operational factors that are often not strong predictors of satisfaction unless they enhance perceived service quality and user experience such as staff responsiveness, information clarity, facility comfort, and self-service technologies (Bogicevic et al., 2017).

5. Conclusion

The objective of this study is to: (1) Examine the types of technological innovations implemented at Nnamdi Azikiwe International Airport. (2) Analyse the effect of these technological innovations on the efficiency of airport operations and passenger experience. The method of data analysis was through descriptive, correlation and regression analysis. Results on passengers show that technological innovation had a weak correlation with passenger perception and satisfaction was based on the holistic evaluation of the airport ($r =$

.015, $p = .776$) and with security and safety ($r = .002$, $p = .972$). These correlations are not statistically significant ($p > .05$), suggesting that the availability and functionality of technological innovations have not directly translated into improved passenger satisfaction and perceived security at the airport. On the other hand, there was a strong positive and statistically significant correlation between passenger perception and satisfaction and security and safety ($r = .893$, $p < .001$). This indicates that higher levels of perceived security and safety are strongly associated with greater passenger satisfaction. Result on operational staff with ($r = .051$, $p = .322$) indicates a weak and statistically insignificant negative relationship between technological innovation and airport operations at Nnamdi Azikiwe International Airport (NAIA) was based also on the overall evaluation of the both wings, there are more unevenly implemented technological innovations at the terminals. This means, introduction technological innovations have not improved the overall operational performance at the NAIA. Linking the correlation result to the theoretical model for this study Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by (Venkatesh *et al*, 2000), result implies that the adoption and effective utilization of technological innovations among airport staff may be influenced by the core determinants of the model performance expectancy, effort expectancy, social influence, and facilitating conditions.

Summarily, the insignificant correlation aligns with the UTAUT's emphasis that technology acceptance does not automatically translate into effective use unless end-users find the system useful, easy to use, and adequately supported by organizational conditions. This finding also aligns with the argument by Kim & Lee, (2020) that in developing economies, technological investments in airports often yield limited operational outcomes when human and institutional factors are neglected.

Recommendations and Future Research

The findings indicate that technological innovation has a weak and statistically insignificant relationship with airport operations. This suggests that while new technologies are being introduced, they are not yet be fully integrated into the operational processes and effective utilized by staff. It is therefore recommended that the airport authority focus on improving user engagement and practical application of technology within daily operations. Emphasis should be placed on staff training, adequate system maintenance, and creating an enabling environment that supports technology. Management should also strengthen internal communication and support mechanisms to ensure that technological systems are not only available but actively contribute to operational efficiency.

For future research, attention should be directed toward exploring factors that influence the acceptance and use of technology among airport staff and passengers. Studies could also investigate how organizational culture, user perception, and infrastructural readiness affect the success of technological innovations in improving efficiency and service delivery. Expanding the study across multiple airports would provide a broader understanding of the variations in technological innovations and airport operations.

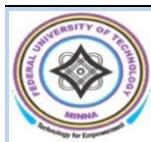
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Effects of Stakeholder Involvement in Sustainable Road Infrastructural Projects in Minna, Niger State, Nigeria

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Abstract

Over the years, it has been observed that persistent issues, such as poor maintenance, weak project delivery, and limited community participation in infrastructure management, have been prevalent. This study assessed the effects of stakeholder involvement on sustainable road infrastructure development in Minna, Niger State, Nigeria. Using a descriptive survey design, data were collected from 365 respondents, comprising government agencies, contractors, engineers, community members, and civil society organisations. Data were analysed using mean scores and the Relative Importance Index (RII). The results revealed that stakeholder engagement significantly improves the durability and quality of roads (mean = 3.11; RII = 0.622), enhances design quality through user feedback (mean = 3.10; RII = 0.620), and increases social acceptability of projects (mean = 3.09; RII = 0.618). Conversely, aspects related to environmental sustainability ranked lower, with eco-friendly construction practices (mean = 2.95; RII = 0.590) and compliance with environmental laws (mean = 3.03; RII = 0.606) receiving less emphasis. The study concludes that while stakeholder participation strengthens the technical and social dimensions of sustainability, environmental inclusion remains inadequate. Consequently, three key recommendations were made: Institutionalise inclusive stakeholder engagement frameworks to improve transparency and reduce conflicts; Strengthen environmental stakeholder participation to enhance compliance and promote green construction practices; and Enhance capacity-building and feedback mechanisms to ensure accountability and continuous stakeholder collaboration. Overall, the findings underscore that balanced stakeholder engagement across technical, social, and environmental dimensions is critical for achieving long-term sustainable road infrastructure in Niger State and similar developing contexts.

Keywords: Stakeholder Involvement, Sustainable Infrastructure, Road Projects, Project Management, Minna, Nigeria.

1.0 Introduction

Road infrastructure is a critical enabler of economic growth and social development, facilitating the movement of goods and people, connecting communities, and providing access to essential services (World Bank, 2021). In Nigeria, road transport remains the dominant mode of transportation, accounting for over 90% of inland freight and passenger movement. Consequently, developing and maintaining a robust and sustainable road network is paramount to the nation's progress. However, road infrastructure developers must balance their pursuit of development with sustainability principles, ensuring economic viability, social equity, and environmental protection (Ugbenna, 2022). Sustainable road infrastructure is designed, constructed, and maintained in a manner that is both economically efficient and environmentally resilient, while also being socially inclusive.

Despite its importance, the Nigerian construction industry, particularly the road sub-sector, faces significant challenges that undermine project success and sustainability. These include

inadequate funding, corruption, political influence, and poor project management practices (Adejoh and Shaibu, 2020). A critical, yet often overlooked, aspect of these challenges is the management of project stakeholders. Stakeholders are individuals, groups, or organisations that can affect or are affected by a project's activities and outcomes. They include government agencies, contractors, consultants, community members, road users, and civil society organisations.

Effective stakeholder involvement is globally recognised as a key driver of project performance, ensuring alignment of objectives, effective communication, and conflict resolution (Ogunlana and Agyekum, 2023). When stakeholders are actively and appropriately engaged, it can lead to improved project design, increased ownership and acceptance, reduced risks, and enhanced long-term sustainability. On the contrary, poor stakeholder engagement often results in conflicts, project delays, cost escalations, and infrastructure that fails to meet the community's actual needs (Akwei and Damoah, 2017).

This study examines the impact of stakeholder involvement on sustainable road infrastructure projects in Minna, Niger State, Nigeria. Minna, the capital of Niger State, is a growing urban centre that grapples with significant road infrastructure deficits. Studies have highlighted the deplorable condition of many roads in Minna, citing challenges such as inadequate funding, poor maintenance culture, and the absence of robust project management strategies (Bolanle and Olorunfemi, 2019). Furthermore, the deterioration of many roads in Minna, marked by potholes, cracks, and ineffective drainage, reflects deep-rooted issues in project execution and management. While funding is a major issue, the extent to which stakeholder dynamics influence the sustainability of road projects in this specific context remains largely unexplored. Most existing studies on stakeholder management in Nigeria focus on national-level or metropolitan contexts, such as Lagos and Abuja, leaving medium-sized cities like Minna underexplored. Given Minna's distinct social, political, and cultural characteristics, a localised study is necessary to understand how stakeholder engagement shapes project outcomes.

Although inadequate funding is often blamed for the poor performance of NIGROMA, evidence shows that project failures also stem from conflicts, weak community participation, and misalignment between project goals and stakeholder interests (Adams, 2024). Current literature also tends to evaluate stakeholder participation through traditional measures of project success, such as cost and time efficiency, without emphasising sustainability (Abwolo et al., 2023; Bello & Tijani, 2022; Mwangi et al., 2021). A lack of empirical work remains in linking stakeholder involvement to the environmental, social, and economic durability of road infrastructure (Johnson & Lee, 2018). This gap underscores the need to examine how inclusive stakeholder processes contribute to the long-term sustainability of projects. Consequently, this study provides an in-depth, evidence-based analysis of stakeholder involvement and its influence on sustainable road infrastructure development in Minna, Niger State. This research, therefore, seeks to bridge this gap by examining the effects of stakeholder involvement on sustainable road infrastructure projects in Minna.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Concept of Stakeholder Involvement

Stakeholder involvement refers to the deliberate and organised engagement of individuals, groups, or institutions that influence or are impacted by a project throughout its various stages. Drawing from Freeman's (1984) stakeholder theory, these actors must have their interests acknowledged and incorporated into project decisions to achieve successful outcomes. In road

development, stakeholders range from government ministries and project managers to engineers, contractors, community residents, civil society organisations, and end users. Their engagement extends beyond basic consultation to include sharing information, giving feedback, participating in decision-making, and collaborating on project planning, implementation, monitoring, and maintenance. In contexts with weaker governance systems, such as many developing regions, meaningful involvement is critical for reducing conflict, promoting accountability, and ensuring projects align with community needs.

2.1.2 Concept of Sustainable Road Infrastructure

Sustainable road infrastructure refers to road projects that are conceived, built, and managed in a way that balances economic practicality, social benefits, and environmental preservation. This concept reflects the global sustainability model that emphasises efficient use of resources, long-term cost savings, equitable access, user safety, and environmental responsibility. Sustainable roads are designed to withstand climate variability, reduce emissions, encourage the use of environmentally friendly materials, and comply with environmental regulations (Ugbenna, 2022). However, in Nigeria, environmental considerations often receive inadequate attention due to weak enforcement mechanisms, limited environmental awareness, and budget-driven decision-making. Achieving sustainability in road projects, therefore, requires stronger policy support, inter-agency collaboration, and active engagement of all relevant stakeholders.

2.1.3 Stakeholder Involvement and Sustainable Road Infrastructure: Conceptual Linkages

The relationship between stakeholder participation and sustainability in road projects is multifaceted. Stakeholders contribute to technical sustainability by providing local knowledge, improving the accuracy of design decisions, and reducing rework through collaborative planning. Their involvement also enhances social sustainability by addressing community mobility needs, minimising disputes, and fostering a sense of ownership that encourages proper use and maintenance of road facilities. Environmental sustainability is further supported when environmental experts and advocacy groups participate, promoting compliance with regulations and the adoption of eco-friendly practices, although this dimension remains comparatively weak in many Nigerian road projects. Stakeholder engagement also improves governance by boosting transparency and helps prevent conflict by addressing concerns early in the project cycle.

2.1.4 Dimensions of Stakeholder Involvement in Road Infrastructure Projects

Stakeholder involvement manifests through several key dimensions: information dissemination, consultation, participation in decision-making, collaboration, and empowerment. Information sharing fosters trust and prepares communities for the impacts of projects, while consultation enables stakeholders to express their concerns during project scoping, design, environmental assessment, and monitoring. Involvement in decision-making gives stakeholders the opportunity to influence project choices, such as materials, design options, and implementation methods, thereby improving long-term sustainability. Collaboration strengthens partnerships between government agencies, communities, and NGOs, while empowerment through training, capacity-building, and access to project data enables stakeholders to contribute effectively, particularly in maintenance and monitoring. These dimensions collectively influence economic, social, and environmental sustainability; however, challenges such as political interference, low awareness, weak institutional support, and bureaucratic delays continue to limit effective engagement in Nigeria.

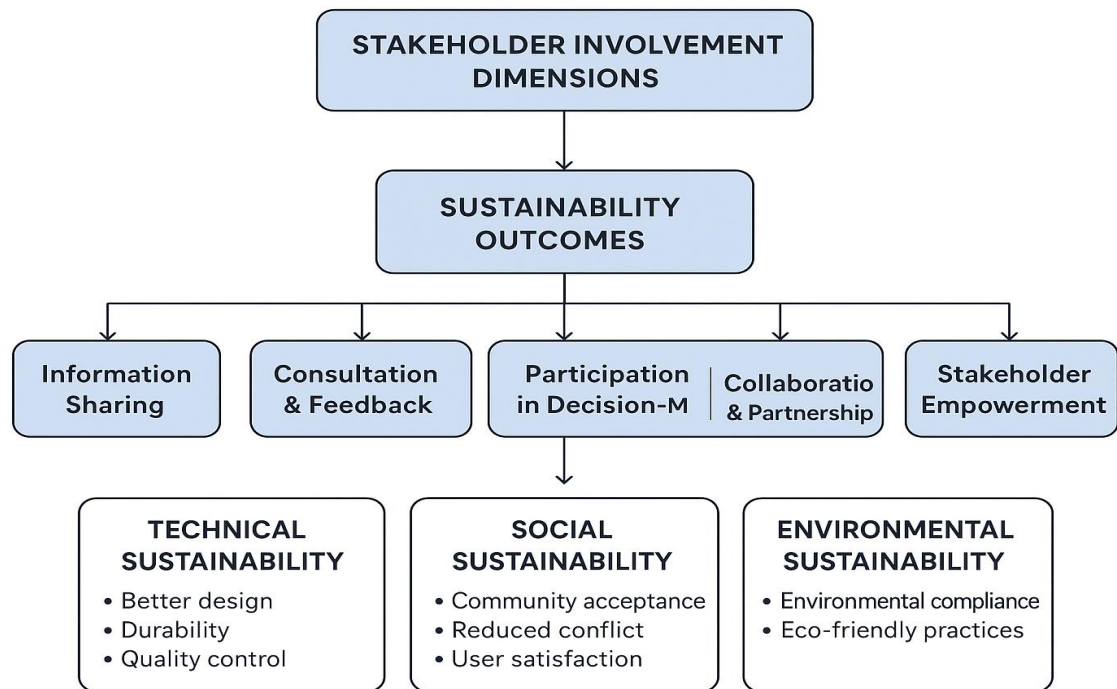


Figure 1: Stakeholder Involvement and Sustainability Outcomes Framework
Source: Authors' Conception (2025)

Figure 1 illustrates how various aspects of stakeholder engagement collectively contribute to achieving sustainable outcomes in road infrastructure development. At the top of the framework is the concept of Stakeholder Involvement Dimensions, which captures the various ways stakeholder groups, including local residents, engineers, contractors, NGOs, and government agencies, participate in planning and executing road projects. Their level and quality of engagement directly influence the Sustainability Outcomes, emphasising that long-term project success depends heavily on the extent of stakeholder participation.

The framework identifies five key elements of stakeholder involvement: Information Sharing, Consultation and Feedback, Participation in Decision-Making, Collaboration and Partnership, and Stakeholder Empowerment. Each plays a distinct role in supporting the delivery of the project. Information Sharing promotes openness and builds confidence among stakeholders, while Consultation and Feedback help uncover community priorities and emerging issues. Participation in Decision-Making encourages local ownership and reduces opposition to project activities. Collaboration and Partnership improve coordination between project actors and affected communities, and Stakeholder Empowerment enables individuals and groups to engage more effectively throughout the project lifecycle.

Together, these dimensions contribute to three main forms of sustainability. Technical sustainability stems from improved project design, enhanced durability, and strengthened quality assurance, made possible through shared expertise and collaborative planning. Social sustainability is achieved when communities support the project, disputes are minimised, and users report higher satisfaction benefits linked to active participation and regular feedback. Environmental sustainability is strengthened when stakeholder engagement promotes adherence to environmental regulations and encourages the use of environmentally responsible practices.

In essence, the diagram underscores that sustainable road infrastructure depends not only on technical proficiency but also on robust, inclusive, and transparent stakeholder engagement. It highlights that when stakeholders are well-informed, involved, empowered, and included in decision-making, road projects stand a greater chance of being effective, widely accepted, and sustainable in the long run.

2.2 Theoretical Review

2.2.1 Stakeholder Theory

Developed by Freeman (1984), Stakeholder Theory posits that organisations, including project-based ones, should be managed to benefit all their stakeholders, not just shareholders or project sponsors. The theory posits that balancing the diverse and often conflicting interests of all stakeholders is essential for achieving long-term success and creating value. In the context of public infrastructure projects, this theory presents a moral and strategic imperative for project managers and government agencies to proactively identify, engage with, and address the concerns of various stakeholders, including local communities, suppliers, and government bodies. Applying this theory helps understand that project success is not merely technical but deeply embedded in the social and political relationships surrounding it.

2.2.2 Arnstein's Ladder of Citizen Participation

Arnstein's (1969) "Ladder of Citizen Participation" provides a robust framework for analysing the level of stakeholder involvement in projects. The ladder features eight rungs, categorised into three levels:

- i. Non-participation (Manipulation, Therapy): Where the real objective is to "educate" or "cure" participants, not to enable their participation.
- ii. Degrees of Tokenism (Informing, Consultation, Placation): Where stakeholders are heard, but there is no guarantee that their views will be considered, and power holders retain the right to decide.
- ii. Degrees of Citizen Power (Partnership, Delegated Power, Citizen Control): Where stakeholders have genuine influence and share decision-making responsibilities.

This framework is particularly relevant for this study as it critically assesses the *quality* and *depth* of stakeholder involvement in Minna's road projects, moving beyond a simple "involved vs. not involved" dichotomy. It will help in evaluating whether current engagement practices are merely tokenistic or genuinely empowering.

2.3 Empirical Review

Eskerod and Huemann (2023) study focused on how early identification of stakeholders and the use of participatory decision-making practices affect the efficiency and timely delivery of construction projects in North-Central Nigeria. The study adopted a mixed-method strategy that combined structured questionnaires targeted at project managers and consultants with interviews and reviews of project documentation. Results indicated that projects that properly identified their stakeholders and incorporated them into decision-making processes experienced fewer delays, reduced conflict, and smoother coordination. In the study it was suggested that project agencies should adopt formal participatory planning systems and to provide training on stakeholder mapping to strengthen performance and long-term project sustainability.

Oloku and Sule (2019) study explored the contribution of stakeholder engagement to addressing socio-economic challenges and improving governance and service delivery across Nigeria. A descriptive survey approach was employed, utilising questionnaires administered to government officials, civil society groups, and community representatives. The study demonstrated that broad-based participation fosters transparency, builds trust within communities, and promotes sustainable development through enhanced accountability. The study recommended enhanced communication structures, deeper grassroots involvement in decision-making, and the implementation of community-driven monitoring mechanisms to improve public service outcomes.

Adejoh and Shaibu (2020) research examined the obstacles that restrict meaningful stakeholder involvement in Nigeria's infrastructure development projects. A qualitative design was utilised, with data collected from key informant interviews and policy document analysis. The study identified communication challenges, political interference, the influence of powerful interest groups, and bureaucratic inefficiencies as major impediments to effective engagement. The study recommended enhancing transparency tools, limiting political intrusion in project processes, and employing communication mechanisms that ensure timely and accessible information sharing.

Across the reviewed studies, a clear consensus emerges that engaging stakeholders significantly improves project delivery, promotes accountability, and supports sustainable development. However, recurring barriers, such as political interference, limited communication, and the exclusion of grassroots actors, continue to weaken participation in infrastructure projects. Although existing research in Minna highlights infrastructural decline and stakeholder-related issues, none of these studies directly examines how specific forms of stakeholder involvement relate to technical, social, and environmental sustainability indicators. This study, therefore, addresses this gap by providing empirical evidence on how different dimensions of stakeholder involvement influence the long-term sustainability of road infrastructure in Minna.

3.0 Methodology

This study employed a descriptive survey design to assess the effects of stakeholder involvement in sustainable road infrastructure projects in Minna, Niger State, Nigeria. The study focuses on stakeholders involved in road infrastructure projects in Minna, Niger State, encompassing government agencies, construction firms, community representatives, environmental groups, and project workers. A structured questionnaire was designed to capture key aspects of stakeholder engagement, including the identification of key stakeholders in road infrastructure projects, current stakeholder engagement strategies employed in the industry, the perceived impact of stakeholder engagement on sustainability outcomes, and challenges and barriers to effective stakeholder participation. Cochran's (1977) sample size formula was applied to determine the minimum required sample size for the study. Cochran's formula estimates the sample size for a proportion when the total population (N) is large or unknown.

It is given as:

$$n_0 = \frac{Z^2 pq}{e^2} \quad \text{----- (1)}$$

Where:

n_0 = Required sample size for an infinite population

Z = Z-score (1.96 for a 95% confidence level)

p = Estimated proportion of the population (assumed to be 0.5 when unknown)

e = Margin of error (set at 0.05 for 95% confidence)

Substituting these values into the formula:

$$n_0 = \frac{(1.96)^2 \times (0.5) \times (0.5)}{(0.05)^2}$$

$$n_0 = \frac{3.8416 \times 0.25}{0.0025}$$

$$n_0 = \frac{0.9604}{0.0025} = 384$$

Thus, a minimum of 384 respondents is required for a large or unknown population to ensure statistical significance at a 95% confidence level.

4. Results and Discussion

4.1 Demographic Characteristics of Respondents

Table 1 displays important demographic variables including age, marital status, income, education, occupation, experience, and gender of the participants. These factors provide a detailed overview of the respondents' backgrounds, enabling an understanding of how demographic variation may impact the study's results. The table lists both the frequency counts and percentages for each subgroup, making it easier to interpret the composition of the sample and draw comparisons across categories. This structured presentation supports clearer insight into the characteristics of the study population.

Table 1: Demographic Profiles of Respondents

Demographic Factor	Category	Frequency (n)	Percentage (%)
Age Group	18–30 years	73	20
	31–40 years	75	20
	41–50 years	90	24
	51 years and above	127	34
Marital Status	Divorced	69	18
	Married	73	20
	Separated	81	22
	Single	68	18
	Widowed	74	20
Income	Below #70,000	50	13
	#70,000 - #100,000	64	17
	#101,000 - #130,000	66	18
	#131,000 - #160,000	63	17
	#161,000 - #190,000	61	16
	Above #191,000	61	16
Educational Level	HND/Bachelor's Degree	86	23
	Master's Degree and above	98	26.8
	OND/NCE	103	28
	SSCE	78	21.4

Occupation	Community member/resident	79	21.6
	Contractor/Engineer	85	23.3
	Government official	64	17.5
	NGO/Development partner	68	18.6
	Other	69	18.9
Gender	Female	75	20.5
	Male	290	79.5
Years of Experience in infrastructural related activities	Less than 2 years	104	28.5
	2 – 5 years	89	24.4
	6 – 10 years	84	23
	More than 10 years	88	24

Source: Field Survey, 2025

The demographic data in Table 1 highlights a predominantly experienced group of stakeholders with the largest proportion aged 51 years and above, suggesting that their insights on road infrastructure sustainability are grounded in extensive practical experience. The relatively balanced distribution of marital status indicates participants come from a variety of household situations that could impact their priorities and perspectives. Income levels are varied, capturing views from multiple economic strata. The income of stakeholders was a necessary demographic factor in this study to assess how economic status influences stakeholders' perspectives, participation levels, and capacity to engage effectively in road infrastructure projects. Recognising that income disparities may affect social inclusion, resource access, and ultimately project sustainability and acceptance. This understanding enables the design of targeted engagement strategies that ensure equitable involvement and address socio-economic barriers in infrastructure development.

The educational qualifications range from technical diplomas (OND/NCE) to advanced degrees, reflecting a mix of technical expertise and community-based knowledge vital for tackling sustainability issues. The occupational diversity, ranging from community members to government officials and contractors, ensures that multiple stakeholder viewpoints, including those directly involved in infrastructure development and those impacted by it, are represented. Additionally, a spread of years of experience and gender further enriches this stakeholder representation. This demographic profile confirms that the study intentionally incorporates a wide range of stakeholders, which is critical for fostering inclusive engagement, resolving conflicts, aligning project goals, and ultimately supporting the environmental, social, and economic sustainability of road infrastructure projects.

Professionally, the study effectively captured a balanced range of stakeholders, with contractors and engineers forming the largest group (23.3%), closely followed by community members (21.6%), and significant representation from government officials, NGOs, and other relevant parties. The distribution of years of experience was fairly even, encompassing new entrants and highly seasoned professionals. However, a notable imbalance was observed in gender, with males constituting a substantial majority (79.5%), a finding attributed to the prevalent male dominance within the construction and infrastructure sectors in Niger State. The demographic composition highlights a broad and diverse range of perspectives, which are critical for understanding stakeholder involvement in sustainable road infrastructure projects.

The demographic structure implies that while stakeholder engagement in Minna's road sector is diverse and inclusive in many respects, critical areas, especially gender balance and

stakeholder capacity building, require policy attention to achieve truly sustainable and participatory infrastructure development.

4.2 The Impact of stakeholder engagement on project planning, design, implementation, and maintenance decisions.

Table 4.2 highlights the respondents' views on the impact of stakeholder engagement across different stages of road infrastructure projects. It details statistical measures, including frequencies, means, standard deviations, ranks, and Relative Importance Indices (RII) for statements related to stakeholder involvement during planning, design, implementation, maintenance, and overall accountability. This data highlights the crucial role that stakeholder participation plays in enhancing transparency, fostering collaboration, reducing conflicts, and improving accountability, all of which are vital for the successful delivery and sustainability of road infrastructure projects.

Table 2: Impacts of Stakeholder Engagement

	Description	Frequency	Mean	Std. D	Rank	RII
1.	Stakeholders are adequately involved during the planning stage of road projects.	365	2.98	1.435	4	0.596
2.	Engagement of stakeholders improves the design quality of road infrastructure.	365	2.98	1.423	4	0.596
3.	Stakeholder inputs are considered during project implementation.	365	2.96	1.406	6	0.592
4.	Maintenance decisions are influenced by stakeholder feedback.	365	2.91	1.404	8	0.582
5.	Early involvement of stakeholders helps in minimising project delays.	365	2.98	1.440	4	0.596
6.	Community consultations reduce land acquisition disputes.	365	2.84	1.426	10	0.568
7.	Stakeholder engagement enhances transparency in decision-making.	365	3.05	1.402	2	0.610
8.	Contractors and local communities collaborate effectively during project execution.	365	2.88	1.404	9	0.576
9.	Stakeholder participation leads to improved accountability in road projects.	365	3.06	1.427	1	0.612
10.	Feedback mechanisms exist for stakeholders throughout the project lifecycle.	365	2.90	1.425	7	0.580

Source: Field Survey (2025)

The findings in Table 2 on the impacts of stakeholder engagement illustrate that stakeholder engagement has a significant positive effect across all phases of road infrastructure projects by enhancing accountability, promoting transparency, improving design quality, and reducing delays and disputes, which aligns with previous studies emphasising that active involvement

in planning, implementation, and feedback processes leads to better project outcomes and smoother execution (Khan et al., 2021; El-Gohary et al., 2021; Matu et al., 2020).

4.3 The Effect of Stakeholder Involvement on Key Sustainability Measures

Table 4.3 illustrates the impact of stakeholder involvement on critical sustainability dimensions in road infrastructure projects, reflecting respondents' views on the effect of participation on environmental impact reduction, infrastructure durability, cost efficiency, operational functionality, and adherence to environmental regulations. The table provides detailed statistical data, including frequency, mean, standard deviation, ranking, and Relative Importance Index (RII), which collectively emphasise stakeholder contributions to promoting environmentally friendly practices, enhancing quality and social acceptance, lowering costs, and supporting the long-term sustainability of road infrastructure.

Table 3: Effect of Stakeholder Involvement on Key Sustainability Measures

	Description	Frequency	Mean	Std. D	Rank	RII
1.	Stakeholder engagement helps to reduce environmental impact of road projects.	365	3.03	1.443	7	0.606
2.	Involving stakeholders improves the durability and quality of road infrastructure.	365	3.11	1.397	1	0.622
3.	Consultation with communities enhances cost efficiency in project execution.	365	2.97	1.416	9	0.594
4.	Stakeholder participation contributes to long-term functionality of roads.	365	3.05	1.451	5	0.610
5.	Involving environmental groups ensures better compliance with environmental laws.	365	3.03	1.403	7	0.606
6.	Road users' feedback helps in designing safer and more sustainable roads.	365	3.10	1.416	2	0.620
7.	Stakeholder input reduces operational and maintenance costs over time.	365	3.02	1.462	8	0.604
8.	Engaged stakeholders promote adoption of eco-friendly construction practices.	365	2.95	1.427	10	0.590
9.	Stakeholder participation improves social acceptability of road projects.	365	3.09	1.420	3	0.618
10.	Long-term sustainability of road infrastructure depends on active stakeholder involvement.	365	3.01	1.432	6	0.602

Source: Field Survey (2025)

Table 3 demonstrates that stakeholder involvement plays a crucial role in improving sustainability outcomes in road infrastructure projects by reducing environmental impacts, enhancing durability and quality, fostering cost efficiency, and promoting long-term functionality and compliance; these results corroborate numerous studies highlighting that consistent and meaningful stakeholder engagement throughout project phases is essential for achieving sustainability, improved performance, and broader social acceptance.

5. Discussion of Findings

The demographic data in Table 1 reveals a predominantly experienced and diverse group of stakeholders, with a large share aged 51 and above, and variation across marital status, income,

education, occupation, years of experience in infrastructure-related activities, and gender; this diversity supports comprehensive stakeholder insights, which prior research identifies as critical for enhancing the effectiveness and sustainability of road infrastructure projects (Abwolo, Onwura and Njagi, 2023).

The findings presented in Table 2 indicate that stakeholder participation has a significant contribution to the success and sustainability of road infrastructure projects in Minna, Niger State. With a mean score of 3.06 and a Relative Importance Index (RII) of 0.612, the statement "Stakeholder participation leads to improved accountability in road projects" ranked highest, indicating that respondents strongly agree that inclusive engagement promotes transparency and responsibility in project execution. Similarly, the role of stakeholder engagement in enhancing transparency in decision-making ranked second (mean = 3.05; RII = 0.610), supporting earlier research by Nyangena and Kagiri (2024), which found that participatory governance mechanisms reduce corruption and foster trust between project implementers and the community.

Equally, areas such as community consultations to reduce land disputes (mean = 2.84; RII = 0.568) and collaboration between contractors and local communities (mean = 2.88; RII = 0.576) ranked lower, suggesting that despite some level of engagement, there are still gaps in effective community integration during road project execution. Overall, the findings indicate moderate stakeholder involvement across all project phases, with mean values ranging from 2.84 to 3.06, suggesting that engagement practices are present but not optimal. The relatively lower ranking of items related to maintenance feedback (mean = 2.91; RII = 0.582) and continuous stakeholder input during implementation (mean = 2.96; RII = 0.592) suggests a lack of sustained interaction after project initiation. This aligns with the study of Otieno, Ondiek and Ayuya (2023), who noted that participation in many Nigerian infrastructure projects tends to decline after the design phase, limiting opportunities for adaptive management and sustainability.

The findings, as shown in Table 3, indicate that stakeholder engagement has a strong positive influence on the sustainability and quality of road infrastructure in Minna, Niger State. The statement *"Involving stakeholders improves the durability and quality of road infrastructure"* recorded the highest mean score (3.11) and RII (0.622), emphasising that inclusive participation enhances construction quality and long-term performance (Chinyio and Akintoye, 2019). Similarly, *"Road users' feedback helps in designing safer and more sustainable roads"* ranked second (mean = 3.10; RII = 0.620), highlighting the importance of integrating user experiences in road design, which aligns with Bello and Tijani (2022) assertion that participatory engagement promotes user-centred and context-appropriate infrastructure solutions. The perception that *"Stakeholder participation improves social acceptability of road projects"* (mean = 3.09; RII = 0.618) also suggests that inclusive engagement fosters community trust and reduces opposition to projects, consistent with findings by Nyangena and Kagiri (2024), who argue that stakeholder involvement enhances project legitimacy and local support. Overall, the results reveal moderate but consistent support for stakeholder involvement in achieving durable, socially accepted, and functionally efficient road infrastructure.

However, findings related to environmental outcomes ranked lower, with *"Engaged stakeholders promote adoption of eco-friendly construction practices"* (mean = 2.95; RII = 0.590) and *"Involving environmental groups ensures better compliance with environmental laws"* (mean = 3.03; RII = 0.606) scoring below other indicators. This implies that while technical and social aspects of stakeholder participation are relatively strong, environmental

considerations receive less attention. The implication is that Minna's road sector sustainability strategies still prioritise construction quality and cost efficiency over ecological protection, echoing the observations of Mwangi, Kamau and Wanjohi, (2021) that environmental performance is often secondary in developing-country infrastructure contexts. Therefore, policymakers and project managers should strengthen stakeholder engagement mechanisms by involving environmental experts and local communities from the early planning stages to ensure a more balanced integration of social, technical, and environmental sustainability dimensions Mwila and Chirwa, (2025).

5. Conclusion and Recommendations

The study concludes that stakeholder participation significantly contributes to improving the sustainability, quality, and public acceptance of road infrastructure projects in Minna, Niger State. The results demonstrate that active involvement of stakeholders enhances road durability and functionality, promotes better design outcomes through user input, and strengthens transparency and accountability in project processes. Nonetheless, environmental aspects of sustainability, such as adopting green construction methods and adhering to environmental standards, appear to receive less attention, suggesting the need for greater inclusion of environmental actors in the process. Consequently, the study emphasises that achieving durable, socially inclusive, and environmentally responsible road infrastructure in Niger State depends on comprehensive stakeholder engagement involving professionals, local communities, and environmental advocates.

In line with the findings of this study, the following recommendations were made:

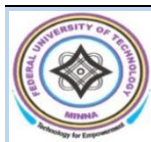
- i. The government should institutionalise inclusive Stakeholder Frameworks to improve transparency and reduce conflicts.
- ii. Environmental considerations should be prioritised by involving environmental protection agencies, NGOs, and local environmental groups in decision-making and monitoring processes.
- iii. Enhance Capacity Building and Feedback Mechanisms to improve their understanding of sustainable infrastructure practices and effective communication strategies.
- iv. Additionally, establishing formal feedback channels will enable stakeholders to monitor project progress, provide timely inputs, and promote accountability throughout the project lifecycle

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Effect of Portfolio Investment on Performance of Pension Funds in Nigeria

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Abstract

This study examines effect of portfolio investment proxied by comprising equity, bond, and money market instruments on performance of pension funds in Nigeria, measured by Return on Investment (ROI). The study applies the Risk-Return Trade-Off Theory to assess how asset allocation influences financial outcomes. A descriptive-correlational research design and a census of all 19 licensed Pension Fund Administrators were employed. Using panel data from 2012–2023, the study applied fixed-effects regression with Panel-Corrected Standard Errors following diagnostic evidence of heteroskedasticity and serial correlation. Findings show that equity and bond investments have significant negative relationships with pension fund performance, while money market investments exhibit no significant direct effect. The results underscore the need for improved diversification, stronger risk management frameworks, and more balanced asset allocation strategies to enhance long-term pension fund sustainability in Nigeria.

Keywords: Portfolio Investment; Pension Fund Performance and Asset Allocation

1.0 Introduction

Pension funds, composed of cumulative contributions into Retirement Savings Accounts (RSAs) under the Contributory Pension Scheme (CPS), play a vital role for individuals, organizations, and the broader economy. They contribute significantly to capital and money market development by complementing and sometimes substituting traditional financial institutions like commercial and investment banks (Nwogwugwu & Ojo, 2022), while also serving as major contributors to a nation's Gross Domestic Product (GDP) and key drivers of capital formation (Obasa, 2022). The relationship between investment strategies and pension fund performance is crucial for long-term growth and solvency. For example, in the USA, pension funds averaged 6.5% returns over the past decade, though solvency remains a concern due to aging populations and low interest rates (Brown & Liang, 2016).

Japan's GPIF achieved 3.5% returns between 2018 and 2022 but faces sustainability challenges from demographic shifts. Brazil recorded strong 9% annual returns from 2018 to 2023, benefiting from a younger population and favorable investment conditions (Silva & Gonzalez, 2019), while India experienced more volatile returns of 5%–7% due to market and regulatory complexities. Mexico and Ghana reported returns of 8% and 9%, respectively, bolstered by regulatory reforms despite governance issues (Lopez & Ramirez, 2020; Acheampong & Addo, 2019). Indonesia and Poland achieved similar returns through strategic asset allocations and reforms (Suryanto & Wibowo, 2021; Kowalski & Nowak, 2022). Australia managed 8.5% returns amid volatility through strong diversification, Chile led South America with 10% returns, and South Korea maintained stability with 6.9% returns despite geopolitical tensions (Smith & Jones, 2021; Gonzalez & Martinez, 2020; Kim & Lee, 2020). Across regions, effective asset allocation remains a critical factor in balancing risk and ensuring sustainable pension fund performance.

Saudi Arabia's pension funds achieved 8.5% returns, supported by diversified investments across various sectors (Al-Hamdi & Al-Khaldi, 2019), while Egypt reported steady growth at 7.2% due to regulatory reforms (Mahmoud & Hassan, 2020). South Africa consistently posted 8% returns under a robust regulatory framework, whereas Nigeria and Kenya experienced more volatility, with returns ranging from 6% to 10% due to economic and regulatory challenges (Koornhof & Botha, 2020). Nigeria's pension industry, in particular, has struggled to meet its performance goals effectively and efficiently. According to Adeniyi, Adeyinka, and Babayaro (2019), Pension Fund Administrators (PFAs) in Nigeria face challenges such as limited investment vehicles and inadequate risk management frameworks. This often results in pension operators being overly cautious, leading to suboptimal fund performance (Obalola & Abass, 2023). Although the introduction of the Contributory Pension Scheme (CPS) in 2024 marked a shift from the underfunded Defined Benefit Scheme (DBS), bringing improved coverage and savings, it also raised concerns over fund performance due to limited investment returns, necessitating continuous policy revisions to respond to economic realities (Obasa, 2022).

Despite impressive growth—evident in the increase of total pension funds to N20.22 trillion by May 31, 2024, from N19.78 trillion in April—the heavy allocation of 63.22% to federal government securities has limited potential returns (TheCable, 2024). Other assets include corporate debt (10.2%) and equities (8.6%), but overall investment performance remains a concern. Coverage remains low, with only 10.19 million RSA holders. Historical losses, such as the depreciation of pension funds by 6.32% in 2020 (N6.53 billion) and 8.22% in 2021 (N8.23 billion), were largely attributed to poor investment decisions and weak risk management frameworks (Nairametrics, 2024). The prevailing conservative investment strategy, though low risk, underscores the need for diversification into alternative assets to optimize returns and strengthen financial sustainability (Nwogwugwu & Ojo, 2022). Portfolio investment management, which involves strategic allocation across stocks, bonds, estates, and cash, is crucial to balancing liabilities with risk tolerance (Salaudeen, 2021). Stakeholders need confidence in how these risks and opportunities are managed to make informed strategic decisions. Broader lessons from corporate failures in financial institutions underline the importance of effective risk management and well-structured investment strategies that align with market dynamics and internal controls (Basel Committee, 2015; Berger et al., 2016; Elamer & Benyazid, 2018). Hence, achieving stable returns and economic contributions from pension funds in Nigeria hinges on risk-aware, diversified investment strategies supported by strong governance frameworks.

The underperformance of Nigerian pension funds has sparked serious concerns regarding the effectiveness of their investment strategies, risk management practices, and the regulatory framework overseeing the industry (This Day Live, 2024). A major contributing factor is the limited diversification of investments, with a disproportionate allocation to federal government securities, which has raised doubts about the ability of Pension Fund Administrators (PFAs) and Pension Fund Custodians (PFCs) to fulfill their roles under the amended Pension Reform Act (PRA) 2014, aimed at ensuring the sustainability of the Contributory Pension Scheme (CPS) (Adams & Ibrahim, 2023). Effective portfolio decisions are vital for optimizing returns but are often constrained by market volatility and investment risks, particularly in the stock and bond markets (Ogunleye, 2023). Consequently, a robust risk management framework is essential to mitigate these risks and enhance overall performance (Eze & Okoro, 2024). Asset allocation, as a core component of investment strategy, significantly influences pension fund performance by determining the balance between risk and return. Diversifying across asset classes such as equities, bonds, real estate, and alternative investments helps reduce portfolio risk and improves the likelihood of consistent, higher returns, even in volatile markets (Brown & Jones, 2021). Each asset class serves distinct roles: bonds offer stability with lower risk,

equities provide the potential for higher returns but with greater volatility, and money market instruments prioritize liquidity with modest yields (Oyedokun, Akingunola, & Somoye, 2022; Antony, 2020). Risk management, therefore, is pivotal in strengthening the link between investment strategy and performance, ensuring long-term stability and the solvency of pension funds (Antony, 2020).

The lack of diversified investment options and the absence of a comprehensive performance benchmark have further hindered the ability of Pension Fund Administrators (PFAs) to make optimal portfolio decisions. These limitations restrict strategic asset allocation and reduce the potential for maximizing returns while managing risk effectively. The study is specifically designed to examine how different components of portfolio investment influence the performance of pension funds in Nigeria. It seeks to determine the effect of equity investment on pension fund performance, and further assess how bond investment contributes to or detracts from fund outcomes. In addition, the study aims to evaluate whether money market investment plays a significant role in shaping the financial performance of pension funds.

2.0 Literature Review

Financial performance refers to the extent to which an organization achieves its financial objectives, serving as a critical element of risk management and overall business success. It is typically measured in monetary terms to assess the outcomes of a firm's policies and operations over a specific period, reflecting its financial health and enabling comparisons across similar firms or industries (Damodaran, 2013). Profitability serves as a shield against unexpected losses, strengthening capital positions and fostering future profitability through reinvested earnings (Odawo et al., 2019). Financial performance encompasses key elements such as revenue, equity, expenditures, and liquidity to ensure stakeholders can make informed decisions (Naz et al., 2016). Persistent losses erode an institution's capital base, endangering both equity and debt holders, and hindering its wealth creation goals. Performance, therefore, is evaluated not only by profitability but also through efficiency, risk-taking, and the ability to minimize costs while meeting operational and financial targets (Maeenuddina et al., 2020; Hasanaj & Kuqi, 2019).

Portfolio investment involves constructing a diversified group of financial assets—including bonds, stocks, cash, and commodities—aimed at optimizing returns while managing risk (World Bank, 2014; Wara & Karlsen, 2022). Rooted in Markowitz's (1952) Modern Portfolio Theory (MPT), the concept emphasizes maximizing expected returns and minimizing risk through diversification, particularly by investing in assets with low or negative correlations. These investments are typically passive, lacking control over the underlying entities, and are structured to reflect the investor's risk appetite, income, and financial goals (Liu, 2022). Asset allocation and diversification are key strategies, balancing capital across various classes to reduce risk exposure. Bonds offer predictable returns and lower risk, while stocks provide ownership stakes with higher volatility and return potential (Nwafor, 2020; Singh & Yadav, 2022). Equity and debt securities, such as debentures and mutual fund shares, further expand diversification, making portfolio investment a cornerstone of financial planning and performance enhancement (Jayakody, 2021; Lang et al., 2020).

2.1 Empirical Review

A substantial body of empirical research has explored the dynamics between portfolio investment components and the financial performance of pension funds across different economic contexts. While most studies converge on the importance of strategic asset allocation

and risk management, the magnitude and direction of their effects tend to vary depending on market efficiency, regulatory structures, and investment culture within each jurisdiction. This section reviews existing empirical evidence along the key portfolio investment proxies—equity, bond, and money market investments—while also examining the moderating role of risk management on pension fund financial performance.

2.1.1 Equity Investment and Pension Fund Performance

Studies generally emphasize the significance of equity allocation in enhancing long-term returns, although outcomes differ across markets. Boyante, Muturi, and Gekara (2022) found that portfolio rebalancing strengthens the effect of equity allocation on pension fund performance in Kenya, showing that actively managed equity positions yield better risk-adjusted returns. Similarly, Wahyudi, Hasanudin, and Pangestutia (2020) reported that equity allocation and institutional ownership positively impact portfolio performance in Indonesia, highlighting the critical role of diversification and governance structures.

In contrast, environmental and policy dynamics also shape equity performance. Ji et al. (2021) showed that green equity funds in BRICS markets—particularly China—outperform conventional funds due to strong environmental regulations and lower volatility. Martí-Ballester (2020) further demonstrated that equity investments aligned with SDG-focused sectors, especially technology, produced superior risk-adjusted returns, whereas energy-sector funds underperformed due to weaker stock-picking capabilities.

2.1.2 Bond investment and pension fund performance

Bond investments constitute the largest component of many pension fund portfolios, especially in heavily regulated markets. Evidence from Boyante et al. (2022) shows that bond allocations significantly benefit from active portfolio rebalancing, although guaranteed or fixed-return instruments remain largely unaffected. Kamau and Maina (2019) also confirmed that bond diversification significantly enhances financial performance in Kenyan mutual funds, suggesting that well-structured bond portfolios provide stability while improving returns through risk reduction.

However, López and Walker (2021) revealed complexities in Chile, where pension fund returns closely mirrored regulatory benchmarks, implying that rigid quantitative investment limits may restrict the potential performance gains of bond portfolios. These findings suggest that while bond investments can enhance stability, overly conservative regulatory frameworks may limit their contribution to long-term returns.

2.1.3 Money market investment and pension fund performance

Money market instruments often serve as low-risk, liquidity-preserving components of pension portfolios. Although not extensively highlighted in the reviewed studies, related empirical evidence provides useful insights. Wahyudi et al. (2020) indicated that diversification across liquid asset classes contributes positively to portfolio efficiency, indirectly affirming the stabilizing role of money market investments. Edo and Kanwanye (2022), though focused on Sub-Saharan Africa more broadly, emphasized that inflation and currency depreciation erode returns on short-term financial instruments, suggesting that money market allocations may yield mixed performance depending on macroeconomic stability.

Furthermore, recommendations from Ikwor and Egbunike (2022) imply that reliance on conservative instruments such as money market assets may be insufficient for generating substantial long-term returns in Nigeria's pension industry, especially in the absence of innovative investment strategies.

2.2 Theoretical Framework

This study is grounded in the Risk-Return Trade-Off Theory, which supports the relationship between the predictor (portfolio investment), the moderator (risk management), and the outcome (pension fund performance). According to the theory, investors expect a higher return as compensation for taking on higher levels of risk (Markowitz, 1952; Fama & French, 2001). This central premise aligns with the decisions made by Pension Fund Administrators (PFAs), who must allocate resources across various asset classes with differing risks and return profiles.

In this study, portfolio investment reflects the asset allocation decisions made by PFAs. The theory implies that higher-risk investments (like equities or alternative assets) should yield higher expected returns, thereby improving the financial performance of pension funds, which is the dependent variable. However, this return is not guaranteed, and the variability of outcomes introduces uncertainty.

Furthermore, as explained by Navas, Dhanavanthan, and Lazar (2020), investor tolerance to risk varies, and pension fund managers must strike a balance between low-risk, low-return and high-risk, high-return assets. This balance is central to constructing a portfolio that not only meets regulatory requirements but also aligns with the long-term financial objectives of the pension scheme beneficiaries. Ultimately, the Risk-Return Trade-Off Theory justifies the need for a dynamic interaction between investment choices and risk mitigation practices to improve pension fund outcomes.

3.0 Methodology

This study adopts a descriptive-correlational research design to investigate the moderating effect of risk management on the relationship between portfolio investment and the performance of pension funds in Nigeria. The descriptive aspect enables the presentation of data characteristics as they naturally occur, while the correlational design supports empirical testing of the relationships among variables. Given the quantitative orientation of the study, a positivist philosophical paradigm was employed to ensure objectivity, reliability, and generalizability. Under this paradigm, the study assumes an objective reality (ontology) that can be understood through observable and measurable facts (epistemology), with minimal researcher bias (axiology), and presented using neutral, third-person rhetoric.

The study follows a deductive research approach, which is suitable for hypothesis testing based on established theories. This method aligns with the research objective of testing the influence of equity, bond, and money market investments on pension fund performance. The research population consists of all 19 licensed Pension Fund Administrators (PFAs) in Nigeria, as listed by the National Pension Commission (PenCom, 2024). A census sampling technique was adopted to include the entire population, thereby avoiding sampling bias and enhancing the study's validity. Data was collected from secondary sources such as audited financial statements of PFAs, the Nigerian Exchange (NGX), and the Central Bank of Nigeria (CBN) statistical bulletin, covering a twelve-year period from 2012 to 2023.

To analyze the data, the study employed panel regression techniques, using multiple linear regression models that accommodate both cross-sectional and time-series characteristics. Robust estimation methods will be used to address potential issues of heteroscedasticity and serial correlation (Gujarati, 2003). Additionally, diagnostic tests were conducted, including the Variance Inflation Factor (VIF) for multicollinearity, the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, the Hausman Specification Test to determine the appropriateness of fixed versus random effects models (Habbash, 2010; Yermack, 1996), and the Breusch and Pagan Lagrangian Multiplier (LM) Test to confirm the presence of random effects. These procedures aim to ensure the accuracy and robustness of the regression outcomes.

The study adapts a panel regression model to estimate the relationship between portfolio investment and pension fund performance.

Base Model:

$$ROI_{it} = \beta_0 + \beta_1 EI_{it} + \beta_2 BI_{it} + \beta_3 MMI_{it} + \beta_4 RM_{it} + \beta_5 FSZ_{it} + \varepsilon_i$$

Where:

i = Firm

t = Year

ROI = Return on Investment

EI = Equity Investment

BI = Bond Investment

MMI = Money Market Investment

FSZ = Firm Size

ε = Error term

3.1 Variable Measurement

Variable	Proxy	Type	Measurement
Return on Investment	ROI	Dependent Variable	Profit Before Tax / Equity (Shehu, 2017)
Equity Investment	EI	Independent Variable	% of total portfolio invested in equities (Harford & Uysal, 2014)
Bond Investment	BI	Independent Variable	% of total portfolio invested in bonds (Harford & Uysal, 2014)
Money Market Inv.	MMI	Independent Variable	% of total portfolio invested in MM instruments (Kacperczyk & Schnabl, 2013)
Firm Size	FSZ	Control Variable	Natural log of total assets or equity

4.0 RESULTS

4.1 Descriptive Statistics

The descriptive statistics on individual variables, as well as a summary of the data on explained and explanatory variables are presented in Table 4.1. Based on the mean and standard deviation, this is taken into account. The data's minimum and maximum values, skewness, and kurtosis, as well as their associated standard errors, are among the others.

Table 4.1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ROI	0.174	0.132	0.0003	0.559	0.969	3.624
EI	0.113	0.055	0.020	0.221	0.317	2.328
BI	0.632	0.082	0.489	0.791	0.127	2.347
MMI	0.110	0.041	0.027	0.187	-0.040	2.804
FSZ	2.892e+10	1.558e+11	133,433,000	1.605e+12	9.057	86.757

Source: Author's computation using STATA 13.

The results in Table 4.1 shows descriptive statistics for the variables in the study, the average ROI of 0.174 indicates that Nigerian pension funds generate a 17.4% return on equity, which reflects moderate financial performance. This performance level can be attributed to the regulated nature of the pension fund industry, where investments prioritize stability over high-risk, high-return ventures. The minimum ROI of 0.0003 shows that some funds experience almost zero returns during certain periods, likely due to poor market performance, economic downturns, or mismanagement of portfolios. On the other hand, the maximum ROI of 0.559 demonstrates periods of exceptional performance, possibly driven by favorable market conditions, strong asset allocation strategies, or significant gains from high-performing asset classes. This variation highlights the diverse risk-return dynamics across the industry.

Equity investments represent 11.3% of the average portfolio allocation (mean EI = 0.113), indicating a conservative investment approach by Nigerian pension funds. This low average reflects the inherent risks of equities, especially in an emerging market like Nigeria, where market volatility and economic uncertainties are prevalent. The minimum of 0.020 implies that some funds invest as little as 2% in equities, which could be attributed to restrictions on their side, or simply the desire to avoid risks. On the other hand, evidence of the maximum EI of 0.221 or 22.1% indicates that funds use a riskier approach during periods of economic stability or rising equity markets to capture better returns.

Bonds constitute the largest portion of pension fund portfolios, with a mean allocation of 63.2% (BI = 0.632). This significant allocation aligns with the traditional preference for low-risk, fixed-income investments in the pension fund industry, ensuring steady and predictable returns. The minimum allocation of 48.9% reflects funds diversifying into other asset classes like equities and money markets. In contrast, the maximum allocation of 79.1% reveals the highly risk-averse nature of certain funds, particularly during periods of economic uncertainty when bonds offer stability. This strong reliance on bonds highlights their role as a cornerstone of pension fund portfolios in Nigeria.

In addition, Money market investments account for an average of 11% (MMI = 0.11) of pension fund portfolios, signifying their role as a complementary asset class. These short-term, liquid

investments provide funds with the flexibility to meet immediate obligations or adjust to market changes. The minimum allocation of 2.7% indicates funds with minimal reliance on money markets, possibly due to higher returns from other assets. On the other hand, the maximum allocation of 18.7% reflects funds leveraging money markets during uncertain times or when interest rates are favorable. This range suggests that money markets serve both as a liquidity buffer and an opportunistic investment option.

Table 4.1 indicates that the data, despite being negatively skewed, is expected to follow a normal distribution. Additionally, the kurtosis value from Table 4.1 suggests that the distribution's peakness is within the expected normal range. Numerous studies have highlighted how assessing skewness and kurtosis can help determine if data is skewed or if the kurtosis deviates from the norm (Bai & Ng, 2005; Barato & Seifert, 2015).

Table 4.2: Correlation Matrix (Including Firm Size – FSZ)

Variables	(1) ROI	(2) EI	(3) BI	(4) MMI	(5) FSZ
(1) ROI	1.000				
(2) EI	-0.286* (0.000)	1.000			
(3) BI	-0.186* (0.010)	-0.015 (0.836)	1.000		
(4) MMI	-0.057 (0.521)	-0.015 (0.832)	0.356* (0.000)	1.000	
(5) FSZ	0.241* (0.002)	0.091 (0.315)	-0.048 (0.588)	0.132 (0.142)	1.000

The correlation matrix above presents the relationships among four key variables: Return on Investment (ROI), Equity Investment (EI), Bond Investment (BI), and Money Market Investment (MMI). ROI is significantly and negatively correlated with both EI ($r = -0.286$, $p < 0.01$) and BI ($r = -0.186$, $p < 0.05$), indicating that higher allocations to equity and bond investments are associated with lower pension fund returns within the observed period. MMI shows a moderate positive correlation with BI ($r = 0.356$, $p < 0.01$), suggesting that funds allocating more to bonds may also favor money market instruments. However, MMI has no significant correlation with ROI or EI, implying a weaker direct relationship with overall returns. The non-significant correlations ($p > 0.05$) are denoted in parentheses, highlighting where associations are not statistically meaningful. The correlation between Bond Investment and Firm Size is weak and non-significant ($r = -0.048$, $p = 0.588$), indicating no meaningful association between the size of a firm and its bond investment decisions. Finally, Money Market Investment and Firm Size also show a weak, positive, and non-significant correlation ($r = 0.132$, $p = 0.142$), suggesting that larger firms do not necessarily invest more in money market securities.

The diagnostic tests conducted to validate the appropriateness and reliability of the panel regression model produced several important results. The Hausman test yielded a chi-square value of 27.88 with a p-value of 0.005, indicating statistical significance at the 1% level. This result confirms that the Fixed Effects model is more suitable than the Random Effects model for the data, as it provides consistent and unbiased estimates. To assess the presence of

multicollinearity among the independent variables, the Variance Inflation Factor (VIF) was examined. All VIF values were below the commonly accepted threshold of 5, showing that multicollinearity is not a problem in the model and that the explanatory variables are sufficiently independent of one another.

The normality of residuals was tested using the Shapiro–Wilk W test, which produced a W value of 0.997 and a corresponding p-value of 0.341. Since this value exceeds the 0.05 significance level, it indicates that the model's residuals are normally distributed, satisfying one of the assumptions of regression analysis. However, the test for autocorrelation revealed issues. The chi-square value of 7.071 with a p-value of 0.0179 indicates the presence of serial correlation in the error terms, significant at the 5% level. This suggests that the residuals are not independent over time, which could bias the efficiency of the estimates if not corrected. Additionally, the heteroskedasticity test conducted using the Group-Wise Modified Wald method for ROI returned a statistic of 1251.15 with a p-value of 0.000. This result is significant at the 1% level and provides strong evidence of heteroskedasticity in the panel data. The presence of both autocorrelation and heteroskedasticity implies that ordinary estimation techniques such as standard Fixed Effects may yield inefficient standard errors.

Table 4.3: Panel Corrected Standard Error regression

ROI	Coef.	St.Err.	t-value	p-value
EI	-0.7331	0.3543	-2.07	0.039
BI	-0.0022	0.0005	-4.98	0.000
MMI	-0.8017	0.4904	-1.63	0.102
FSZ	0.0016	0.0002	8.09	0.000
Number of obs	192		Chi-square	158.57
Prob > chi2	0.000		R-Square	0.3931

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: Author's computations generated with STATA 14 software

4.2 Discussion of findings

The regression results provide insights into the relationships between the independent variables, their interactions, and the dependent variable, Return on Investment (ROI). The model's goodness of fit is supported by the high Chi-square value (158.57) with a p-value of 0.000, indicating that the model is statistically significant overall. The R-squared value of 0.3931 suggests that approximately 39.31% of the variations in ROI are explained by the independent variables and their interactions, showcasing a reasonable explanatory power for this type of study.

The coefficient for equity investment is -0.7331, with a standard error of 0.3543, a t-value of -2.07, and a p-value of 0.039. This indicates a statistically significant negative relationship between EI and ROI at the 5% significance level. The negative coefficient suggests that an increase in equity investment is associated with a decrease in ROI. This outcome may be attributed to the volatility and higher risks associated with equity investments, which, when unmanaged, can lead to lower financial returns. However, this result also emphasizes the

importance of employing effective strategies to mitigate these risks and improve outcomes. Hence, null hypothesis was rejected that equity investment has no significant effect on ROI

The coefficient for bond investment is -0.0022, with a standard error of 0.0005, a t-value of -4.98, and a p-value of 0.000. This shows a highly significant negative relationship between BI and ROI at the 1% significance level. The small negative coefficient indicates that a marginal increase in bond investment leads to a slight reduction in ROI. This may reflect the conservative nature of bonds, which generally provide lower returns compared to other investment options like equities. Despite their stability and lower risk, bonds may not contribute significantly to ROI unless combined with other high-yield strategies. Hence, null hypothesis was rejected that bond investment has no significant effect on ROI

The coefficient for money market investment is -0.8017, with a standard error of 0.4904, a t-value of -1.63, and a p-value of 0.102. While the negative coefficient suggests a potential inverse relationship between MMI and ROI, the result is not statistically significant at conventional levels ($p > 0.05$). This insignificance implies that money market investments may not have a direct or consistent effect on ROI. Given their typically low-risk and low-return nature, money market investments might serve as a stabilizing factor rather than a major contributor to ROI. Further investigation may be needed to explore their impact in different contexts or under varying conditions. Hence, null hypothesis was rejected that money market investment has no significant effect on ROI.

The regression analysis reveals a statistically significant negative relationship between equity investment (EI) and Return on Investment (ROI), suggesting that an increase in equity allocation leads to a decline in ROI. This finding is aligned with Prospect Theory (Kahneman & Tversky, 1979), which posits that investors are loss-averse and often react negatively to volatility in equity markets. In the context of pension funds in Nigeria, where regulatory and economic instability can amplify market fluctuations, increased exposure to equities may lead to underperformance if not carefully managed. Empirically, this result is consistent with the work of Meng and Pfau (2010), who found that overly aggressive equity allocations in retirement portfolios could result in suboptimal returns due to heightened exposure to market downturns.

Regarding bond investment (BI), the regression result also shows a statistically significant but modest negative effect on ROI. Although bonds are traditionally considered safe and stable investment instruments, the low return characteristics may explain their inverse relationship with ROI in this study. According to Modern Portfolio Theory (Markowitz, 1952), optimal diversification includes assets with varying risk-return profiles, but over-reliance on low-yield instruments like bonds may dilute the overall portfolio return. Similar outcomes were observed in the study by Davis and Steil (2001), who emphasized that excessive bond holdings could hamper pension fund performance, especially in developing economies where inflation and interest rate risks further erode bond yields.

Finally, money market investment (MMI) shows a negative but statistically insignificant relationship with ROI. This aligns with the general understanding that money market instruments—while liquid and low-risk—tend to offer minimal returns, serving primarily as a cash preservation strategy rather than a growth vehicle. The Liquidity Preference Theory (Keynes, 1936) supports this, as it suggests that investors may prioritize short-term liquid assets in uncertain environments, which could explain their limited impact on ROI. The findings resonate with those of Bikker et al. (2012), who argued that although money market instruments offer safety, their negligible returns limit their effectiveness in enhancing pension fund performance unless used strategically within a broader, balanced portfolio.

5 Conclusion and Recommendation

5.1 Conclusion

This study investigated the moderating effect of risk management on the relationship between portfolio investment (equity, bond, and money market investments) and the performance of pension funds in Nigeria, with ROI as the performance metric. The findings indicate a statistically significant negative effect of both equity investment and bond investment on ROI, while money market investment had an insignificant effect. The negative association suggests that higher allocations to equities and bonds may have led to suboptimal returns, likely due to inadequate risk-mitigation strategies and poor timing or selection within those asset classes. Despite the general expectation that diversified portfolio investment should improve pension fund performance, the observed outcomes imply that Nigerian PFAs may not be effectively managing the risks inherent in volatile or interest-sensitive investment instruments.

5.2 Recommendations

Since both equity and bond investments significantly and negatively impact ROI, PFAs should adopt dynamic and data-driven risk management frameworks. These frameworks should include market sensitivity analysis, stress testing, and scenario planning to manage downside risks, particularly in volatile equity markets and interest rate-sensitive bond markets.

Given the negative impact of traditional asset classes on performance, PFAs should reevaluate their asset allocation strategies. The current concentration in equities and bonds appears counterproductive without strong risk controls. Emphasis should be placed on optimizing the risk-return trade-off through strategic rebalancing based on economic cycles.

While money market investments showed no significant effect on ROI, they can still play a valuable role in stabilizing portfolio cash flows. PFAs should continue using them primarily as liquidity buffers rather than return drivers, especially in periods of high volatility.

The findings highlight the need for PFAs to invest in training their fund managers on portfolio optimization under uncertainty and real-world application of risk-adjusted performance metrics. Such competencies will enhance strategic decisions and compliance with regulatory expectations.

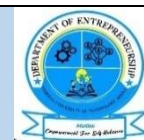
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Green Marketing Strategy and Customer Patronage of Retail Malls in Ilorin Metropolis

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Abstract

The awareness on eco-friendly products and sustainable environment has forced majority of customers to shift from ordinary brands to more conscious items that enhanced their wellbeing. This study examined the influence of green marketing practices, with a specific focus on green logistics, on customer patronage of retail malls. The study is a cross-sectional research design using a quantitative research approach, data were collected from shoppers across major urban retail malls and analyzed through descriptive statistics and regression modeling. The population is infinite and the exact figure cannot be ascertained. Godden (2004) formula used to ascertain the sample size of Three hundred and forty-nine (349). The structured instruments of (349) administered but only three hundred and two (302) duly returned analyzed. The p value = 0.001 less than 0.05 and coefficient of 0.988. hence the null hypothesis formulated is rejected. Findings indicate that the adoption of green logistics--such as the use of renewable energy in transportation, recycling programs, and low-emission delivery systems significantly affects customer perception of environmental responsibility, thereby enhancing their willingness to patronize retail malls. The study concludes that integrating green logistics into green marketing strategies serves as a competitive opportunity in attracting and retaining environmentally conscious customers. The study recommends retailers should leverage on energy-efficient delivery vehicles, displayed green certification, introduced recyclable material established green warehousing and comply with environmental regulation to achieve customer patronage.

Keywords: Customer Patronage, Eco-friendly, Green marketing, logistic, Mall, Retail

1.0 Introduction

In a time when customers are increasingly aware of the social and environmental consequences of their shopping decisions, comprehending the factors that sustain their loyalty to retail malls has become paramount. Customer patronage is the recurrent visits, purchasing behaviour, and enduring loyalty exhibited by customers towards a retail establishment, serves as a critical performance indicator that influences the viability and competitiveness of retail malls (Etim *et al.*, 2023). In Nigeria, especially in urban areas like Ilorin, retail malls have become significant economic entities, facilitating job creation, invigorating local trade, attracting investments, increasing tax revenue, and fostering development of related service sectors such as logistics, food services, and entertainment (Lebia, 2025). Notwithstanding these contributions, shopping malls in Ilorin Metropolis persistently encounter obstacles that impede customer patronage. The difficulties encompass inconsistent product pricing, insufficient parking facilities, inadequate waste management, subpar service quality, restricted product variety, erratic power supply impacting the in-mall experience, and increasing consumer apprehensions over environmental sustainability (Fadare, 2025; Lebia, 2025). As consumers grow increasingly

ecologically conscious, retail malls that do not conform to sustainability standards may face diminished foot traffic and weakening brand allegiance (Collins and Chinedu, 2023).

Furthermore, customer patronage is a vital metric for the viability of retail businesses, especially in the current competitive market when consumers are more discerning about their shopping choices (Adeola *et al.*, 2023). In urban centers such as Ilorin metropolis, retail malls rely significantly on repeat patronage, favourable word-of-mouth, and robust consumer loyalty for their success. The retail sector, in particular, has been at the forefront of these developments as a result of its direct relationship with end users. Most retail businesses who failed to adapt to the changes have been weed-out from the sector or diversify to meet-up with the environmental call (Collins and Chinedu, 2023). Green marketing, which involves the promotion of products and services based on their environmental benefits, has emerged as a key strategic approach in addressing both ecological concerns and evolving consumer expectations (Zubairu & Shah 2024).

In the Nigerian retail industry encompassing supermarkets, departmental stores, convenience outlets, and online marketplaces the application of green marketing is still in its developmental stages (Owoseni, *et.al*, 2023). Some forward-thinking retail companies are beginning to adopt environmentally responsible practices such as the use of biodegradable packaging, energy-efficient lighting, waste recycling, and the promotion of eco-friendly products. These initiatives are often driven by corporate social responsibility goals, competitive differentiation, and a response to shifting consumer preferences, especially among the educated and urban middle-class population.

Moreover, Victory *et al.* (2023) opined that green marketing encompasses a wide range of practices, including eco-friendly product design, sustainable packaging, energy-efficient operations, waste reduction initiatives, and transparent communication about environmental commitments. As consumers become more environmentally conscious, they are more likely to favour businesses that demonstrate an obligation to green evolution. According to Akerele-Popoola *et al.* (2024) explained that the shift in consumer behaviour has led retailers to integrate green marketing strategies not only as a means of corporate social responsibility but also as a competitive advantage over close rivals. Green marketing, which refers to the promotion of products and services based on their environmental benefits, is recently gaining momentum in Nigeria's retail space (Nsefumu *et.al.*, 2024). Increasingly, consumers have come to expect companies to demonstrate their commitment to improving their operations alongside various environmental, social, and governance (ESG) criteria. More so, many companies will distribute social impact statements on an ongoing basis, in which they periodically self-report their progress toward these goals. Despite this awareness, some consumers still prefer price to environmental conscious products (Victory *et al.*, 2023).

In recent years, the growing concern for environmental sustainability has compelled businesses, particularly in the retail sector, to adopt green marketing strategies (Bento, 2020; Lebia, 2025). These strategies such as green packaging, value-based pricing, green logistics, and the implementation of eco-friendly facilities are increasingly viewed as essential not only for environmental stewardship but also for gaining a competitive edge. It is upon this premise that the study examined the effect of green marketing on the customer patronage of retail mall in Ilorin. The specific objective of the study is to examine the influence of green logistics on the customer patronage of retail mail. By exploring the link between green logistics and customer patronage, the study provides actionable insights for retail businesses seeking to enhance their market position through sustainable practices. Retailers can better understand which green logistic initiatives resonate most with customers, enabling them to design more effective and targeted sustainability programs that not only reduce environmental impact but also improve customer loyalty and satisfaction.

2.0 Literature Review

Concept of Green Marketing

Collins and Chinedu (2023) asserted that green marketing refers to the marketing of products that are presumed to be environmentally safe. According to Polonsky *et.al* (2024) green marketing encompasses a broad range of activities, including product modification, changes to the production process, sustainable packaging, and modifying advertising content. It aims not only to satisfy consumer needs but also to minimize environmental harm. The concept began gaining traction in the late 1980s and early 1990s, as noted by Peatti (2025), during the rise of ecological consciousness among consumers and increasing regulatory pressures. Green marketing has since evolved from being a niche strategy to becoming a core component of

corporate social responsibility and brand positioning (Fadli *et al.*, 2024). However, Zubairu and Shah (2024) opined that green marketing refers to the process of promoting, developing, and selling products or services based on their environmental benefits. It involves strategies that not only meet customer needs but also minimize the negative impact on the environment. This approach is rooted in the broader framework of sustainable development, where businesses aim to operate in a way that conserves natural resources, reduces pollution, and supports ecological balance. Green marketing refers to the practice of developing and promoting products and services based on their environmental benefits (Nsefumu *et al.*, 2024; Zubairu & Shah 2024).

Green Logistics as a Dimension of Green Marketing Strategy

Aqabneh (2025) opined that green logistics refers to the strategic integration of environmentally friendly practices into logistics and supply chain operations. When viewed through the lens of green marketing, green logistics becomes a key enabler in delivering the environmental promises made by companies to eco-conscious consumers. Zubairu and Shah (2024) green logistics involves optimising logistics activities such as transportation, warehousing, packaging, inventory management, and reverse logistics to reduce their environmental impact. It emphasises lowering carbon emissions, reducing energy and resource consumption, minimising waste, and promoting recycling and reuse.

Meanwhile, Fadli *et al.* (2024) argue that green logistics involves optimising logistics operations like transportation, storage, and distribution to minimise their environmental footprint. Historically, the logistics sector has been associated with high fuel consumption and carbon emissions as goods move through complex supply chains from raw materials heading to a factory to finished goods coming from warehouses. Pursuing a green, sustainable logistics strategy often requires companies to reimagine their operations, which may require an upfront investment with the goal of reducing long-term operating costs and environmental harm (Akinbogun *et al.*, 2024).

Customer Patronage

Customer patronage of green products refers to the willingness and behaviour of consumers in consistently purchasing environmentally friendly goods. Customer patronage of green products involves the continued support, preference, and purchase behaviour of consumers toward environmentally sustainable goods ((Zubairu & Shah 2024). These include products that are biodegradable, energy-efficient, recyclable, organically produced, or ethically sourced. Consumers with greater awareness of environmental issues are more likely to support green products. Education and media play crucial roles in shaping this awareness. Green products

must meet or exceed expectations in functionality, durability, and aesthetics to gain customer loyalty.

According to Chijioke-Okoro (2024) asserted that higher prices of green products can deter patronage unless consumers perceive added value or long-term savings. Brands with transparent sustainability practices and certifications (e.g., EcoLabel, USDA Organic) tend to enjoy higher patronage levels. Consumers with strong ethical values or concern for future generations are more likely to make green choices.

Green-Driven Retail Malls in Nigeria

The rapid urbanisation and rising consumer culture in Nigeria have accelerated the development of large-scale shopping complexes across major cities such as Lagos, Abuja, and Kano. While retail malls stimulate economic growth and create employment, their operations are energy-intensive, relying heavily on grid electricity and diesel generators (Adeola, *et.al*, 2023; Fadli *et al*, 2024). According to Oluigbo, *et.al* (2025) this dependence increases greenhouse gas emissions and contributes to Nigeria's already significant environmental challenges, including air pollution, carbon emissions, and rising energy costs.

In recent years, the concept of green-driven or sustainably designed retail malls has emerged as a response to these concerns. A green-driven retail mall integrates renewable energy sources such as solar photovoltaic systems with energy-efficient building design, water conservation practices, and sustainable waste management (Kurniadi & Gamal, 2024). Moreover, such malls aim to reduce environmental footprints while maintaining profitability and shopper comfort (Collins and Chinedu, 2023). The National Renewable Energy and Energy Efficiency Policy (NREEEP) and the Energy Transition Plan 2050 encourage investments in renewable energy and green building standards. Private sector initiatives reflect this shift: Jabi Lake Mall in Abuja and Ado Bayero Mall in Kano have adopted large-scale solar installations that lower carbon emissions and operational costs. These developments show that sustainable retail infrastructure is technically and economically feasible in the Nigerian context.

Theoretical Review

This study is underpinned by the green consumption theory. The green consumption theory was attributed to the work of Michael J. Polonsky in (1994). His work laid the groundwork for understanding how environmental concerns shape consumption decisions. He posits that consumers' environmental consciousness significantly influences their purchasing and patronage decisions (Nouri and Emkani, 2020). The theory argues that customers are more likely to support businesses that demonstrate ecological responsibility through environmentally friendly products, processes, and communications (Testa *et al.*, 2021). This makes the theory fit to the present study, as green marketing strategies such as green product offerings, green promotion, eco-friendly facilities, and sustainable operational practices can shape customers' attitudes and ultimately drive their patronage of retail malls in the Ilorin metropolis.

Empirical Review

Aqabneh (2025) conducted an empirical investigation into how e-logistics service quality influences customer satisfaction, trust building, and customer loyalty among e-shoppers in Palestine. The study adopted a quantitative research design and collected data from active online shoppers using a structured questionnaire. Using statistical techniques such as Structural Equation Modeling (SEM), the study examined both the direct and indirect effects of e-logistics

service quality dimensions on key customer behavioural outcomes. The findings revealed that e-logistics service quality significantly and positively affects customer satisfaction, indicating that timely delivery, accuracy of order fulfillment, effective tracking systems, and responsiveness to delivery issues are critical in shaping customer perceptions.

Fadli *et al.* (2024) conducted an empirical investigation to examine how green logistics practices and service quality dimensions jointly influence customer satisfaction and customer loyalty among users of JNE courier services in East Jakarta. The study was motivated by the growing need for environmentally responsible logistics operations and the increasing competitive pressure within Indonesia's courier and parcel delivery industry. The authors adopted a quantitative survey research design. Data were collected from customers who had used JNE's delivery services in East Jakarta. The results showed that green logistics practices exerted a significant positive effect on customer satisfaction. Customers appreciated eco-friendly transport options, reduced emissions, and environmentally responsible handling of parcels. The findings indicate that sustainability initiatives in logistics operations improve customer perceptions and strengthen satisfaction levels.

Aqabneh (2025) studies was conducted among e-shoppers in Palestine, while Fadli *et al.* (2024) focused on courier service users in East Jakarta, Indonesia. This posed that contextual and geographical gaps exist.

3.0 Methodology

This study employed a cross-sectional research design using the quantitative statistical method to gather information about the effect of green marketing on the customer patronage of retail malls within Ilorin, Kwara State. The study population is infinite (estimated above 50,000), as the exact population of the customers patronising these malls cannot be ascertained during the investigation. The criteria for choosing this location include the following: Ilorin is one of Nigeria's fastest-growing midsize urban centres, experiencing rapid expansion in retail infrastructure, the emergence of retail malls, increased urbanisation and population growth, efficient and effective supply chains, easy accessibility, and a large number of youths who are more open to eco-conscious lifestyles and technology-driven shopping experiences (Gabriel *et al.*, 2024).

The study adopted the simple random sampling technique to select respondents from the visited malls in Ilorin so that every element in the population had an equal probability of being selected. This eliminates selection bias and enhances the credibility of the findings. Bill Godden's (2004) formula was adopted in selecting the sample size since the researcher is constrained in examining the whole population. This study focuses on the primary source of data through a structured questionnaire administered to the target respondents, and the secondary source from journals, textbooks and online sources was used to substantiate the findings. The method of data analysis employed is regression through SPSS V.26.

Sample Size - (where the population is greater than 50,000)

$$SS = \frac{Z^2 \times (p) \times (1 - p)}{C^2}$$

Where:

SS = Sample Size

Z = Z-value (e.g., 1.96 for a 95 percent confidence level)

P = Percentage of population picking a choice, expressed as decimal in this case (0.8)

C = Confidence interval, expressed as decimal (e.g., .05 = +/- 5 percentage points)

In calculating the sample size, the following result was obtained:

$$SS = \frac{1.96^2 \times 0.8 \times (1 - 0.8)}{0.5^2}$$

$$SS = \frac{3.8416 \times 0.8 \times 0.2}{0.0025}$$

$$SS = \frac{0.614656}{0.0025}$$

Sample size = 349

4.0 Results and Discussion of Findings

H₀₁: there is no statistical significance between green logistics and customer patronage of retail malls.

Three hundred and forty-nine (349) copies of the questionnaire were administered, but only three hundred and two (302) were duly filled, returned and coded for the analysis which represent 86.53 % of the total instruments, the demographic data of the respondents were answered using descriptive statistics of frequency counts. This revealed that the responses received were factual following the sampled population.

Table 1
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.858 ^a	.736	.735	.465

a. Predictors: (Constant), Green logistics
Source: SPSS Output, 2025

The table I presents the model summary. It shows that the correlation coefficient r is 0.858 (i.e., $r = 0.858$) which indicates that there exists a very strong relationship between dependent variable (customer patronage) and green logistics (which is the predictors or independent variables). It is also clear from the table that the r^2 , which is the coefficient of determination, is 0.736. This implies that more than two-third of percentage i.e., 73.6% change in customer patronage and the green logistics.

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10088.701	1	3362.900	754.456	.001 ^b
	Residual	1653.689	135	4.457		
	Total	11742.39	136			

a. Dependent Variable: Customer patronage

b. Predictors: (Constant), Green logistics

Source: SPSS Output, 2025

From the ANOVA table. The F-statistic as shown from the table is significant since the probability value of .001 is less than the alpha level of 0.05, thus the model is fit. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. This implies that green logistic has a significant influence on the customer patronage of retail mail.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	12.377	1.020		12.134	.001
Green logistics	.988	.047	.431	20.933	.001

a. Dependent Variable: Customer patronage

Source: SPSS Output, 2025.

From the coefficient table It could be seen that the overall significant effect for the independent and the dependent variable is less than 0.05 significant level. Therefore, there is a significant effect of the independent variable on the dependent variable, which implies that the null hypothesis is rejected and the alternative hypothesis is accepted. The Beta value of 0.431 for green logistic (independent variable) implies that increase in green logistics will lead to 43.1% increase in customer patronage of retail mall.

Discussion of findings

The study examined the influence of green logistics on customer patronage of retail malls, yielding notable results. The r^2 value of 0.736 indicates that green logistics practices such as eco-friendly transportation, sustainable packaging, energy-efficient supply chains, and waste-reduction strategies explain approximately 73.6% of the variation in customer patronage. This is a strong coefficient of determination, signifying that most of the changes in customers' willingness to visit and repeatedly shop at retail malls can be attributed to the malls' green logistics initiatives. The mean square value of 3,362.900 from the ANOVA output suggests that the regression model is highly significant and has a strong overall fit. The standardised beta coefficient of 12.377 indicates a very strong positive relationship between green logistics and customer patronage. Practically, this means that for every unit increase in the adoption of green logistics measures, there is a substantial rise in customer patronage. Such a high beta value reflects that consumers are not only aware of but are also highly responsive to sustainable logistics efforts. These findings align with sustainability and consumer-behaviour literature (Akinbogun et al., 2024; Aqabneh, 2025; Fadli, 2024), which consistently reports that modern shoppers, especially environmentally conscious segments such as Generation Z and millennials, prefer retail outlets that minimise their ecological footprint.

5.0 Conclusion and Recommendations

This study concludes that green logistics strategies such as eco-friendly supply chain management, energy-efficient transportation, sustainable packaging, and waste reduction influenced customer patronage of retail malls. Customers are increasingly drawn to eco-friendly brands, which they see as honest and socially responsible. Malls that use energy-efficient transportation and eco-friendly packaging not only save money and help the environment, but they also get more business from shoppers who care about it. Waste-reduction programmes demonstrate a company's commitment to long-term sustainability, fostering confidence and promoting repeat visits. This study emphasised using full green logistics solutions gives a business a stronger competitive edge, makes customers more loyal, and makes retail malls leaders in sustainable commerce. The result leads to more customers and long-term profits.

The study recommended that continuous investment in eco-innovations, transparent communication of green initiatives, and management engagement to strengthen customer patronage and support broader sustainability goals will go a long way in fostering customer patronage of retail malls and enhancing long-term loyalty.

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Micro-Financing and Performance of Women-Led Shea Butter Businesses in Niger State, Nigeria

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Abstract

Women in shea-butter business in Niger state, Nigeria, have over the years faced with several challenges that hampered their performance despite the abundance of shea trees. Micro-financing remains one of the key factors driving performance but it under-examined within the context of this study. This study therefore examined the effect of micro-financing (Interest rate, loan duration and loan recovery strategies) on the performance (output/sales) of women in shea butter business in Niger state, Nigeria. The study utilizes cross sectional survey research design and data for the study were collected through primary sources from 278 sampled women in shea butter business in Niger state. Data for the study were analyzed using correlation and regression analysis. The study found that interest rate has a significant negative effect on the performance of women in shea butter business in Niger state with a coefficient of -0.170 and p-value of 0.020 while, loan duration has significant positive effect on performance ($\beta = 1.568$; $P < 0.001$). Also, loan recovery strategies have significant positive effect on the performance of women-led shea-butter businesses in Niger state ($\beta = 0.370$; $P < 0.001$). Consequently, the study recommends that microfinance banks should lower their interest rates, extend the loan duration and sustain their loan recovery strategies to encourage women in shea butter business to patronize the banks, conveniently pay back the loan with minimum default rate and fast-track loan recovery process to achieve improved performance among the women in shea-butter businesses in Niger state.

Keywords: Microfinancing, interest rates, loan duration, loan recovery strategies, performance and shea butter.

1.0 INTRODUCTION

The essence of establishing a business is primarily to achieve the objectives of providing goods and services thereby enabling the business to make profit and continue to survive. In order to achieve the set business objective, organizations continue to strive and develop various strategies. The effective and efficient attainment of the set goal by an organization via a well-designed approach is termed performance. In furtherance to this assertion, Moussa (2020) posited that organizational performance encompasses all aspects of tangible output or outcome of an entity as measured against its set plan either in form of goals or objectives.

Organizational performance is measured along financial and non-financial dimensions, both of which provide a holistic understanding of an organization's success. The financial performance measures are crucial matrix for evaluating a company's financial health and profitability, reflecting its ability to generate returns for investors and manage costs efficiently (Dahmen & Rodríguez, 2022). This according to Laitinen (2019), includes traditional indicators such as revenue growth, net profit, return on equity (ROE), and earnings before interest and taxes (EBIT). On the other hand, non-financial dimensions of business performance provide important metrics for ascertaining the long-term sustainability and competitive advantage of the business as they directly affect customer loyalty, operational efficiency, and brand reputation (Neely, 2021). The non-financial indicators cover customer satisfaction, innovation

capability, employee engagement, and environmental impact (Huang & Watson, 2022). Customer satisfaction, for example, is a predictor of future revenue, while high levels of employee engagement correlate with enhanced productivity and innovation (Olufemi, 2019).

All over the world, there are well documented evidences of improved performance in institutions and organizations. For instance, Okafor (2020) argued that the competitive nature of firms in European and Asian countries is on the increase due to the well-regulated, coordinated and competitive business environment as well as access to information. However, in Africa particularly Nigeria, the level of business performance is highly unstable and the key bane of performance fluctuation is information asymmetry and lack of clear and well-coordinated institutional framework to drive holistic organizational performance (Okafor, 2020; Zhiri, 2017). While the entire business ecosystem in Nigeria grapples with the challenges of poor performance, small businesses are the worst hit by the uncoordinated policies and programmes of government and even though, small businesses are the drivers of the nation's economy (Yusufu et al., 2020).

Beck et al. (2023), confirmed that Small and Medium Enterprises (SMEs) are crucial for the economic development because they play a key role in promoting inclusive economic growth by generating employment opportunities and supporting poverty alleviation efforts, especially in rural and underserved regions. Despite the numerous advantageous roles played by small businesses in Nigeria, they still encounter significant obstacles such as limited access to finance, regulatory complexities, and inadequate infrastructure (World Bank, 2023). Sanni et al. (2020) confirmed that despite government efforts aimed to improve the performance of small businesses through the intervention of Bank of Industry, Central bank of Nigeria, conventional banks, there still leave a huge gap in small businesses financing in the rural communities which is partly due to their inability to provide the much-needed collateral, high interest rates, short repayment period, and inability to access government intervention for small businesses. This development hampered the performance small businesses thereby making them to contribute insignificantly to the local economy

Microfinance banks across the country are charged with responsibility of providing financial services to meet the financing needs of small and medium scale entrepreneurs (Mohammed et al., 2023). The micro-credit functions of the micro-finance banks which are of particular interest to the performance of small businesses include, interest rate, loan duration and loan recovery strategy. Microfinance interest rates is the cost of capital, where lower and more favorable rates tend to enhance profitability and growth, while high rates erode margins and constrain reinvestment (Ashta & Hudon, 2019). Loan duration shapes SME is the length of time it takes the borrower (SMEs) to repay the loan with the interest (Onyeiwu et al., 2021). Repayment flexibility, as adequately longer tenures ease cash flow pressure and support expansion, whereas very short durations can limit scaling and meaningful growth. Loan recovery strategies covers the extent of encouragement and sometimes the use of legal process to recover loans from the borrowers and this strategy whichever way it is applied affect the performance of SMEs.

The above explanation clearly show that a relationship exists between the activities of the microfinance banks and the performance of small businesses. While the effect is pervasive among small businesses, it is felt more by women-dominated businesses (Amran & Mwasiagi, 2019). For instance, in Niger state, Shea butter represents one of the women-dominated businesses but, their performance in shea butter production is generally among other factors, affected by the credit facilities available to them from the microfinance banks. While the effect of microfinance credit has been evaluated in relation to the various performance indicators and sustainability of Small and Medium Scale Enterprises (SMEs) both within and outside Nigeria,

Ibrahim (2018), Mnunka & Oyagi (2020), Dhungana et al. (2022) and Herlinawati et al. (2023), specific effort aimed to examine the effect of microfinancing on the women dominated businesses especially, women-led shea butter business in Niger state, is almost next to non-existence, to the best of knowledge of this study. This study therefore deemed it necessary to consider the effect of microfinancing (interest rates, loan duration and loan recovery strategies on the performance (output and sales) of women-led shea butter businesses in Niger state (Bosso, Edati, and Mariga), Nigeria. The local governments were chosen due to their dominance in shea butter production in Niger state.

2.0 LITERATURE REVIEW

This section of the study reviewed relevant literature within subject matter of the study, conceptually, theoretically and empirically.

2.1 Microfinancing

Microfinancing constitutes the allocation of financial resources by micro-finance institutions to small-scale business operators to facilitate their ability to fulfill financial commitments (Amran and Mwasiagi, 2019). Microfinancing especially in Nigeria refers to the provision of financial services, primarily credit, savings, and insurance, to low-income individuals or small enterprises who traditionally lack access to formal banking institutions. The aim of microfinance is to promote financial inclusion by providing the underserved population with the tools to engage in productive activities, manage risks, and improve their economic status. One of the central features of microfinance in Nigeria is its focus on small-scale entrepreneurs, especially women, who represent a significant portion of the informal sector (Agboola, 2015). This enables women in the rural communities to access capital to start and expand their businesses, thereby contributing to household income and reducing poverty levels. The conditions, programmes and schemes under which microfinance banks operate which are of interest especially to the women entrepreneurs are reviewed in detail as follows.

2.1.1 Interest Rate

Loan interest rate is a major consideration and concern in microfinancing as it affects the performance small businesses. Generally, Moussa (2020) defines interest rate as the cost of borrowing or the amount which borrowers must pay in addition to the principal loan amount for accessing credit services from microfinance institutions (MFIs). The interest rate in microfinancing is designed to cover not only the cost of funds but also the operational expenses incurred by MFIs, which tend to be higher compared to conventional banks due to smaller loan sizes and the labor-intensive nature of dealing with numerous small-scale borrowers (Amran and Mwasiagi, 2019; Anyanwu, 2022). Microfinance interest rates in Nigeria are also influenced by several factors, including inflation, the cost of funds, the risk of default, and the regulatory framework established by the Central Bank of Nigeria (CBN). The interest rates often range from 20% to 50% annually depending on the risk factors, operational cost (Maitrot & Hulme, 2021). Generally, the rate of interest charged by microfinance banks specifically in Nigeria plays a great role in determining the credit accessibility of small businesses.

2.1.2 Loan Duration

Another microfinancing dimension used in this study is loan duration. Loan duration also have considerable implications on the performance businesses. Loan duration in microfinancing refers to the length of time granted to the borrowers, typically small businesses, to repay the loans by the micro-finance institutions (Apat & Bawica, 2022). This duration is a strong determinant of loan affordability, repayment success, and the overall impact of the loan on business sustainability and performance. All over the globe, microfinance loans are structured to provide flexible terms and conditions that accommodate the needs of small enterprises, but the loan duration varies depending on the institution, the region, and the economic environment

(Ibrahim, 2018). In most cases, shorter loan durations often place small businesses and individual lenders under significant pressure, while longer durations offer them a manageable repayment terms which often come with higher interest rate (Apat & Bawica, 2022). Also, Ibrahim (2018) confirmed that shorter loan terms help to reduce debt burdens, but limit the ability of small businesses to invest in long-term projects. On the other hand, longer loan duration can provide more flexibility but escalates the risk of default and reduce the bank's ability to turnover its loan and satisfy the financial needs of other categories of prospective borrowers (Olowe, 2015). In order to overcome the challenges posed by the loan repayment pattern in Nigeria, the Central Bank of Nigeria (CBN) has introduced a number of reforms to encourage flexible loan terms, including extended repayment periods, to support small and medium-sized enterprises (SMEs) (Olowe, 2015).

2.1.3 Loan Recovery Strategies

Microfinance loan recovery strategies in Nigeria are the structured measures microfinance banks employ to safeguard portfolio quality by combining robust pre-disbursement screening, such as stringent client appraisal, character assessment, and careful setting of collateral and credit terms, to reduce the likelihood of default from the outset (Anyanwu, 2022). Mudakkar and Uppal (2023) opined that during the life of the loan, institutions rely on ongoing techniques including close monitoring of clients' businesses, regular repayment reminders, use of group or joint-liability schemes that harness peer monitoring and peer pressure and continuous borrower engagement to sustain repayment discipline and early detection of distress. When repayment problems arise, banks deploy corrective tools such as loan restructuring, renegotiated repayment schedules, temporary principal forbearance, interest rate adjustments and where feasible, consolidation of multiple obligations, with improved recovery and lower non-performing loans (Nwosu & Akpors, 2020). In more severe or persistent default cases, lenders may escalate to legal remedies and regulatory instruments ranging from formal demand letters and court actions to enforcement of collateral and the Central Bank's Global Standing Instruction (GSI) that allows recovery from accounts in other banks while also suspending defaulters from further credit, all aimed at improving repayment performance without undermining long-term customer relationships or institutional sustainability (Okafor, 2018)

2.1.4 Concept of Performance

The concept of business performance encompasses various facets of company operations such as financial results, market position, and overall organizational efficiency. It acts as a crucial gauge of a business's success in achieving its objectives, reflecting its capacity to generate profits, maintain growth, and compete effectively. According to Olubiyi (2024), organizational performance refers to the degree to which an organization achieves its established goals and creates value through the effective distribution of resources. Performance is frequently evaluated through metrics such as profitability, market share, customer satisfaction, innovation, and operational effectiveness (Gyan, 2024). Measuring organizational performance according to Ahmad et al. (2024), is essential for both public and private sector entities to establish disparity in goal-activity relationship. Organizational performance can be measured through both economic and non-economic otherwise known as financial and non-financial dimensions.

Financial performance encapsulates quantitative outcomes that concentrate on monetary indicators such as profitability, liquidity, return on investment (ROI), sales and output volume, revenue, and market share (Rai, 2024). These metrics are intrinsically linked to the economic prosperity of the firm and are frequently utilized by investors, creditors, and regulatory bodies to assess a firm's overall health and sustainability. Non-financial performance on the other hand, encompasses qualitative indicators such as customer satisfaction, innovation, employee engagement, corporate social responsibility (CSR) and environmental sustainability (Hafis et al., 2024). These elements are increasingly acknowledged as vital contributors to enduring

competitiveness and growth. From the foregoing explanations on both dimensions of performance, it can be inferred that duo are complementary aspects of firm success. While, financial metrics provide critical insights into a firm's short-term profitability and stability, the non-financial indicators offer a deeper understanding of long-term capabilities competitiveness and sustainability of the firms. Considering the domain of the study as well as the nature of their business (shea butter production) this study considers the volume of output of shea butter produced/sold which fall under the financial dimension as the appropriate measure of performance in this instance since most of the women do not keep proper record of accounting that could lead to the determination of profit.

2.2 Theoretical Framework

This study is anchored by Micro-finance credit theory which was postulated by Muhammed Yunus in 1976, in response to the financial exclusion of low-income individuals, particularly in developing countries (Kabeer, 2019). The theory postulates that the provision of credit by micro-finance institutions can act as a catalyst for financial independence, thereby contributing to both economic and social development (Ahmad and Mahtab, 2017). Micro-finance credit theory provides an approach that offers small, unsecured loans aimed at improving the economic status of the borrowers and fostering entrepreneurial activities among them (Armendáriz and Morduch, 2017). In relation to the three dimensions of microfinancing terms and condition vis a vis the performance of SMEs, Microfinance credit theory support the use of interest rate, loan duration and recovery strategies to jointly shape SMEs' performance by balancing lender sustainability with borrower capacity.

2.3 Empirical Review

Relevant studies that examined the effect microfinancing terms and conditions are reviewed as follows with each dimension of microfinancing in relation to performance sequence of paragraphs. With respect to the effect of interest rates on the performance, Adewale and Adeyemo (2024) conducted a study in Osun State, Nigeria by evaluating the impact of microfinance bank loans (interest rate) on small and medium enterprises (SMEs) performance. Using a descriptive survey research design, the study sampled 150 SMEs from the primary data were collected and analysed using regression analysis. the study found that while microfinance loans enhance productivity and business expansion, high-interest rates create significant constraint to effective loan utilization as it has negative effect on performance. Similarly, Pedersen (2023) explored the broader implications of microfinance on small business development in Nigeria over a period of 30 years (1992-2021), using secondary data from the Central Bank of Nigeria. Employing econometric techniques like unit root tests and co-integration analysis, the study concluded that while microfinancing activities have positive influences on business growth, high interest rate has significant negative on performance. Conversely, Akinyede and Iriobe (2023) investigated the effect of formal microfinance banking practices on the performance of SMEs in Osun State. This study utilizes a survey research design and employs a purposive sampling technique to select 200 respondents from the study population to whom questionnaire were administered. Data for the study were analyzed using the ordinary least square regression. The study established that interest rate has positive relationship on the performance of the MSEs studied. This implies that the effect of interest rate on the business performance is mix.

On the effects of loan duration on the performance of businesses, Akram et al. (2023) studied the effect of loan characteristics and their influence on microfinance contract performance in Pakistan. Using survey research design and regression analysis, it was found that loan duration has significant effect on business performance and also mediates the relationship between loan terms and business. This shows that longer loan duration improves repayment rates by reducing pressure on businesses to repay within shorter periods, thus improving client-business

performance. Similarly, Adnan and Kumar (2024) conducted a study in Indonesia that focusing on the role of microfinancing financial literacy knowledge transfer and risk attitudes on the performance of 149 selected microenterprises. Findings from the study through regression analysis revealed that financial literacy transfer significantly and positively influenced the performance of the microenterprises by enabling better financial decision-making and resource management. The reviewed studies show that there is a consensus on the positive and significant effect of loan duration on the performance of business.

Loan recovery strategies represent another proxy of microfinancing used in this study. Amoah (2024) conducted an empirical analysis of debt recovery strategy effectiveness and implementation challenges on some selected SMEs in Ashanti Region, Ghana. Loan recovery was assessed through different debt-recovery strategies (regular borrower follow-up, flexible rescheduling, group-monitoring) used by MFIs and their impact on non-performing loans (NPLs), portfolio quality and SMEs performance. The study employed mixed method approach and collected primary data from the MFIs operating in the Ashanti region. Descriptive statistics, OLS and multivariate regression were employed to analyse the data. The findings revealed that Proactive, relationship-based recovery practices (regular borrower follow-up, flexible rescheduling, group-monitoring) were associated with lower NPL ratios and improved portfolio and SMEs performance. Similarly, Ashemeza and Turyamushanga (2025) evaluated the effect of credit risk management (appraisal, collateral rules, monitoring, and formal recovery procedures) on the loan recovery rates and institutional financial performance of microfinance institutions loans in Ishaka-Bushenyi, Uganda. The study employed a case study/cross-sectional survey of one SACCO and nearby MFIs and regression analysis linking presence/strength of credit-risk controls to measured loan recovery ratios and NPL levels; triangulated with staff and borrower interviews. Findings revealed that strong credit-risk control measures (rigorous appraisal, periodic monitoring, clearly codified recovery procedures) had a statistically significant positive association with higher recovery rates and lower provisioning.

3.0 Methodology

This study utilized cross-sectional survey research design and collected primary data from 284 (Bosso LGA 72; Edati LGA 113 and Mariga LGA 99) sampled women Shae Buter producers that were purposively selected for the study. The psychometric properties of the instrument were confirmed via instrument validation by experts in both academia and practice while, instrument reliability was assessed using Cronbach Alpha test on the 10% 30 respondents (approximately) used for the pilot testing with a Cronbach Alpha result of 0.841. This indicate that the instrument is reliable because the reliability result is above the minimum threshold of 0.70 (Amoah (2024)). Data for the study were collected using questionnaire (ranked in 5-point Likert scale) administered through the help of research assistants. The study employed correlation, Variance inflation Factor (VIF) and regression analysis to analyze the data for the study. There are two main variables used in this study: Dependent variable proxied by sale/output and the independent variable which consists of 3 proxies (Interest rate, loan duration and loan recovery strategies). This study adapts the model of Amran and Mwasiagi (2019) to establish the effect of microfinancing on of women in shea butter production in Niger state. the original model of Amran and Mwasiagi (2019) is stated thus:

$$FP = \beta_0 + \beta_1 FA_i + \beta_2 SM_i + \beta_3 FK_i + \beta_4 LR_i + \varepsilon$$

Where: FP = Financial Performance of SMEs; FA= Financial accessibility; SM = Savings mobilization; FK = Financial knowledge; LR = Lending rates; ε = Error term Where

The model is further modified to capture the model for this study which result into the following model.

$$OPS_i = \beta_0 + \beta_1 IR_i + \beta_2 LD_i + \beta_3 LRS_i + \varepsilon_i$$

Where: β_0 = constant term, $\beta_1 - \beta_3$ = coefficient of the independent variables, ε_i = error term, OPS_i = Quantity produced/Sold, IR_i = Interest Rate, LD_i = Loan Duration and LRS_i = Loan recovery strategy.

4.0 Results and Discussion

This section presents and discusses the results of the analysis.

4.1 Correlation and VIF Results

The correlation among the variables and the VIF result is summarized in Table 4.1.

Table 4.1: Correlation and VIF Results

	OPS	IR	LD	LRS	VIF
OPS	1.000				
IR	-0.121	1.000			1.342
LD	0.371	-0.069	1.000		1.254
LRS	0.011	0.271	0.035	1.000	1.532
				Mean VIF	1.376

Source: Generated from the questionnaire through 'Stata' (2025)

The correlation result of the variables shown in Table 4.1 discloses the strength and direction of relationship among the variables. The results of the correlated variables show that loan duration, savings mobilization and financial knowledge are positively correlated with output/sales. However, interest rate has negative correlation with output/sales. This implies that all the variables except for interest rates move in same direction while interest rate moves in opposite direction with output/sales. On the whole, the correlation result discloses absence of multicollinearity. The highest correlation value of 0.371 which is between loan duration and output/sales is less than the maximum of 0.8 ceiling (Hafis et al., 2024). The absence of multicollinearity was further corroborated through Variance Inflation Factor (VIF) test where all the values are below the maximum threshold 10 for the mean VIF (Hafis et al., 2024)

4.2 Regression Results

The regression result of the study which is based on the model specified in chapter three is presented in Table 3.

Table 4.2: Regression Results

Variables	Coef.	P-val.
IR	-0.170**	0.020
LD	1.568***	0.000
LRS	0.370***	0.000
FK	0.076	0.175
R ²	0.794	
F-stat	26.29	0.000

Source: Generated through 'Stata' (2025)

The result revealed an R² of 0.794 for the model which indicates that approximately 80% of the variation in the dependent variable (output and sales) of the women in shea-butter business in Bosso, Mariga and Edati local government areas is explained by the proxies of the dependent

variable (Interest rate, loan duration and loan recovery strategy. The f-statistics value of 26.29 with a p-value of 0.000 indicate the joint significance of microfinancing on the women-led shea butter businesses in Niger state. This therefore shows the fitness of the model. The level of significance of each proxy of the independent variable on the dependent variable is indicated in asterisk (*) with three asterisks (***) denoting significance at 1% and two asterisks (**) denoting significance at 5%.

4.3 Discussion of Results

Considering the regression result in Table 2, the effect of microfinancing on the performance women-led shea-butter businesses in Bosso, Mariga and Edati local government areas respectively, is discussed and linked with previous studies.

i. Interest rate and performance

The result captured in Table 3 revealed that interest rate has a negative coefficient of -0.170 and a p-value of 0.020. The result suggests that a reduction in interest rate has a significant increase in the performance of the women-led shea-butter businesses in Bosso, Mariga and Edati local government areas, respectively. In other word, interest rate charged by the micro finance institutions significantly improved performance. This implies that the micro finance institutions charge reasonably low interest rates that encouraged women in shea butter businesses to take loan for further investment in growth, innovation and operational activities of their respective busiensses. This finding is in line with the submission Adewale and Adeyemo (2024) but contradicts Akinyede and Iriobe (2023).

ii. Loan duration and performance

Table 2 reveals that loan duration has positive coefficient of 0.568 and a p-value of 0.000 ($P < 0.01$) in relation to performance (output and sales). This implies that the loan duration offered by the microfinance banks has significantly driven and positively influenced output and sales of shea-butter in the three local government areas. This further suggests that, longer loan duration offered by must have helped the women in the business in reducing the amount and number of periodic repayments, thereby improving cash flow, allocate more resources toward expanding investments in shea-butter business, efficiently manage their working capital and plan for repayment in good time. This finding is consistent with those of Akram et al. (2023) Adnan and Kumar (2024).

iii. Loan Recovery Strategies and performance

Table 2 shows that loan recovery strategies employed by the microfinance banks have positive coefficient of 0.370 and a p-value of 0.000 ($P < 0.001$) in connection with the output and sales (performance) of women-led shea-butter business in Bosso, Edati and Mariga local government areas on Niger state. This indicates that the banks possibly deployed considerate loan recovery strategies to safeguard loan portfolio quality as well as ensuring that loan terms are less stringent and carryout careful assessment on the character of the prospective borrowers. The bank may have also engaged in monitoring of clients' businesses, give regular repayment reminders, use of group or joint-liability schemes that harness peer monitoring and peer pressure and continuous borrower engagement to sustain repayment discipline and early detection of distress. This significant effect of loan recovery strategies as documented in this study is in tandem with the conclusion of Amoah (2024).

5.0 Conclusion and Recommendations

The study examined the effect of microfinancing on the performance of women-led shea-butter businesses in Bosso, Edati and Mariga local government areas of Niger state. This study is considered necessary and timely due to the unstable and sometimes dwindling level of output/sales made by women in shea-butter business, even with the abundance of shea trees in the three local government areas covered by the study. The poor performance was primarily linked microfinancing because availability of funds on favourable terms and condition could

help in improving investment, output and sale of shea-butter in the three local government areas. The result from the study revealed that microfinancing proxies (interest rates, loan duration and loan recovery strategies) have significant effect on the performance of women in shea-butter business in Bosso, Edati and Mariga local government areas of Niger state. Conclusively, a reduction in interest rate, extension in repayment period and good loan recovery strategies are crucial in driving the performance of women-led shea butter businesses in Niger State, Nigeria.

Consequent upon the findings and conclusion of this study, the following recommendations among others have been put forward to help drive healthy financial intermediation of the microfinance banks as well as the performance of women-led shea-butter businesses in Bosso, Mariga and Edati local government areas of Niger state.

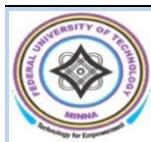
- i. Considering significant negative effect of interest rate on the performance of women in shea-butter business in Bosso, Mariga and Edati local government areas of Niger state, it is recommended the banks should continue lower the cost of capital/borrowing (interest rate) in order to further spur borrowing for investment and business expansion. This can be done by giving special and competitive interest rate consideration to the women in shea-butter business to enable them harness the abundant presence of shea-trees/nuts, improve their performance and pay back the loan with ease.
- ii. The banks should continue to provide a repayment time-lag that commensurate with the peculiar nature (season and off-season) of the shea-butter business such that the women are given ample time to pay back their load without putting the two parties in liquidity crunch. This will no doubt encourage the women to give the desired attention to the growth of the business and think less of or be consumed by the fear having to pay the loan within the shortest period of time especially during the off-peak period.
- iii. The banks are encouraged to sustain their flexible and customer friendly loan recovery strategies through mentorship, advisory services, loan restructuring, keep regular communication with customers and deploy legal mean as the last resort. While this helps build friendly atmosphere between the banks and the borrowers, it can also encourage timely repayment of loan by the customers

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Impact of Technological Innovation on Rural Financing in South East Nigeria

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Abstract

This study examined the impact of technological innovation on rural financing in South East Nigeria, with a focus on mobile banking, Automated Teller Machines (ATMs), and Point-of-Sale (POS) systems. Rural communities in South East Nigeria have long faced challenges in accessing formal financial services, resulting in a reliance on informal lending practices and financial exclusion. Technological innovations offer potential solutions to bridge this gap by enhancing financial accessibility, promoting financial inclusion, and fostering economic growth in underserved regions. The research employs a survey design to examine how these technologies have affected access to financial services, the barriers to their adoption, and the broader socio-economic implications for rural development. Data were collected from 500 respondents across five states using questionnaires, interviews, and document reviews. The study's findings reveal strong positive correlations between the use of mobile banking, ATMs, and POS services, and financial inclusion in rural areas. However, challenges such as low digital literacy, inadequate infrastructure, and security concerns hinder the full adoption of these technologies. The study concludes that while technological innovations significantly contribute to improving financial inclusion, addressing these barriers is essential for realizing their full potential. Recommendations include enhancing digital infrastructure, promoting financial literacy programs, and implementing stronger security measures to encourage widespread adoption.

1. Introduction

Rural financing is a critical factor in promoting economic growth, particularly in regions where agriculture and small-scale enterprises form the backbone of the economy. It involves the provision of financial services such as loans, savings accounts, insurance, and other investment opportunities, specifically tailored to support the agricultural sector, small businesses, and households in rural areas (Agbakwuru, 2019). Effective rural financing is instrumental in reducing poverty, empowering communities, and facilitating economic development by enabling access to capital and investment in underserved regions. In South East Nigeria, however, rural communities face significant financial challenges, including limited availability of formal financial services, low levels of financial literacy, and a reliance on informal lending practices (Okeke et al., 2021). These challenges hinder economic growth, exacerbate poverty, and contribute to a high level of income inequality.

Despite the importance of rural financing, many rural areas in South East Nigeria remain financially underserved, with a scarcity of formal banking institutions. The traditional banking infrastructure has struggled to penetrate these areas due to high operational costs, poor infrastructure, and a lack of tailored financial products that meet the unique needs of rural populations (Okeke et al., 2021). This financial exclusion has perpetuated a cycle of poverty and limited economic opportunities for millions of people, leading to the urgent need to explore innovative solutions that can bridge the financial access gap in these regions (World Bank, 2008).

Technological innovation has emerged as a transformative tool for addressing these challenges (Chiemeké et al 2020). Technological advancements such as mobile banking, Automated Teller Machines (ATMs), Point-of-Sale (POS) systems, and digital payment platforms are reshaping the financial landscape in South East Nigeria. These innovations have the potential to overcome barriers such as physical distance, high transaction costs, and bureaucratic inefficiencies, providing more accessible and efficient financial services to rural communities (Rogers, 2003). By leveraging mobile phones, internet connectivity, and digital platforms, financial services can be extended to areas previously considered too remote or economically unviable for traditional banking institutions.

While technological innovations like mobile banking, ATMs, and POS systems have begun to gain traction in urban areas, their adoption in rural regions remains limited. This limitation is largely due to inadequate digital infrastructure, including unreliable internet access, poor network coverage, and unstable electricity supply (Lawal et al 2024). In addition, socio-cultural factors such as low digital literacy and mistrust of digital systems continue to hinder widespread adoption (Lui, 2025). These persistent barriers highlight the need for further research into how technological innovation can promote rural financing, particularly within South East Nigeria (Sam-Abugu, 2025).

This study seeks to address these gaps by exploring the impact of mobile banking, ATMs, and POS services on financial inclusion in rural communities in South East Nigeria. The study will analyze how these technologies have improved access to financial services, the barriers to their full adoption, and the broader socio-economic implications for rural development. By examining these factors, the study aims to contribute valuable insights into the potential of technological innovation as a means to promote financial inclusion and sustainable economic growth in rural areas.

The remainder of this paper is structured as follows: Section 2 reviews the relevant literature, Section 3 presents the research methodology, Section 4 discusses the analysis and results, and Section 5 offers conclusions and policy recommendations.

2. Review of Literature

Technological Innovation

Technological innovation could be seen as the introduction or application of new technologies or the improvement of existing ones to enhance efficiency, productivity, and accessibility in various sectors (Schumpeter, 1942). It encompasses the use of groundbreaking tools and methodologies that address existing challenges and create new opportunities. According to Thairu & Wahome (2016), technological innovations are opening up new markets for service providers such as telecoms and a wide range of retail stores, as well as new consumers which might include millions of unbanked cell phone owners. Angko (2013) stated that cost savings for both banks and clients are a benefit of technological advancements in banking. This implies that in order to draw in and satisfy clients, banks must make sure that cutting-edge goods and services are fairly priced. In the financial sector, technological innovation includes advancements such as mobile banking, digital payment platforms, blockchain, artificial intelligence, and fintech solutions, which aim to revolutionize traditional financial services by making them more inclusive and accessible (Chukwu & Nnamdi, 2020). Technological advancements in the banking sector include online account opening, ATM deposits and withdrawals, internet banking, mobile banking, and electronic money transfers. These innovations significantly contribute to expanding a bank's customer base, capital, and profitability, ultimately enhancing its overall financial performance (Hill, 2009). Hilal (2015) asserts that introducing new technologies and fostering innovation are the best ways to increase bank productivity. For instance, mobile banking platforms such as Paga and Opay have

empowered millions of unbanked people in South East Nigeria to carry out transactions without relying on physical bank branches (Eze & Nnamani, 2021). Similarly, agricultural fintech platforms such as FarmCrowdy offer credit facilities, input supply chains, and market linkage services tailored to rural farmers, thereby driving financial inclusion and productivity.

Furthermore, innovations like blockchain provide secure and transparent transaction frameworks, which are particularly useful in addressing fraud and enhancing trust in financial systems. Conversely, artificial intelligence enables financial institutions to analyze data patterns, predict customer needs, and customize financial products, making them more accessible to rural populations. These technological advancements not only reduce operational costs but also expand the reach of financial services to underserved regions. Technological innovations are broadly acknowledged as key factors that drive economic growth and improve prosperity in both advanced and emerging economies. Enhanced technological innovation has the potential to foster sustainable economic development by boosting productivity and fostering creativity (Gwani, 2023). However, the successful implementation of these innovations in South East Nigeria is often hindered by infrastructural deficits, such as poor internet penetration and irregular power supply, as well as socio-economic factors, including digital illiteracy and gender disparities (Ogbu & Ukpere, 2023). Addressing these barriers requires a concerted effort from stakeholders to invest in digital infrastructure, promote capacity building, and create an enabling regulatory environment.

Rural Financing

Rural financing involves offering specialized financial services like loans, savings, insurance, and payment options, to rural populations to support their agricultural activities, small-scale enterprises, and household needs. Rural financing includes formal, informal, and semiformal systems designed to tackle the specific financial challenges encountered by rural communities (World Bank, 2004). Kofi et al. (2018) emphasize that rural financing is crucial for empowering rural households, driving economic development, and alleviating poverty by facilitating access to vital capital for both productive use and consumption. These services enable rural populations to mitigate risks, invest in education and health, and enhance income stability. Rural financial systems involve diverse stakeholders, including microfinance institutions, cooperative societies, and informal savings groups. Nonetheless, access to formal financial services in rural areas continues to be restricted because of poor infrastructure, high transaction expenses, and the intricate nature of rural economic activities (Echebiri & Nwosu, 2020). This gap often compels rural dwellers to rely on informal financial arrangements, which may not always meet their needs effectively. Agboola and Fadeyi (2019) emphasize the critical need for inclusive financial services to address these barriers and promote economic sustainability in rural areas. In addition, rural financing supports not just agricultural ventures but also non-farm activities that contribute to rural development, such as small businesses and social enterprises. Adewole et al. (2021) highlight that effective rural financing must include innovative financial products like microinsurance, digital payment platforms, and leasing services, which cater specifically to the diverse and often underserved needs of rural populations. Incorporating technology into rural financing has demonstrated considerable promise in addressing traditional obstacles like restricted access to physical bank branches and low levels of financial literacy (Ifeanyi & Olu, 2022). For sustainable rural financial systems, collaborative efforts are essential among governments, financial institutions, and development agencies. Policy stability, infrastructure investment, and financial literacy programs are crucial to ensuring that rural communities can access and utilize financial services effectively (Chukwuma & Umeadi, 2020). Expanding rural financing through these means is critical to fostering inclusive economic growth, enhancing resilience, and addressing the persistent challenges of poverty and inequality in rural regions.

Mobile Banking

The banking sector is vital to national economies, particularly in emerging markets. Over time, it has evolved from conventional banking methods to incorporate electronic banking (e-banking) and, more recently, mobile banking (m-banking) (Shobhit, 2016). Mobile banking, or m-banking, is a significant technological innovation that allows customers to manage their financial activities anytime and anywhere using their mobile phones. Essentially, m-banking provides clients with a 24/7 bank at their fingertips through dedicated mobile applications offered by financial institutions. Many customers are drawn to mobile banking because of its simplicity, enabling them to create accounts, transfer money, pay bills, make purchases, and more using mobile devices. Significantly, many American and Chinese banks that adopted mobile banking for their full range of services saw a substantial increase in demand (Narteh et al 2022). Mobile banking combines the banking and telecommunications industries, enabling customers to use banking services through smartphones and tablets (Meghna, 2022). This innovation has revolutionized how individuals and businesses manage their finances, leveraging the convenience and accessibility of mobile technology. By providing convenient, accessible, and secure banking solutions, mobile banking has reshaped the financial services landscape on a global scale. With ongoing technological progress, mobile banking is anticipated to become increasingly important in promoting financial inclusion and shaping the future landscape of digital finance. Despite substantial investments in mobile banking and its numerous benefits, its adoption remains underrepresented in rural areas. The rate of uptake has not reached the anticipated levels. Low literacy and limited knowledge act as significant barriers, as many individuals face challenges in operating advanced technologies like smartphones and personal digital assistants (PDAs).

Automated Teller Machine (ATM)

An Automated Teller Machine (ATM) is a self-operated device that allows customers to carry out a range of financial transactions; such as withdrawing cash, checking account balances, transferring funds, and making deposits without needing assistance from bank personnel. Ohazulike (2022) defined an ATM as a machine that disburses the amount of money a customer requests and highlighted its role in improving operational efficiency for banks and convenience for clients. ATMs help declutter banking halls, reduce workloads for employees, and enhance customer experience by allowing transactions outside traditional banking hours and locations. Beyond convenience, the quality of ATM services is a significant determinant of customer satisfaction, influenced by factors such as transaction speed, accessibility, and reliability. According to Ohazulike (2022), demographic factors such as age, education level, and income influence the relationship between ATM services and customer satisfaction. Okafor and Adebayo (2020) emphasized that ATMs are a key factor in driving customer loyalty in banking, particularly when combined with user-friendly interfaces and efficient service delivery. However, ATMs also pose challenges, including the risks of skimming, hacking, and fraud, which necessitate ongoing technological advancements and stringent security measures (Adebisi & Emmanuel, 2019). The integration of biometric authentication and real-time fraud detection systems has further strengthened ATM security, fostering greater trust among users (Kalu & Nnamdi, 2021). ATMs continue to be a vital component of contemporary banking, connecting traditional and digital banking services and promoting financial inclusion for underserved communities in remote locations. Olorunfemi (2020) emphasized that ATMs play a key role in advancing financial inclusion in rural areas with limited access to physical bank branches.

Point of Sale (POS)

The Point of Sale (POS), also known as Point of Purchase (POP), is a system that enables electronic payment for goods and services using methods like debit cards, credit cards, or

mobile payment platforms. A POS system typically includes a terminal, software, and other tools that enable sales transactions and generate receipts. Chitokwindo (2014) noted that POS systems manage the selling process efficiently, allowing for the printing of receipts and accurate tracking of sales for business and tax purposes. POS systems are essential for retailers and marketers as they often influence purchasing decisions, especially for high-margin products and services. Modern POS systems have advanced to include features like inventory management, customer relationship management (CRM), and data analytics. These innovations enable businesses to optimize sales processes, improve customer service, and gain insights into consumer behavior. Bala et al. (2021) highlighted that POS systems are integral to the transition towards cashless economies, particularly in developing countries where they bridge gaps in financial inclusion. POS systems are increasingly mobile, allowing businesses to operate outside traditional store locations and accept payments at pop-up shops, events, and delivery points, thus enhancing convenience for both retailers and customers (Akindele & Johnson, 2020). However, as Chitokwindo (2014) pointed out, POS systems are sometimes misused to fabricate records and evade taxes through illicit software, known as "zappers." This underscores the importance of regulatory oversight and the adoption of secure, tamper-proof technologies to ensure the integrity of POS operations. By integrating AI and blockchain technologies, POS systems are becoming more robust, offering enhanced security, fraud detection, and transaction transparency (Nguyen & Dao, 2022). The ongoing development of POS systems is essential in accelerating the adoption of cashless payment methods, supporting financial inclusion, and improving operational efficiency for businesses worldwide.

Illiteracy

Being illiterate is defined as not being able to read, write or use technical tools like mobile banking, ATMs, or point of sale systems to transfer money. The concept of functional illiteracy refers to individuals who, despite having basic reading, writing, and math skills, struggle to apply these abilities effectively in real-life situations that require informed decision-making and active participation in everyday activities (Cree et al 2023). As to the definition provided by UNESCO, illiteracy is determined through the evaluation of an individual's reading, writing and mathematics skills in several financial categories that impact their identity and integration into society (Cree et al 2023).

Financial Inclusion

Babajide, Adegboye, and Omankhanlen (2015) describe financial inclusion as the effort to make suitable financial services accessible to every group within society particularly the economically vulnerable through regulated institutions that offer these services in an affordable, fair, and transparent manner. According to Demirgüç-Kunt et al (2015), financial inclusion involves delivering a broad array of quality financial products, such as savings, credit, insurance, payments, and pensions, tailored to the needs of all adults, with a special focus on those with low incomes. The importance of financial inclusion has gained global recognition among policymakers, researchers, and development organizations. Its significance is anchored in its capacity to promote economic development by reducing poverty, generating employment, creating wealth, and improving overall welfare and living standards. According to a 2017 World Bank report, around two billion adults of working age, more than half of the global adult population remain excluded from formal financial services. To close this gap, financial inclusion initiatives are designed to provide households and businesses across all income levels with the ability to access and make effective use of essential financial tools, thereby improving their overall well-being (EFInA, 2016). Around the world, financial inclusion has become a central focus for policymakers, regulators, and development organizations. The World Bank Group views it as a key driver in the fight against extreme poverty and in promoting shared prosperity. Reflecting this belief, the organization has committed to the ambitious objective of achieving universal financial inclusion. By expanding access to financial services and

encouraging their practical use, financial inclusion supports sustainable economic growth and helps create more equitable development outcomes (Allen et al 2016).

Theoretical Framework

This study is grounded in three key theoretical frameworks that link technological innovation to rural financing: the Diffusion of Innovation (DOI) Theory, Financial Intermediation Theory, and Technology Acceptance Model (TAM). The DOI Theory by Rogers (1962), explains how new technologies, such as mobile banking, ATMs, and POS systems, are adopted within a social system, emphasizing factors like perceived benefits, compatibility with existing practices, and ease of use, which are crucial for overcoming barriers to financial access in rural areas. The Financial Intermediation propounded by Gurley & Shaw (1960) highlights the role of financial intermediaries, like microfinance institutions and rural banks, in providing credit and financial services to underserved populations, and how technological innovations lower transaction costs and expand the reach of these services to rural communities (Ajakaiye & Fakiyesi, 2019). Finally, the Technology Acceptance Model (TAM) by Davis (1989), posits that the likelihood of technology adoption increases when users perceive a technology as both useful and easy to use, which is essential for the acceptance of mobile banking and POS systems in rural areas. Together, these theories explain how technological innovations can improve rural financing by enhancing financial access, reducing transaction costs, and promoting the adoption of digital financial services, thus fostering financial inclusion and economic growth in rural communities.

Empirical Review

Ogunleye et al. (2020) explored the influence of mobile banking on financial inclusion within rural areas of Nigeria. Utilizing a quantitative research design, the study gathered data through structured questionnaires administered to rural banking clients. The collected information was analyzed using both descriptive and inferential statistics to examine the relationship between mobile banking adoption and levels of financial inclusion. The findings revealed that mobile banking has significantly improved access to financial services among rural populations, with notable benefits for women and small-scale entrepreneurs. The study highlighted that mobile money platforms have enhanced the ability of rural users to obtain micro-loans, transfer and receive remittances, and save funds securely.

Ugwuanyi et al (2020) investigated the impact of digital finance on money supply in Nigeria over the period from 2008 to 2019. The study utilized the Auto-Regressive Distributed Lag (ARDL) model to analyze the data and derive conclusions. A unit root test was conducted as a diagnostic measure, indicating that the variables were integrated at levels $I(0)$ and first difference $I(1)$, thus justifying the use of the ARDL technique. The results of the ARDL analysis showed that digital finance, particularly deficit financing, had a positive and statistically significant effect on the money supply in Nigeria.

Dzogbenuku et al. (2021) examined the impact of digital payment systems on financial well-being in rural Ghana, with particular attention to variations across gender and age groups. The study found that security, ease of use, and convenience significantly influenced customer satisfaction. Females prioritized security, while males valued ease of use; younger users focused on convenience, whereas older users emphasized security. Customer satisfaction mediated trust and digital payment experiences, with females showing stronger trust linked to positive experiences. The findings underscore the importance of tailoring digital payment systems to meet diverse user needs based on demographic factors.

In a related study, Ajayi and Olufemi (2021) assessed the effect of Point of Sale (POS) systems on financial transactions in rural Nigeria. Employing a mixed-methods approach, the researchers combined qualitative interviews with rural bank managers and POS users,

alongside quantitative data gathered through questionnaires distributed to rural consumers. The study revealed that POS systems have significantly enhanced access to financial services in rural communities. By facilitating cashless transactions and minimizing the need for long-distance travel to bank branches, POS terminals have contributed to greater financial inclusion and convenience for rural dwellers.

Furthermore, Onuoha and Ugochukwu (2022) investigated the role of mobile banking and financial technology (FinTech) in improving rural development in Nigeria. The authors used a quantitative research design, distributing structured questionnaires to rural residents and business owners in Nigeria. Their study concluded that FinTech solutions have contributed to increasing financial inclusion, particularly among low-income and underserved rural populations. By offering digital loans, savings accounts, and remittance services, mobile banking platforms have helped rural Nigerians manage financial risks and access capital for small-scale businesses.

Ekechukwu and Mbah (2019) carried out a study to assess the influence of electronic banking on Nigeria's economic growth over the period from 2008 to 2018. The study used Mobile Transfers, Point-of-Sale (POS) systems, and Automated Teller Machines (ATM) as independent variables, while Real Gross Domestic Product (RGDP) served as the measure of economic growth. A range of econometric tools including the Augmented Dickey-Fuller (ADF) test, error correction mechanism, Breusch-Pagan-Godfrey test for heteroscedasticity, and the Durbin-Watson test were employed to analyze the data. The results revealed that Mobile Transfers and POS systems had varying effects on RGDP, showing both positive and negative relationships at different times. However, ATM usage consistently demonstrated a significant and positive impact on Nigeria's economic growth throughout the study period.

Gap in the Literature Review

Existing literature on technological innovation in rural financing largely focuses on urban areas, leaving rural regions, particularly in South East Nigeria, underexplored. Key gaps include a lack of research on the specific impact of mobile banking, ATMs, and POS systems in rural economies, and how these technologies foster financial inclusion in areas with limited banking services. Additionally, socio-cultural barriers such as low digital literacy, mistrust of digital systems, and gender disparities in technology adoption have been insufficiently addressed. Moreover, studies rarely examine the long-term economic and social impacts of these technologies, such as their effects on household income, small business growth, and agricultural productivity in rural areas. This study aims to fill these gaps by focusing on how technological innovations can improve financial access and promote rural economic development, while also considering the socio-cultural barriers to adoption.

3. Methodology

The study utilized a survey research design, which, as defined by Isangedighi et al (2004), involves collecting data that accurately reflects real-world conditions and behaviors. Data were gathered using a range of instruments, including questionnaires, interview guides, direct observations, and document reviews. The research was conducted across the five states in Nigeria's South East geopolitical zone: Enugu, Anambra, Abia, Imo, and Ebonyi. The study population consisted of 1,250 adults (which comprises of 250 adults from the North senatorial district of each state) within the age range of 20 to 50 years (The age range of 20 to 50 years was selected as it represents the economically active population most likely to engage with financial technologies like mobile banking, ATMs, and POS systems). A simple random sampling technique was employed to ensure that every member of the population had an equal chance of being selected. Despite the larger population, a final sample of 500 participants was

used for the analysis. The sample size for this study is determined using Taro Yamane's formula for sample size calculation, which is commonly used in social sciences research.

The formula is:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n is the sample size

N is the total population of adults in rural South East Nigeria

e is the margin of error (0.05)

Data were processed and analyzed using the Statistical Package for Social Sciences (SPSS). Quantitative responses were coded into a spreadsheet, and Pearson's product-moment correlation coefficient was used to evaluate the relationship between independent and dependent variables. A 0.01 significance level was set, with p-values above this threshold indicating no statistically significant relationship. Results were presented in tabular form, with mean ($\bar{x}$) scores and standard deviations (SD) used to summarize the data. In addition, qualitative data from interviews and document analysis were compared against questionnaire responses, providing a basis for confirming or challenging the quantitative outcomes.

4.0 Data Analysis and Interpretation of Results

4.1 Analysis of the First Objective

To assess this objective, responses from participants were analyzed using mean scores and standard deviations. The focus was on understanding how mobile banking influences access to and usage of financial services across the South East region of Nigeria.

Table 4.1: Mean and standard deviation responses of respondents on the impact of mobile banking on financial inclusion in South East Nigeria.

Issues Raised (SA=5, A=4...)	Mean	SDev	Remark
Mobile banking has made financial services more accessible to people in rural areas.	4.0380	1.31606	Agree
The use of mobile banking has significantly reduced the need to visit physical bank branches.	3.7520	1.23999	Agree
Mobile banking provides an affordable means of accessing financial services.	3.8180	1.43002	Agree
Mobile banking has enhanced savings among low-income earners in South East Nigeria.	3.7560	1.37267	Agree
Awareness of mobile banking services has improved financial literacy in the region.	3.9160	1.32531	Agree
Overall mean	3.8560		Agree

Source: Researcher's Computation, 2025

Table 4.1 presents the mean and standard deviation responses of the participants regarding the impact of mobile banking on financial inclusion in South East Nigeria. The responses indicated general agreement with all the items, as each recorded mean scores above 3.0. The highest mean score was recorded for the item "Mobile banking has made financial services more accessible to people in rural areas" (Mean = 4.0380, SDev = 1.31606). This reflects a strong

consensus among the respondents that mobile banking significantly improved access to financial services in rural communities. This result aligns with the findings of Adebisi and Emmanuel (2019), who asserted that mobile banking serves as a powerful instrument for promoting financial inclusion, particularly in underserved rural areas where access to traditional banking infrastructure is limited. The item "Awareness of mobile banking services has improved financial literacy in the region" also received a high mean score (Mean = 3.9160, SDev = 1.32531), suggesting that mobile banking not only facilitates access to financial services but also plays a role in enhancing financial knowledge in the region. This supports the argument by Afolabi (2021), who highlighted the importance of mobile banking in raising awareness and improving financial literacy among the Nigerian populace. "Mobile banking provides an affordable means of accessing financial services" (Mean = 3.8180, SDev = 1.43002) and "Mobile banking has enhanced savings among low-income earners in South East Nigeria" (Mean = 3.7560, SDev = 1.37267) also received significant agreement. This indicated that mobile banking reduces costs and encourages savings, particularly among low-income earners. These findings are consistent with studies by Smith and Akinwale (2022), who identified mobile banking as a key enabler for increasing savings, especially among financially underserved populations. The item *"The use of mobile banking has significantly reduced the need to visit physical bank branches"* recorded a slightly lower mean score (Mean = 3.7520, SDev = 1.23999), indicating that while mobile banking has reduced the need for physical visits to bank branches, the reduction is not as pronounced compared to other areas. However, it still reflects agreement among the respondents. This finding is similar to the work of Opara (2015), who found that while mobile banking reduces the dependency on physical banks, some users still prefer in-person transactions for certain services. The overall mean score of 3.8560 indicated a general agreement that mobile banking has a positive impact on financial inclusion in South East Nigeria. This finding is consistent with existing literature, notably the study by Kofi et al (2018), which identified mobile banking as a key driver of financial inclusion in Nigeria. Their research highlighted that mobile banking plays a particularly important role in rural regions, where limited access to traditional banking infrastructure presents a significant barrier.

4.2 Analysis of the Second Objective

To determine the impact of Automated Teller Machine on financial inclusion in South East Nigeria.

Table 4.2: Mean and standard deviation responses of respondents on the impact of Automated Teller Machine on financial inclusion in South East Nigeria.

Issues Raised (SA=5, A=4...)	Mean	SDev	Remark
The availability of ATMs has increased access to cash in rural areas.	3.9100	1.38771	Agree
ATMs have made banking services faster and more convenient for users.	3.7360	1.24153	Agree
The introduction of ATMs has reduced queues in bank branches in South East Nigeria.	3.8740	1.31970	Agree
ATMs enable users to perform transactions at any time, promoting financial inclusivity.	3.7940	1.21264	Agree
Security concerns with ATMs discourage people from fully utilizing their services.	3.5400	1.50763	Agree
Overall mean	3.7712		Agree

Source: Researcher's Computation, 2025

Table 4.2 presented the mean and standard deviation responses of participants on the impact of ATMs on financial inclusion in South East Nigeria. The responses indicated agreement with all items, as all mean scores were above 3.0. The highest mean score was recorded for the item "The availability of ATMs has increased access to cash in rural areas" (Mean = 3.9100, SDev = 1.38771), highlighting the significant role of ATMs in enhancing cash accessibility in underserved rural locations. This aligns with the findings of Eze and Ugwu (2022), who emphasized that ATMs bridge the gap between rural populations and banking services by providing easier access to cash. Similarly, the item "The introduction of ATMs has reduced queues in bank branches in South East Nigeria" (Mean = 3.8740, SDev = 1.31970) confirms the assertion by Ohazulike (2022) that ATMs minimize overcrowding in banks, thus improving the efficiency of financial service delivery. "ATMs enable users to perform transactions at any time, promoting financial inclusivity" (Mean = 3.7940, SDev = 1.21264) and "ATMs have made banking services faster and more convenient for users" (Mean = 3.7360, SDev = 1.24153) further demonstrate that ATMs enhance convenience and round-the-clock access to financial services. These findings corroborate the study by Umar and Lawal (2019), which revealed that ATMs play a crucial role in improving the convenience and timeliness of banking services in rural areas, thereby fostering financial inclusion. However, the item "Security concerns with ATMs discourage people from fully utilizing their services" (Mean = 3.5400, SDev = 1.50763) highlighted the challenges associated with ATM usage, particularly in rural settings. This aligns with the observations of Afolabi and Osakwe (2022), who noted that security concerns, such as fraud and ATM theft, remain significant barriers to the full adoption of ATM services in some regions. The overall mean of 3.7712 confirmed a general consensus that ATMs positively impact financial inclusion in South East Nigeria, particularly in rural areas. This finding is consistent with existing literature, such as Nwachukwu and Ugochukwu (2020), who identified ATMs as an effective tool for expanding financial inclusion by reducing physical and transactional barriers in rural areas.

4.3 Analysis of the Third Objective

To assess the impact of Point-of-Sale services on financial inclusion in South East Nigeria.

Table 4.3: Mean and standard deviation responses of respondents on the impact of Point-of-Sale services on financial inclusion in South East Nigeria.

Issues Raised (SA=5, A=4...)	Mean	SDev	Remark
Point-of-Sale (POS) services have brought banking closer to people in remote areas.	4.0000	1.27564	Agree
The availability of POS services has increased financial transactions in small-scale businesses.	3.7140	1.25193	Agree
POS services provide a reliable alternative to bank ATMs.	3.8240	1.37579	Agree
The use of POS services has reduced the reliance on physical cash in the region.	3.9240	1.35864	Agree
High transaction fees on POS services discourage their full utilization.	3.6520	1.31847	Agree
Overall mean	3.8227		Agree

Source: Researcher's Computation, 2025

Table 4.3 presents the mean and standard deviation responses of participants on the impact of Point-of-Sale (POS) services on financial inclusion in South East Nigeria. All items recorded mean scores above 3.0, indicating general agreement among respondents that POS services positively influence financial inclusion. The highest mean score was recorded for the item "The

use of POS services has reduced the reliance on physical cash in the region" (Mean = 3.9240, SDev = 1.35864), highlighting the significant role of POS services in promoting cashless transactions. This supports the findings of Okeke and Udeh (2022), who emphasized the role of POS services in reducing dependency on cash and enhancing financial inclusivity in underserved areas. The item "Point-of-Sale (POS) services have brought banking closer to people in remote areas" (Mean = 4.0000, SDev = 1.27564) reflects the ability of POS services to extend banking services to rural and remote areas, aligning with the study by Ifeanyi and Olu (2022), which identified POS services as a tool for bridging the gap between rural communities and formal financial services. Other items, such as "POS services provide a reliable alternative to bank ATMs" (Mean = 3.8240, SDev = 1.37579) and "The availability of POS services has increased financial transactions in small-scale businesses" (Mean = 3.7140, SDev = 1.25193), further underscore the positive impact of POS services. These findings align with Gwani (2023), who noted that POS services not only improve accessibility but also drive economic activities in small businesses. However, the item "High transaction fees on POS services discourage their full utilization" (Mean = 3.6520, SDev = 1.31847) highlights a notable limitation, as high transaction costs could reduce the adoption of POS services in some areas. This finding corresponds to the observations of Eze and Ugwu (2022), who identified high service charges as a barrier to the widespread use of POS services. The overall mean of 3.8227 indicates a general agreement that POS services significantly contribute to financial inclusion in South East Nigeria. These results support existing literature work of Hilal (2015) who highlighted the importance of POS services in promoting cashless policies and increasing financial awareness in rural areas.

Table 4.4: Pearson product moment Correlation Analysis of Mobile Banking, ATM, POS, and Financial Inclusion in South East Nigeria

	Correlations	Mobile Banking	ATM	Pos	Financial Inclusion
Mobile Banking	Pearson Correlation	1	.994**	.995**	.990**
	Sig. (2-tailed)		.000	.000	.000
	N	500	500	500	500
ATM	Pearson Correlation	.994**	1	.995**	.994**
	Sig. (2-tailed)	.000		.000	.000
	N	500	500	500	500
Pos	Pearson Correlation	.995**	.995**	1	.992**
	Sig. (2-tailed)	.000	.000		.000
	N	500	500	500	500
Financial Inclusion	Pearson Correlation	.990**	.994**	.992**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	500	500	500	500

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

Source: Researcher's Computation, 2025

The Pearson correlation coefficient results presented in Table 4.4 indicate very strong and statistically significant positive relationships between mobile banking, ATM usage, POS services, and financial inclusion in rural areas of South East Nigeria. These relationships were tested at the 0.01 level of significance, confirming the reliability of the findings. Notably, a near-perfect positive correlation was found between mobile banking and financial inclusion ($r = 0.990$), suggesting that as mobile banking adoption increases, access to financial services in rural communities also rises substantially. Similarly, ATM usage demonstrated a strong positive correlation with financial inclusion ($r = 0.994$), indicating that greater availability and use of ATMs significantly contribute to expanding financial access in these areas. There was an equally positive correlation between POS services and financial inclusion ($r = 0.992$), which indicates that as the availability of POS terminals increases, there will be a corresponding increase in financial inclusion in rural South East Nigeria. The relationships among the independent variables; mobile banking, ATM usage, and POS services also showed very strong positive correlations. Mobile banking and ATM usage are highly complementary ($r = 0.994$), suggesting that the expansion of one service likely supports the growth of the other. Likewise, mobile banking and POS services ($r = 0.995$) are closely related, with the growth of mobile banking likely driving increased POS usage. The correlation between ATM and POS usage ($r = 0.995$) confirmed that these two technologies are intertwined in facilitating financial transactions, further enhancing financial inclusion in rural areas. The analysis of the Pearson correlation results implied that mobile banking, ATMs, and POS services are critical tools for financial transactions in South East Nigeria, significantly contributing to the improvement of financial inclusion in rural communities.

5. Conclusion and Recommendation

This study examined the impact of technological innovations specifically mobile banking, ATMs, and POS systems on financial inclusion in rural South East Nigeria. The analysis was carried out using Pearson's Product-Moment Correlation to assess the relationships between the usage of these technologies and financial inclusion. The results indicated strong and statistically significant positive correlations between the use of mobile banking, ATMs, POS services, and financial inclusion, confirming that these technologies significantly enhance access to financial services in rural areas. The study also highlighted that while mobile banking, ATMs, and POS systems have been instrumental in improving financial inclusion, there are barriers such as poor internet connectivity, low digital literacy, and security concerns that limit the full potential of these technologies. The findings suggest that these technological innovations are interrelated and work synergistically, with mobile banking supporting the growth of ATM usage and POS services. Despite the positive outcomes, it was clear that additional efforts are needed to improve infrastructure and address the challenges that still impede adoption. The analysis technique employed, Pearson's correlation, confirmed that mobile banking, ATMs, and POS services are critical enablers of financial inclusion in rural South East Nigeria, but further efforts in addressing barriers and enhancing adoption are needed to fully harness their potential.

To enhance the impact of technological innovations on rural financing and financial inclusion, the following recommendations are proposed:

First, there is a need for improvements in digital infrastructure: reliable internet connectivity and consistent electricity supply are crucial to ensuring that mobile banking, ATMs, and POS systems function effectively in rural communities. These improvements will increase the efficiency and reliability of digital financial services, making them more accessible to rural populations.

Second, financial literacy and digital skills programs should be introduced at the community level: These programs would help bridge the digital divide by training individuals in rural areas to use mobile banking apps, ATMs, and POS systems effectively. Training initiatives should be carried out by local organizations, microfinance institutions, and community centers to ensure that rural residents are equipped with the necessary skills to engage with digital financial services. Importantly, governments and NGOs could provide financial support for such initiatives, ensuring widespread access to training across different rural areas.

Third, security measures should be enhanced to address concerns related to fraud and cybercrime: Financial institutions and technology providers should work together to implement robust security protocols, such as biometric verification and real-time fraud detection systems. These measures will help to build trust and encourage the widespread adoption of digital financial services.

Fourth, the government should create policies that promote rural financing: the government should ensure that financial institutions and digital service providers are incentivized to expand their operations into rural areas. Policy interventions could include subsidizing internet services for rural communities, offering tax incentives to businesses providing POS systems, and ensuring subsidized access to mobile banking platforms. Additionally, the government should engage in public-private partnerships to create programs that incentivize digital financial service providers to offer affordable services in rural regions.

Fifth, the government should address the challenges of training private operators in the rural areas: to address the challenge of training private operators of POS systems in rural areas, the government should partner with local financial institutions and mobile network providers to establish training hubs. These hubs could be set up at the community level to provide free or subsidized training programs for POS operators, ensuring that rural small-scale businesses can leverage digital payment systems effectively.

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Effect of Entrepreneurial Skills on the Growth of Small and Medium Enterprises in Niger State, Nigeria

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Abstract

Entrepreneurship stands as a cornerstone in the trajectory of economic development, particularly in the context of rice processors SMEs. This study therefore, examined the effect of Entrepreneurial skill on the Growth of Small and Medium Enterprises in Niger State, Nigeria. Cross sectional survey research design was adopted with a structured questionnaire for data collection. The sample size of the study is 379 rice processors SMEs owners in Bida local government area. Simple random sampling technique was employed for this study. Descriptive and multiple linear regression analysis techniques were used for data analysis. The result showed R^2 of 0.499%, which indicate the model for the study has a good fit. The findings revealed that managerial skill, communication Skill and leadership skill have a positive and significant effect on Growth of Small and Medium Enterprises in the study area. This implies these skills are crucial for making strategic decisions, allocating resources, managing people, and responding to market changes. The study concluded that communication, leadership and managerial skill plays a vital role in fostering the growth and sustainability of SMEs. It is recommended that policy makers should establish a formal enforceable policy framework that will promote entrepreneurial skills development, particularly in management, communication, and leadership in order to better position SMEs to grow, innovate, and sustain long-term success.

Keywords: Entrepreneurial Skills, Small and Medium Enterprises, SMEs Growth, Rice processors,

1.0 Introduction

Small and Medium Enterprises are widely recognized as the key engine of economic development. As a result, the sector contributes 48% to the national GDP, account for 96% of businesses, and employ over 84% of the country's workforce (National Bureau of Statistics Report, 2024). Furthermore, SMEs are also instrumental in promoting industrial development and enhancing economic diversification. They provide platforms for skills development, entrepreneurship training, and local content creation (Drakaki, 2025). In the agricultural sector, the agro-processing SMEs such as rice processors play a crucial role in value addition, food security, rural employment, and income generation. Interestingly, Niger State being one of Nigeria's largest rice-producing state in North central regions, has witnessed a growing number of small and medium-scale rice processors who add value to raw paddy through milling, packaging, and distribution (Babu *et al.*, 2020; Mugambi and Gatobu, 2024).

However, despite the substantial contribution of rice processing enterprises to the economy, many of them face challenges related to growth, efficiency, and sustainability (Sulandjari, 2023; Nwangwu Jacinta *et al.*, 2020). The challenges also include inadequate access to finance, weak infrastructure (particularly power and transportation), limited access to markets, and inefficient business practices that limit their competitiveness and scalability. Specifically, rice

processing SMEs often suffer from low productivity, outdated processing technology, and shortage of managerial and technical skills (Pattanayak and Padhy, 2020).

In response to these challenges, numerous policy initiatives have sought to promote SMEs growth through interventions such as financial inclusion strategies, tax incentives, infrastructural support, and enterprise development programs (Abidin *et al.*, 2025). Studies have also examined the impact of external support systems, such as government grants and microfinance schemes on SMEs survival and growth (Botella-Carrubi *et al.*, 2024; Babu *et al.*, 2020; Iza, 2020; Drakaki, 2025), while these efforts have yielded some positive outcomes, they often fail to address the internal capacities of SMEs owners particularly their ability to recognize opportunities, innovate, and strategically manage resources which are critical for sustainable enterprise growth (Amrullah, *et al.*, 2023).

It is against this backdrop, that entrepreneurial skills emerged as a vital determinant of SMEs success. The skills include problem-solving skills, communication skills, leadership skills and managerial skills that will enhance entrepreneurs' capacity to improve product quality, optimize production processes, access new markets, and scale their businesses sustainably. However, prior literatures have largely focused on examining the effect of entrepreneurial skills dimensions on technology and manufacturing sector and service sector (universities), while neglecting the agro-processing SMEs (Osahon *et al.* 2023; Hamid *et al.* 2024; Ahmad and Ahmad 2021; Sulandjari, 2023) while neglecting the agro-processing SMEs. This posed a gap that the study seeks to address. Therefore, the study investigates the effect of entrepreneurial skills on the growth of rice processors operating as small and medium enterprises in Niger State.

The remainder of this paper is organized as such: Section two provides the literature review of the variables considered for this study. Section three provides the methodology adopted for this study. Section four provides results and discussion, while, the last section contains conclusion and recommendations.

2.0 Literature Review

In this section, the study's variables will be discussed in detail covering definitions of entrepreneurial skills and their dimensions, SMEs Growth, conceptual framework, theoretical framework and empirical review in order to identify gaps in the literatures.

Entrepreneurial Skills

Entrepreneurial skills refer to the ability of an entrepreneur to identify opportunity, innovate, mobilize resources and manage risk amicably (Mugambi, and Gatobu, 2024). Sulandjari (2023) also defines entrepreneurial skills as the behaviors, and attributes that enable an individual to identify opportunities, create and manage innovations, as well as deal with uncertainty and complexity. These behaviors are part of a broader set of leadership and management skills that enable individuals to manage a business venture successfully. More so, Botella-Carrubi *et al.* (2024) opined entrepreneurial skill as the ability to recognized opportunities, take calculated risks, innovate, and effectively organize and manage resources in order to grow a business. These skills are essential not only for starting a business but also for driving innovation within existing organizations. Drakaki (2025) also affirmed entrepreneurial skills as creative thinking, problem-solving, teamwork, communications skills that improve the performance of Small and Medium Enterprises. Hosseini *et al.* (2020) define entrepreneurial skills as the core abilities needed to start and run a successful business. These skills include leadership, innovation, personal and technical skills that are important for identifying opportunities and managing a business successfully.

This study conceptualized entrepreneurial skills based on managerial skills, communication skills and leadership skills as identified by Sulandjari (2023); Drakaki (2025) and Hosseini *et al.*, (2020). Management skills refer to the ability of an individual to plan, direct, organize, and control organizational resources effectively (Ahmad and Ahmad, 2021). The component of managerial skills includes planning and strategic thinking: setting short- and long-term goals; financial management: budgeting, cash flow and cost control; operational management: process design, inventory, quality control, and supply chain coordination. Communication skills involve the ability to effectively transmit and receive messages, both verbal and non-verbal (Moreno-Pérez *et al.*, 2023). More so, communication skills refer to the ability to transmit and interpret information clearly and persuasively across internal and external stakeholders (Soekardi *et al.*, 2020). The component of communication skills includes interpersonal communication: one to one interaction; team communication: task coordination and knowledge sharing; market and customer communication: value proposition articulation and branding. Leadership skills refer to the ability to influence, inspire, and guide individuals or groups toward achieving objectives (Sulandjari, 2023). Leadership skills are the strength and abilities of an entrepreneur to demonstrate quality of overseeing, processing, guiding initiative and steer their employees towards achieving organizational goals (Osahon *et al.*, 2023). The component include vision and strategic direction: articulating a compelling future and aligning stakeholders; motivation and empowerment: building intrinsic motivations and delegating others; change leadership: guiding organisations through innovations and growth plan.

Small and Medium Enterprises (SMEs) Growth

Small and Medium Enterprises (SMEs) has been defined by Sulandjari, (2023); Abidin *et al.* (2025); Mibey *et al.* (2023) based on number of employees, annual sales, working capital, gross output, market share and total asset. According to Drakaki, (2025) SMEs refer to business enterprises whose total assets excluding land is not more than Two Hundred Million Naira (N200,000,000.00). The United Nations Industrial Development Organization (UNIDO) also define SMEs as enterprises with a limited number of employees, low levels of capital and assets, and relatively low turnover. These enterprises are often family-owned and operate at the local or regional level. The European Union (EU) also define SMEs as an enterprise which employ fewer than 250 persons and have an annual turnover not exceeding €50 million, or an annual balance sheet total not exceeding €43 million. The Small enterprises as those operating in the formal sector with less than 50 employees; and medium enterprises as those employing less than 250 employees.

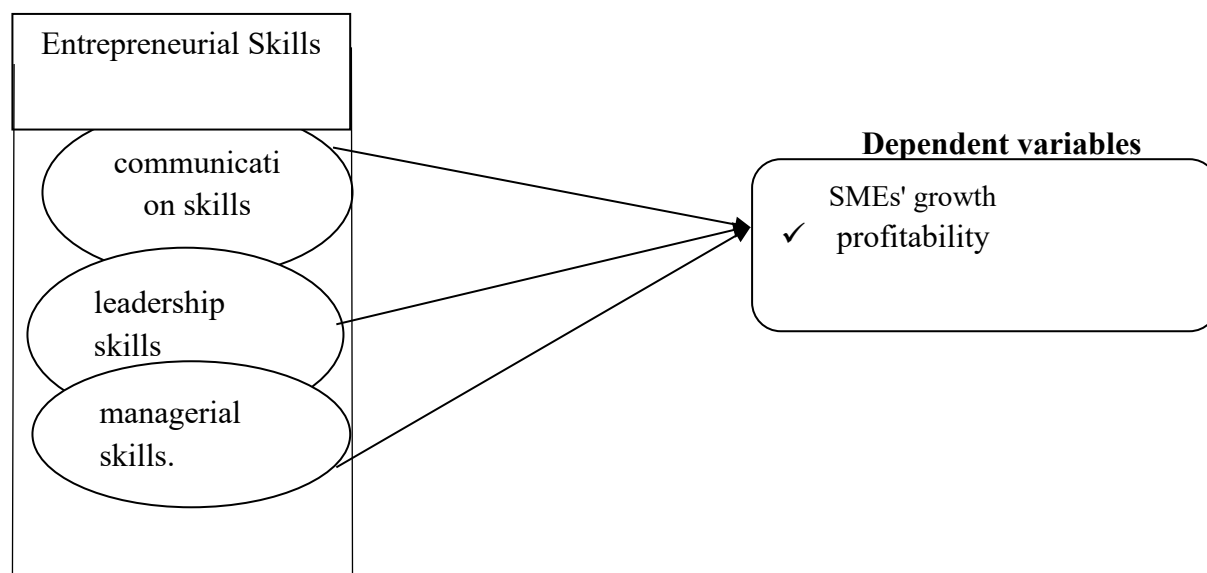
SMEs growth is defined as the increase in the size, profitability and market of small and medium enterprises over time. It involves improvements in revenue, workforce size, production output, market share, or operational (Mugambi and Gatobu, 2024; Amrullah, *et al.*, 2023). Growth is being measured based on financial and non-financial measures with increase in sales, profitability, total asset turnover, change in market share, growth in net profits or gross margins, volume of goods/services produced, increase in the number of employees over time and customer retention rate (Sulandjari, 2023; Abidin *et al.*, 2025; Mibey *et al.*, 2023). Thus, the study adopted the use of financial growth measure with profitability as the proxy for measuring SMEs' growth. According to Mibey *et al.* (2023) measuring growth of SMEs based on profitability metrics revealed the financial health of an enterprise.

Conceptual Framework

The study aims to investigate the effect of entrepreneurial skills on the growth of rice processors operating as small and medium enterprises in Niger State. The independent variable entrepreneurial skills, has three dimensions: communication skills, leadership skills and managerial skills. SMEs' growth is the dependent variable and will be measured with profitability as the proxy. The conceptual framework depicts the relationship between the

independent variables (entrepreneurial skills dimensions) and dependent variables (SMEs' growth) in Figure 1.

Independent variables



Theoretical framework

Innovation Theory of Entrepreneurship.

The study is anchored on the theory of innovation. The theory was developed by a prominent Australian economist Joseph Alois Schumpeter and his colleagues in 1934 (Smith, 2013). The theory is based on the assumption that economic development is driven by innovation introduced by entrepreneurs and that Growth of SMEs can only occur when entrepreneurs disrupt the status quo and create value through novel approaches (Drakaki, 2025). The theory posits that a manager with strong entrepreneurial vision can optimize resource utilization and introduce novel business models that will improve productivity and profitability of SMEs. Joseph Schumpeter also viewed an entrepreneur as someone who leads economic change that inspire subordinate to innovative products, or render services and business processes that fuel growth (Amrullah *et al.*, 2025). Furthermore, Moreno-Pérez, *et al.* (2023) opined that entrepreneurs with strong communication skills can dissemination of innovative practices within the firm and build customer relationships that inform product development.

Empirical Review on Entrepreneurial Skills on the Growth of SMEs

Osahon *et al.* (2023) examined the effect of leadership skills and performance of selected public universities in Delta State. leadership skills were measured based on intuition, self-understanding, and visionary. Performance was measured as shareholder return. The population of the study is 2,048 staff of universities in Delta. Taro Yamane's formula was utilized to determine a sample size of 345 staff of the institutions. Structured questionnaires were administered to 345 staff, out of which 330 were retrieved. Multiple regression and Pearson moment correlation were employed for data analysis. The findings revealed that intuition, self-understanding and visionary dimensions of leadership skills have a significant positive impact on organizational performance. The study concluded that leadership skills have an effect on organizational performance. Therefore, it suggests that every organization hire visionary leaders to manage its affairs and guarantee the accomplishment of its objectives and purposes.

Hamid *et al.* (2024) examined the effect of communication skills and emotional intelligence on employees Performance at Universitas Muhammadiyah Kendari. The population of the study is 125 employees of Universitas Muhammadiyah Kendari. Simple random sampling technique was used to determine a sample of 56 respondents. Multiple linear regression was used for data analysis. The findings revealed that communication skills have a positive and significant influence on employee performance. This means that higher communication skills lead to improved employee performance. Conversely, emotional intelligence has a negative and insignificant influence on employee performance. This means that higher job stress leads to decreased employee performance. The study recommended that future researchers can consider other factors that influence employee performance besides communication skills and emotional intelligence.

Ahmad and Ahmad (2021) Examined the mediating effect of strategic planning on managerial skills and the performance of small- and medium-sized enterprises (SMEs) in Punjab, Pakistan. The population of the study is 265 SMEs. Partial Least Square Structural Equation Modeling (PLS-SEM). The findings revealed that managerial skills have a positive on SME performance and that strategic planning significantly mediates the relationship. Moreover, managerial skills strongly influence the effective utilization of company resources when guided by strategic planning. Furthermore, strategic planning plays a positive role in strengthening the link between managerial skills and SME performance in Punjab. The study recommended that SMEs should leverage on managerial skills to enhance resource utilization that can lead to better performance outcomes.

Sulandjari (2023) examined the effect of Entrepreneurial Skills and Business Mentoring on Startup firms Growth and Success in West Java. The Startup firms focused only on technology, manufacturing and service sector. Entrepreneurial Skills was measured as opportunity recognition, resource utilization, risk management, and creativity. Business Mentoring was measured based on the frequency and depth of mentoring relationships, mentor characteristics, and perceived impact of mentoring on entrepreneurial skills. Startup Growth was measured as revenue growth, market expansion, and employee hiring rate, while Startup Success was measured as profitability, customer satisfaction, and sustainable market presence. The study was anchored on Resource-Based View (RBV) to explain the relationship between variables of interest. Quantitative research design with aid to structured questionnaire was used to collect data for the study. A sample size of 120 startups was selected for the study. Structural Equation Modeling (SEM -PLS) was used for data analysis. The findings revealed that entrepreneurial skills have a positive and significant effect on both startup growth and success. Business mentoring has a positive and significant effect on both startup growth and success. The study concluded that entrepreneurial skills and business mentoring play an important role in the success and growth of startups. The study advocates for the strategic importance of business mentoring, revealing its substantial influence on both entrepreneurial skills enhancement and startup success.

Based on this review, it is empirically proof that the studies reviewed focused on technology, manufacturing sector and service sector(universities), while neglecting the agro-processing SMEs. This posed that industry wise gaps exist.

3.0 METHODOLOGY.

The study employed quantitative research designed as used in the studies (Sulandjari, 2023; Mibey *et al.*, 2023). The total population of the study is 7,340 SMEs of rice processors in Bida Local Government Area (Niger State Ministry of Agriculture, 2024). Using the Glen's formula (2013), 379 was obtained as the Sample size. Structured questionnaire was used to collect data

from the respondents. Simple random sampling technique was adopted in selecting 379 SMEs owners from the population. More so, in gathering data from the SMEs owners, subjective or objective means is either used (Mugambi and Gatobu, 2024; Mibey *et al.*, 2023; Pattanayak and Padhy, 2020; Kanapathy, 2024). Multiple regression with the aid of SPSS version 24 was used to analyzed the data collected. Descriptive statistics was also used to analyses the respondents' demographic data.

The study adapts the model of Mutuku *et al.* (2020) with personal skills, managerial skills and technical skills as independent variables and performance of Small and Medium Enterprises as dependent variable.

This Model is stated as follows:

$$PSME = F(ES) \quad 1$$

With PSME = GP

2

and $ES = F(EL, CS)$

3

Where: PSME = performance of Small and Medium Enterprises

ES = Entrepreneurial Skills

Substitute equation 2 and 3 into equation 1, equation 1 becomes

$$GP = F(EL, CS)$$

4

Equation 3 can be rewritten as follows:

$$GP = F(EL, CS)$$

5

Transforming equation 4 into linear regression, equation 4 then becomes

$$P = \beta_0 + \beta_1 EL + \beta_2 CS + \epsilon$$

Where:

GP= Growth in Profit

EL= Entrepreneurship literacy

CS = Communication Skill

β_0 = Intercept

ϵ = Error term

Mutuku *et al.* (2020) model was modified in this study as follow

$$GSMEs = F(ES) \quad I$$

1

With $GSMEs = P$

2

and $ES = f(MS, CS, LS)$

3

Where: $GSMEs$ = Growth of Small and Medium Enterprises

ES = Entrepreneurial Skills

P = Profitability

Substitute equation 2 and 3 into equation 1, equation 1 becomes

$$P = F(CS, LS, MS)$$

4

Equation 3 can be rewritten as follows:

$$P = F(CS, LS, MS)$$

5

Transforming equation 4 into linear regression, equation 4 then becomes

$$P = \beta_0 + \beta_1 CS + \beta_2 LS + \beta_3 MS + \epsilon$$

Where:

P= Profitability

CS = Communication Skills

LS = Leadership Skills

MS= Managerial Skills

β_0 = Intercept

ϵ =Error term

4.0 Results and Discussion

Table 4.1 seek to determine the socio-economic characteristics of the respondents such as gender, age, level of education and marital status.

Table 4.1: Socio-Economic Demographic of Respondents

Demographic factor	Percentage
Gender	Male 66.8%
	Female 33.2%
Age	20-25 22.5%
	26-30 36.8%
	31-35 9.6%
	36-40 11.8%
	41 years above 18.6%
Level of Education	Informal 7%
	Primary certificate 11%
	SSCE 39%
	Vocational certificate 9%
	Tertiary certificate 33%
Marial Status	Single 24%
	Married 66%
	Divorce 7%
	Widow 3%

Sources: field survey, 2025

Table 4.1 illustrated the gender distribution of Small and Medium Enterprises sampled showed that 66.8% were male and 33.2% were female in the study area. The reason might be due to culture and religion inclination of northern part of this country, as women are not encouraged to engage in occupation that will make them interact with different people freely and thus limit their participation in Small and Medium Enterprises. The result indicated that majority of respondents age is largely 26-30 years, which indicates that the respondents are still young, active and in their productive years with mental and technical know- how to carryout day to day activities of SMEs. Table 4.1 indicates that a vast majority of the respondents (39%) had SSCE as their qualifications, which indicate that most respondent have the basic educational and technical skills needed to carryout SMEs activities. The result shown that 66% of the respondents are married. This implied that majority of the SMEs respondents were married and had responsibilities to take care of.

Regression Results

Table 4. 2 presents the regression result of the effect of entrepreneurial skills dimensions on growth of Small and Medium Enterprises in the study area.

Table 4.2: Regression Analysis Results

Explanatory variables	Coefficient	Standard error	P> t
Managerial Skill	0.263	0.60	0.005
Communication Skill	0.193	0.63	0.034
Leadership Skill	0.368	0.55	0.004
Constant	1.213	0.306	0.002
R-square	0.499		
Adj R-square	0.492		
p < 0.05			

Source: Author's Field Survey (2025)

The result from Table 4.2 showed R^2 of 0.499, implying that about 49.9 % of variations that occur in Growth of Small and Medium Enterprises were explained by the independent variables included in the model, while the remaining 50.1% were due to other extraneous variables not included in the model and error in measurement of some variables.

Objective 1: Examine the effect of communication skills on the growth of rice processors operating as small and medium enterprises in Niger State.

Table 4.2 indicates that, communication skill regression coefficient of 0.193 shows a positive relationship between communication skill and growth of Small and Medium Enterprises. Therefore, a unit increase in communication skill will yield to 19.3% units increase on the Growth of Small and Medium Enterprises. The regression result also indicates that communication skill has a significant effect on the growth of Small and Medium Enterprises with a p-value of 0.034 at < 0.05 . This implies that effective communication skill strengthens customer relationships and internal management processes that will drive growth among Small and Medium Enterprises (SMEs). The result of study is in line with the submission of Hamid *et al.* (2024) The findings revealed that communication skills have a positive and significant influence on employee performance.

Objective II: Assess the effect of managerial skills on the growth of rice processors operating as small and medium enterprises in Niger State.

Table 4.2 indicates that, managerial skills regression coefficient of 0.263 shows a positive relationship between managerial skills and growth of Small and Medium Enterprises. This implies that a unit increase in managerial skills will yield to 26.3% units increase on the growth of Small and Medium Enterprises. The regression result revealed that managerial skills have a significant effect on the growth of Small and Medium Enterprises with a p-value of 0.005 at < 0.05 . The findings implies that managerial skills enable rice processors to set clear business goals, plan effectively, and make informed decision about production, pricing, sourcing and market expansion that will lead to sustainable growth. The result of the study is in line with the submission of Ahmad and Ahmad (2021) who found that that managerial skills have a positive on SME performance and that strategic planning significantly mediates the relationship.

Objective III: examine the effect of leadership skill on the growth of rice processors operating as small and medium enterprises in Niger State.

Table 4.2 indicates that, leadership skill regression coefficient of 0.368 shows a positive relationship between leadership skill and growth of Small and Medium Enterprises. Therefore, a unit increase in leadership skill will yield to 36.8% units increase on the Growth of Small and Medium Enterprises. The regression result also indicates that leadership skill has a significant effect on the growth of Small and Medium Enterprises with a p-value of 0.004 at < 0.05 . This implies that a good leadership skill enables a leader to set direction, align subordinate and motivate them to perform task optimally in order to achieved organisational growth. The result

of study is in line with the submission of Osahon *et al.* (2023) who found that intuition, self-understanding and visionary dimensions of leadership skills have a significant positive impact on organizational performance

5.0 Conclusion and recommendation

The study investigates the Effect of Entrepreneurial Skill on the Growth of Small and Medium Enterprises in Niger State. A quantitative research design and structured questionnaires was used to collect data from respondents. The study concluded that management skill, communication Skill and leadership skill have a positive and significant effect on Growth of Small and Medium Enterprises in the study area. This implies these skills are crucial for making strategic decisions, allocating resources, managing people, and responding to market changes.

Recommendations

- i. It is recommended that SMEs owners should improve their communication skills through regular training and capacity-building programmes that promote effective communications skills when interacting with their customers in order to strengthen good customer relationships and internal management processes that will drive growth among Small and Medium Enterprises (SMEs). Government agencies should organize workshops and seminars focused on business communication to help rice processors leverage communication as a tool for growth.
- ii. The study recommended that SMEs owners should prioritize leadership development training that will promote good leadership practice that inspire, guide and motivate subordinate to work together in achieving organizational growth.
- iii. It is recommended that SMEs owners should promote strong managerial capabilities that will enable rice processors to set clear business goals, plan effectively, and make informed decision about production, pricing, sourcing and market expansion that will lead to sustainable growth. Policymakers and development partners should facilitate access to managerial training and mentorship that enable SMEs manage resources efficiently for sustainable business growth.

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Exploring the Role of Artificial Intelligence in Shaping Venture Creation in Nigeria

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Abstract

Artificial Intelligence (AI) is revolutionizing entrepreneurial activity worldwide, yet its practical influence on venture creation in emerging economies remains underexplored. Nigeria's e-commerce sector, marked by rapid digital adoption but constrained by infrastructural gaps and trust deficits, presents a unique context to examine AI's transformative potential. This study examined the role of AI in shaping venture creation among Nigerian e-commerce firms. Anchored in the Technology–Organization–Environment (TOE) framework, the research employed a cross-sectional explanatory design, surveying 300 e-commerce firms selected via stratified purposive sampling. Data were collected using structured questionnaires administered to founders and executives, and analyzed using descriptive statistics and regression analysis at a 0.05 significance level. Results revealed that AI-driven decision support ($\beta = 0.32$, $p = 0.001$), AI-enabled customer engagement ($\beta = 0.41$, $p < 0.001$), and AI-enabled market intelligence ($\beta = 0.27$, $p = 0.007$) significantly enhance venture creation, whereas AI-powered process automation ($\beta = 0.21$, $p = 0.058$) and AI-enabled financial management ($\beta = 0.09$, $p = 0.452$) were not significant. The findings indicate that Nigerian entrepreneurs are technologically and organizationally prepared to adopt AI in consumer-facing and intelligence-driven functions, but infrastructural and institutional barriers limit its impact in operational and financial areas. The study concludes that AI serves as a strategic enabler of entrepreneurial growth and competitiveness in Nigeria's digital economy. A key recommendation is for policymakers to invest in digital infrastructure and strengthen consumer trust mechanisms to fully unlock AI's transformative potential for e-commerce ventures.

Keywords: Artificial Intelligence, E-commerce, Financial management, Market intelligence, Process automation, Venture creation.

1.0 Introduction

Venture creation remains one of the most vital drivers of economic diversification and inclusive growth in Nigeria. Despite being Africa's largest economy with a Gross Domestic Product (GDP) of approximately \$477 billion in 2022, Nigeria continues to face daunting challenges of youth unemployment (estimated at 33.3%), infrastructure deficits and limited access to formal financing (National Bureau of Statistics, 2023). In such an environment, entrepreneurship has increasingly been positioned as a strategic lever for job creation, innovation diffusion and poverty alleviation. Yet, the high failure rate of start-ups estimated at nearly 80% within the first five years signals the fragility of traditional business models that rely heavily on intuition, informal networks and resource-constrained management practices.

The advent of Artificial Intelligence (AI) is reshaping this terrain by offering novel tools to entrepreneurs for designing, launching and scaling ventures in the digital age. AI technologies enhance venture creation by reducing uncertainty, augmenting decision quality and enabling new forms of customer and market interaction (Chalmers *et al.*, 2021). For instance, AI-driven decision support systems provide data-driven insights for entrepreneurs to evaluate

opportunities more effectively, while AI-enabled customer engagement tools personalize interactions that deepen brand loyalty. This is particularly significant in Nigeria's digital economy where mobile penetration has exceeded 100 million active internet users and consumer behavior is increasingly shaped by online platforms.

Beyond customer-facing applications, AI-powered process automation is streamlining core business operations by lowering transaction costs and enhancing efficiency, allowing small ventures to compete on scales previously unattainable (Shepherd & Majchrzak, 2022). Similarly, AI-enabled market intelligence tools are providing entrepreneurs with predictive analytics on consumer trends, competitor actions and regulatory changes, crucial in Nigeria's volatile policy landscape. Moreover, AI-enabled financial management solutions are expanding access to alternative credit scoring, risk profiling and real-time cash-flow analytics, thereby mitigating one of the most persistent barriers to venture growth in Nigeria: limited access to finance (Al-Mamary, 2025).

Globally, scholars have argued that the fusion of AI and entrepreneurship constitutes a paradigm shift where entrepreneurs transition from being merely resource orchestrators to becoming "machine-augmented opportunity seekers" (Dwivedi *et al.*, 2025). Within Nigeria's context, this transformation is not just an academic curiosity but a developmental imperative. Leveraging AI to shape venture creation could accelerate the emergence of resilient, innovation-led enterprises capable of scaling regionally and globally. However, empirical studies that interrogate how specific AI capabilities such as decision support, customer engagement, process automation, market intelligence and financial management which translate into enhanced venture creation in Nigeria remain sparse. This raises a critical question for both scholars and practitioners: to what extent can AI, within the constraints of Nigeria's technological, organizational and environmental context, serve as a decisive enabler of sustainable venture creation in the e-commerce sector? Moreover, the study aimed to explore the role of artificial intelligence in shaping venture creation with the following objectives;

- i. To examine the influence of AI-driven decision support (IV) on venture creation (DV) in Nigeria.
- ii. To assess the effect of AI-enabled customer engagement (IV) on venture creation (DV) in Nigeria.
- iii. To determine the effect of AI-powered process automation (IV) on venture creation (DV) in Nigeria.
- iv. To investigate the influence of AI-enabled market intelligence (IV) in shaping venture creation (DV) in Nigeria.
- v. To evaluate the contribution of AI-enabled financial management (IV) to venture creation (DV) in Nigeria.

2.0 Literature review:

2.1 Artificial Intelligence as a Transformative Tool

Artificial Intelligence (AI) has rapidly evolved into a disruptive general-purpose technology, widely recognized for its capacity to reshape industries, redefine organizational processes and reconfigure the global competitive landscape. At its core, AI encompasses a constellation of computational techniques such as machine learning, natural language processing, computer vision and predictive analytics that simulate and augment human cognition at scale (Dwivedi *et al.*, 2025). Unlike traditional digital tools that primarily automate routine operations, AI introduces adaptive and generative intelligence, enabling systems to learn from data, refine

outputs and continuously optimize decisions without explicit programming. This dynamic, self-improving nature positions AI not as a static artefact but as a strategic resource with pervasive implications across all domains of enterprise and society.

The distinguishing feature of AI lies in its ability to reduce uncertainty in high-variability environments. By processing vast, unstructured datasets and detecting hidden patterns, AI enhances decision accuracy, accelerates response times and expands the scope of possible strategic options. For instance, predictive analytics provide foresight into consumer demand shifts, while reinforcement learning enables systems to recommend optimal resource allocation strategies under uncertainty. These functions directly address one of the most persistent challenges in organizational and entrepreneurial contexts: the need to make informed decisions in dynamic and incomplete information settings (Chalmers *et al.*, 2021).

AI further extends its impact through automation of knowledge-intensive tasks. Beyond simple mechanization, AI-driven automation executes complex functions such as fraud detection, credit scoring and supply-chain orchestration that previously required specialized human expertise. This capacity to substitute and augment human judgment at scale transforms organizational efficiency and unlocks opportunities for entirely new modes of production and service delivery. In particular, the integration of AI into consumer-facing functions creates personalized engagement ecosystems that continuously adapt to individual preferences, thereby raising switching costs and reinforcing customer loyalty (Shepherd & Majchrzak, 2022). A more profound dimension of AI's role is its ability to act as a generative technology, facilitating the discovery of opportunities that humans may overlook. By mining latent consumer needs, simulating alternative scenarios and generating novel solutions, AI effectively expands the frontier of innovation. Dwivedi *et al.* (2025) argued that this generative capacity marks a transition from tool-based efficiency to capability-enhancing augmentation, where AI becomes an integral partner in strategic sensing and innovation. In this sense, AI is not merely a support mechanism for entrepreneurs but a foundational driver that shapes the possibilities of what ventures can emerge, scale and sustain in the digital economy.

Importantly, the relevance of AI as an independent variable is accentuated in developing country contexts such as Nigeria. Here, structural inefficiencies ranging from weak infrastructure to fragmented financial systems constrain entrepreneurial activity. AI offers a counterbalance by enabling ventures to circumvent institutional voids through alternative credit scoring, digital customer intelligence and predictive logistics planning. By bridging data gaps and lowering entry barriers, AI creates conditions for new firm formation and survival in environments traditionally hostile to entrepreneurial emergence. In this way, AI functions not just as a performance enhancer, but as a contextual equalizer that redefines the terms of participation in the digital economy.

Thus, conceptualizing AI as the independent variable situates it as a multi-dimensional force encompassing decision support, customer engagement, process automation, market intelligence and financial management that directly and indirectly influences venture creation outcomes. Its adoption alters the structure of opportunities available, the efficiency of resource mobilization, and the scalability of new business models. In entrepreneurial research, this underscores AI's role not as a peripheral enabler but as the core driver of venture creation dynamics in the digital age.

2.1.1 AI-Driven Decision Support

AI-driven decision support represents one of the most critical applications of artificial intelligence in entrepreneurship. It involves the integration of predictive analytics, data mining, and machine learning to inform decisions on pricing, product selection, inventory levels and strategic resource allocation. In e-commerce, where decision speed and accuracy often determine survival, these systems provide real-time insights that reduce the uncertainty entrepreneurs face in volatile digital markets (Chalmers *et al.*, 2021). In Nigeria's e-commerce ecosystem characterized by fluctuating consumer demand, seasonal purchasing behavior and unpredictable logistics costs. AI-based decision tools empower entrepreneurs to respond proactively to market dynamics. Instead of relying solely on intuition, founders can forecast demand surges, optimize product assortments and dynamically adjust pricing to maintain competitiveness. As Shepherd and Majchrzak (2022) argued, AI-driven decision support enhances entrepreneurial judgment by merging human intuition with machine intelligence, thereby allowing Nigerian ventures to make more precise, data-grounded strategic choices in environments marked by high risk and limited buffers.

2.1.2 AI-Enabled Customer Engagement

Customer engagement is widely recognized as the lifeblood of e-commerce and AI technologies have transformed this domain by making personalization scalable. Tools such as chatbots, recommendation engines and AI-enabled sentiment analysis facilitate tailored interactions that foster deeper consumer trust and loyalty. In Nigeria, where e-commerce firms contend with low consumer trust in online transactions and high competition from informal retail markets, AI-enabled customer engagement provides a powerful differentiator. Personalized recommendations increase purchase likelihood, while chatbots enhance responsiveness by providing 24/7 assistance, thereby building confidence in platforms (Chen, 2024). Moreover, these tools allow firms to segment customers based on behavior and purchasing history, which is critical for effective retention strategies in a price-sensitive market. Dwivedi *et al.* (2025) highlighted that AI personalization strengthens customer relationships by creating a sense of individualized attention, which is particularly important in the Nigerian context where repeat purchases are essential for venture sustainability. By fostering loyalty and long-term engagement, AI-enabled customer systems directly enhance the survival and scalability of new e-commerce ventures.

2.1.3: AI-Powered Process Automation

Process automation represents another transformative application of AI, aimed at improving operational efficiency and scalability. Unlike conventional mechanization, AI-powered automation involves intelligent orchestration of core business processes, including order fulfillment, payment processing, logistics coordination and returns management. For e-commerce firms in Nigeria, operational inefficiencies such as delayed deliveries, high transaction costs and logistical fragmentation remain major constraints on venture performance. AI-based automation mitigates these challenges by streamlining workflows, reducing human error and ensuring consistency in service delivery (Shepherd & Majchrzak, 2022). For example, automated systems can optimize delivery routing in congested urban centers, track inventory in real-time and even predict maintenance requirements for logistics equipment. Rastogi (2025) argued that automation not only reduces operational overheads but also enables small firms to achieve scale without proportional increases in resources. In Nigeria's highly competitive digital marketplace, such lean scalability can be the difference between venture survival and premature exit.

2.1.4: AI-Enabled Market Intelligence

AI-enabled market intelligence equips entrepreneurs with sophisticated tools for monitoring market trends, predicting consumer demand and tracking competitor strategies. This function is particularly critical in Nigeria, where e-commerce firms face dynamic and fragmented consumer behavior shaped by cultural diversity, regional disparities and shifting economic conditions. By aggregating and analyzing diverse data sources ranging from social media sentiment to competitor pricing AI systems provide predictive insights that enhance opportunity recognition and innovation (Chalmers *et al.*, 2021). Such intelligence allows Nigerian e-commerce ventures to anticipate demand surges around cultural festivals, tailor product offerings to regional preferences and react swiftly to competitive pricing pressures. Dwivedi *et al.* (2025) emphasized that AI-driven market intelligence strengthens the entrepreneur's ability to "sense" opportunities and reduce the risks associated with entering uncertain markets. For Nigerian e-commerce firms, which often operate in thin-margin environments, the ability to forecast demand and identify emerging niches is critical for sustaining growth and achieving first-mover advantages.

2.1.5: AI-Enabled Financial Management

Access to finance remains one of the most pressing challenges for Nigerian entrepreneurs, particularly in the e-commerce sector where firms often lack collateral and face skepticism from traditional lenders. AI-enabled financial management addresses this challenge by providing alternative credit scoring, fraud detection, and real-time financial analytics. By analyzing unconventional data points such as transaction histories, customer reviews and digital payment patterns, AI systems broaden access to credit for firms excluded from traditional banking systems (Al-Mamary, 2025). This innovation is particularly vital in Nigeria, where many start-ups struggle with liquidity constraints that stifle venture creation and growth. In addition, AI-driven fraud detection enhances trust in digital payment platforms, reducing the risks of financial losses that often undermine consumer confidence in online commerce. According to OECD (2025), the integration of AI in financial management improves the sustainability of small ventures by minimizing default risks and strengthening cashflow predictability. For Nigerian e-commerce firms, the ability to secure funding and manage financial risks more effectively directly translates into enhanced survival rates and greater prospects for scale.

2.2 E-Commerce in Nigeria: Contextual Realities that Shape AI–Venture Dynamics

Nigeria's e-commerce sector is shaped by three defining realities: platform concentration, logistics fragmentation and volatile consumer behavior. As at 2025 marketplaces such as Selar 241,000, Jiji 200,000, Konga 130,000, Jumia 64,000, dominate the landscape with over 635,000+ traders, creating dense data environments where AI tools for decision support, customer engagement and market intelligence thrive. These platform which has grown exponentially since the advent of AI allow entrepreneurs to leverage data flows for personalization and predictive analytics to scale (Rastogi, 2025).

Conversely, weak last-mile infrastructure and high delivery costs constrain growth, particularly for smaller firms. In this space, AI-powered process automation such as predictive routing, warehouse optimization, and real-time tracking can deliver outsized efficiency gains, directly addressing Nigeria's logistics bottlenecks (Fraccastoro, 2025). Consumer behavior adds further complexity: Nigerian shoppers are mobile-first, price-sensitive and prone to rapid shifts influenced by cultural and seasonal factors. This volatility elevates the value of AI-enabled

market intelligence and decision support, which help ventures anticipate demand surges, adapt pricing and reduce stockouts during peak periods like Christmas or Ramadan.

Ultimately, AI's impact is not uniform but heterogeneous across sub-sectors. Market intelligence and engagement tools are strongest in high-data marketplaces, while automation yields greater returns in logistics and fulfillment. Financial management tools cut across these contexts, easing persistent barriers to credit and payment fraud. These realities highlight that AI's influence on venture creation in Nigeria emerges most powerfully where inefficiencies are acute or data density is high (Rastogi, 2025; Fraccastoro, 2025).

2.3 Theoretical Foundation: Technology–Organization–Environment (TOE) Framework

The Technology Organization Environment (TOE) framework by Tornatzky and Fleischer in 1990 provides a comprehensive lens for examining how firms adopt and integrate innovations such as artificial intelligence. TOE argued that adoption is shaped by three interrelated contexts: technological readiness (availability and perceived benefits of AI tools), organizational factors (resources, skills, leadership orientation) and environmental conditions (competitive intensity, regulatory structures and market dynamics).

This framework is particularly relevant for Nigerian e-commerce ventures. On the technological side, AI-driven tools like decision support systems, customer engagement engines, and financial management platforms are increasingly accessible through cloud-based solutions. However, adoption varies depending on firms' ability to invest and manage digital infrastructures. At the organizational level, Nigerian start-ups often operate with lean resources, meaning that leadership vision, entrepreneurial agility and capacity for process automation determine how effectively AI is leveraged for venture creation. Finally, the environmental dimension is critical: Nigerian firms face infrastructural bottlenecks, regulatory uncertainties and consumer trust deficits, making AI adoption both a necessity and a differentiator in surviving competition. By situating AI adoption within the TOE framework, the study can explain not only whether but also *why* and *how* Nigerian e-commerce ventures deploy AI differently across sub-sectors. It highlights that AI's role in venture creation is not simply technological but emerges from the interplay of organizational capacities and environmental realities.

3.0 Methodology

This study adopts a cross-sectional explanatory design to examine how artificial intelligence (AI) adoption shapes venture creation among e-commerce firms in Nigeria. The population covers active players in marketplaces, direct-to-consumer retail, logistics and payment-enabled platforms. As at 2025 marketplaces such as Selar, Jiji, Konga and Jumia accounted for 241,000; 200,000; 130,000 and 64,000 respectively dominating the landscape with over 635,000+ traders. These players accounted for 85% of the digital commerce activities in the country. With a target sample of about 399 firms derived using Yamane sample determination technique out of over 635,000 estimated traders on the platforms, but 300 traders successfully returned the instruments which was sufficient for robust statistical analysis. Firms were selected through stratified sampling to ensure coverage of different platforms, sub-sectors and complemented by snowballing via industry networks. Respondents were the key decision-makers such as founders, traders or managers. Data were collected using a structured 5 points likert scale closed ended google form questionnaire administered online, with follow-ups by phone calls

and emails where necessary. The instrument measured firm characteristics, AI adoption across five proxies (decision support, customer engagement, process automation, market intelligence and financial management) and venture creation outcomes such as revenue growth, customer base expansion, product launches and survival prospects. Reliability were confirmed through Cronbach's alpha (≥ 0.70) and test-retest checks, while validity was established via expert review, pilot testing and factor analysis. Data analysis was at the 0.05 significance level which involved descriptive statistics to profile firms and multiple regression models to estimate the effect of each AI proxy on venture creation outcomes, with diagnostic tests for robustness. Ethical protocols including informed consent, confidentiality and institutional approval guided the process, while contextual realities such as infrastructural challenges and uneven digital maturity are considered to ensure findings reflect Nigeria's e-commerce ecosystem.

4.0 Results and Discussion

Table 1: Descriptive Statistics of E-commerce Firms in Nigeria (N = 300)

Variable	Mean	Std. Dev.	Min	Max
Firm Age (years)	4.2	2.1	1	12
Number of Employees	36.5	21.7	5	110
AI-Driven Decision Support (1–5 scale)	3.4	0.9	1	5
AI-Enabled Customer Engagement (1–5 scale)	3.7	1.0	1	5
AI-Powered Process Automation (1–5 scale)	3.1	1.1	1	5
AI-Enabled Market Intelligence (1–5 scale)	3.6	0.8	2	5
AI-Enabled Financial Management (1–5 scale)	2.9	1.2	1	5
Venture Creation (Growth Index, 1–100)	62.3	15.4	28	95

Source: Field survey (2025)

Table 4.1 The descriptive statistics show that Nigerian e-commerce firms are relatively young (mean age ~4 years), small-to-medium in scale (average 36 employees) and still in the early-to-mid stages of AI adoption (most proxies score between 3.0–3.7 on a 5-point scale). Venture creation outcomes (mean 62/100) indicate modest but uneven growth. This reflects a dynamic but fragile e-commerce ecosystem where firms experiment with AI but adoption depth is uneven, with financial management tools (mean 2.9) lagging behind decision support and customer engagement. Nigerian e-commerce firms recognize AI's potential in customer-facing and market intelligence applications but face constraints in financial and process automation due to infrastructural bottlenecks. Chalmers *et al.* (2021) argued that AI adoption in entrepreneurial contexts often starts with customer-facing solutions where returns are most visible, while operational AI takes longer to mature.

Table 2: Correlation Matrix

Variable	1	2	3	4	5	6
1. AI Decision Support	1					
2. AI Customer Engagement	.42*	1				
3. AI Process Automation	.38*	.44*	1			
4. AI Market Intelligence	.51*	.36*	.41*	1		
5. AI Financial Management	.29	.33*	.30	.35*	1	
6. Venture Creation (Growth Index)	.47*	.53*	.39*	.41*	.18	1

*Significant at $p < 0.05$

The Table 4.2 correlation matrix shows significant positive relationships between most AI proxies and venture creation. The strongest correlation is between AI-enabled customer engagement ($r = .53^*$) and venture creation, followed by AI decision support ($r = .47^*$). AI financial management shows the weakest link ($r = .18$, not significant). These correlations confirm that customer engagement and decision-making are central to survival in Nigeria's competitive and trust-deficit e-commerce market, where retaining customers is more critical than process efficiencies. Entrepreneurs should prioritize AI that improves customer interactions and supports managerial decision-making before heavy investments in backend automation or financial AI. Shepherd and Majchrzak (2022) noted that AI personalization fosters consumer loyalty and accelerates venture growth, particularly in digital markets where trust is fragile.

Table 4.3: Multiple Regression Results Predicting Venture Creation

Predictor (IV)	B (Beta)	Std. Error	t-value	p-value	Significance
AI-Driven Decision Support	0.32	0.09	3.56	0.001	Significant
AI-Enabled Customer Engagement	0.41	0.08	5.13	0.000	Significant
AI-Powered Process Automation	0.21	0.11	1.91	0.058	Not Sig.
AI-Enabled Market Intelligence	0.27	0.10	2.70	0.007	Significant
AI-Enabled Financial Management	0.09	0.12	0.75	0.452	Not Sig.

Model Summary: $R^2 = 0.49$, Adjusted $R^2 = 0.47$, $F(5, 294) = 56.3$, $p < 0.001$

Objective 1: To examine the effect of AI-Driven Decision Support on venture creation among e-commerce firms in Nigeria

The Table 4.3 regression results show a significant positive effect ($\beta = 0.32$, $p = 0.001$), indicating that firms adopting AI for decision support experience stronger venture outcomes. In Nigeria's unstable business climate marked by inflation, exchange rate volatility and unpredictable consumer trends. AI-driven tools help entrepreneurs optimize pricing, manage inventory and allocate scarce resources more effectively. This capacity to act on real-time insights reduces uncertainty and improves the chances of survival and growth. AI decision support enhances strategic agility, a critical factor for e-commerce firms competing against informal retail and navigating weak institutional structures. Chalmers *et al.* (2021) emphasized AI's role in reducing entrepreneurial uncertainty, while Shepherd and Majchrzak (2022) stressed AI as a partner in entrepreneurial judgment. TOE Technologically feasible and organizationally empowering, AI decision support is particularly valuable in Nigeria's uncertain environment.

Objective 2: To investigate the influence of AI-Enabled Customer Engagement on venture creation

Customer engagement shows the strongest effect ($\beta = 0.41$, $p = 0.000$), confirming its centrality in venture success. Nigerian consumers often face trust issues with online shopping, ranging from fraud concerns to poor service experiences. AI tools like chatbots, recommendation engines and personalized marketing improve trust, encourage repeat purchases and enhance loyalty. This makes customer engagement a decisive factor in scaling digital ventures. Firms that invest in personalized AI engagement strategies can overcome Nigeria's consumer

skepticism, achieve higher retention, and grow faster than competitors. Dwivedi *et al.* (2025) showed personalization boosts customer satisfaction and growth; Chen (2024) highlights its importance in emerging digital markets. TOE enables scalable personalization, organizationally easing workload and environmentally offsetting consumer distrust.

Objective 3: To assess the effect of AI-Powered Process Automation on venture creation

The effect of automation is positive but not significant ($\beta = 0.21$, $p = 0.058$), suggesting that while automation has potential, it is not yet translating into tangible growth outcomes. Nigeria's infrastructural challenges such as unreliable power supply, poor logistics networks and fragmented supply chains limited the efficiency benefits of automation in e-commerce operations. Many Nigerian e-commerce firms remain unable to fully exploit backend automation and smaller ventures may find automation costly relative to their immediate survival needs. Rastogi (2025) noted that automation benefits are highly context-dependent and weaker in markets with infrastructural gaps.

Objective 4: To determine the effect of AI-Enabled Market Intelligence on venture creation

Market intelligence significantly predicts venture creation ($\beta = 0.27$, $p = 0.007$), underscoring its strategic importance. In Nigeria's rapidly evolving market, shaped by youthful consumers, rising smartphone adoption and volatile incomes. AI intelligence helps firms anticipate demand, track competitor pricing, and respond quickly to shifts in policy or regulation. This ability strengthens opportunity recognition and competitive positioning. Firms that use AI for predictive insights gain market agility and are better positioned to capture emerging opportunities in Nigeria's fluid consumer landscape. Chalmers *et al.* (2021) stressed its role in strategic foresight. Technological Organizational environment provide foresight, organizationally enhancing adaptability to Nigeria's dynamic environment.

Objective 5: To evaluate the effect of AI-Enabled Financial Management on venture creation

Financial AI tools show no significant effect ($\beta = 0.09$, $p = 0.452$), pointing to their weak role in current e-commerce outcomes. Despite AI's global potential in credit scoring, fraud detection and cash flow management, Nigerian firms face systemic challenges: limited integration with fintech platforms, unreliable financial data, and barriers to SME credit access. Until institutional reforms improve credit markets and fintech integration, AI-enabled financial management will have little practical impact on entrepreneurial growth in Nigeria. Al-Mamary (2025) highlighted AI's role in financial sustainability but notes effectiveness depends on institutional maturity. The theory of TOE aligned that Technological potential exists, but environmental and institutional weaknesses dilute organizational gains. This objective is not supported, reflecting the limits of financial AI under Nigeria's underdeveloped financial infrastructure.

5.0 Conclusion and recommendations

5.1 Conclusion

This study set out to examine how Artificial Intelligence (AI) shapes venture creation among e-commerce firms in Nigeria, using five key proxies such as AI-driven decision support, AI-enabled customer engagement, AI-powered process automation, AI-enabled market

intelligence and AI-enabled financial management, framed within the Technology Organization Environment (TOE) model. The results revealed that AI-driven decision support, customer engagement and market intelligence are strong and significant predictors of venture creation, demonstrating that AI enables entrepreneurs to make better strategic decisions, deepen consumer trust through personalization and adapt to dynamic markets with predictive insights. However, AI-powered process automation and financial management showed insignificant effects, largely due to persistent infrastructural bottlenecks, fragmented logistics systems, weak institutional support and systemic financing barriers that characterize Nigeria's business environment. These findings suggest that while Nigerian entrepreneurs and firms demonstrate readiness to adopt AI, especially in consumer-facing and intelligence-driven areas, the broader environment continues to constrain its effectiveness in operational and financial domains. Thus, AI in Nigeria's e-commerce sector functions not just as a tool for efficiency but as a strategic enabler of entrepreneurial resilience, growth and competitiveness, with its impact realized unevenly across domains depending on the interaction of technological readiness, organizational capacity and environmental conditions. The study therefore concludes that realizing AI's full potential for venture creation in Nigeria requires coordinated efforts from entrepreneurs, policymakers, investors and fintech innovators to dismantle systemic barriers while scaling adoption of AI solutions most relevant to the Nigerian context.

5.2 Recommendations

The following recommendations were informed by the study;

- i. Entrepreneurs should invest in affordable AI-based analytics platforms to optimize pricing, inventory, and demand forecasting, enabling them to navigate Nigeria's volatile market with greater accuracy.
- ii. Government should strengthen digital consumer protection and data privacy frameworks to enhance trust, which will amplify the effectiveness of AI tools in customer acquisition and retention.
- iii. Innovation hubs and logistics-tech startups should co-create modular automation solutions (e.g., order tracking dashboards, delivery optimization tools) that SMEs can adopt without heavy capital requirements.
- iv. Venture capitalists and angel investors should prioritize funding for e-commerce firms leveraging AI-driven market intelligence, as these businesses are more resilient and adaptive to fast-changing consumer preferences and regulatory shifts.
- v. Fintech firms should design AI-driven credit scoring and fraud detection models tailored to SMEs, expanding access to finance and strengthening the sustainability of new ventures.

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Modelling Intercity Trip Generation of Public Passenger Transport in Niger State, Nigeria

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Abstract

The persistent growth in intercity travel demand across Niger State has not been matched by adequate transport services and infrastructure, leading to inefficient passenger movement, delays, and poor service delivery. Despite these challenges, there is limited empirical understanding of the factors influencing intercity trip generation, creating a need for a study that models the determinants of public passenger transport demand in the State. This study aims to identify demographic, socioeconomic, and transportation-related factors that influence the weekly travel frequency of public transport passengers in Niger State. Key variables examined include age, marital status, household size, educational level, car ownership, trip purpose, trip distance, and perceived insecurity, each measured through categorical proxies. A cross-sectional survey research design was adopted, covering nine major cities: Minna, Bida, Kontagora, Suleja, Mashegu, Mokwa, Shiroro, New Bussa, and Lapai. Using Dillman's (2007) formula, a sample of 1,290 respondents was drawn from a population of 90,775 registered passengers with NURTW, RTEAN, and NSTA. Data were analysed using correlation and multiple linear regression, with diagnostic tests for multicollinearity ($VIF < 10$, Tolerance near 1). The regression model revealed an R^2 value of 0.967, indicating high predictive accuracy with statistically significant predictors ($p < 0.001$). The study concludes that demographic, socioeconomic, and transport-related factors strongly influence intercity trip generation in Niger State, providing an empirical basis for transport planning and policy. The study recommends that transport authorities should enhance safety and security, improve accessibility and convenience for key demographic groups and focus resources on the factors that most significantly influence intercity trip generation.

Keywords: Intercity, Trip Generation, Modelling, Public Transport Passenger

1. Introduction

Transportation plays a crucial role in the functioning and survival of any society and economy, facilitating the movement of people, goods, and services (Okonkwo, 2023). It is a vital component linking the physical environment to patterns of social and economic development (Olorunfemi, 2020). Borlo, et al (2021) emphasised that transportation is central to human society, significantly contributing to social and economic interactions. The transportation system is pivotal to the economic and social development of nations (Akinsehinwa, 2023). The mobility and accessibility it provides have shaped urban centres and influenced the location of social and economic activities (Ojekunle et al., 2018).

Intercity trip generation is a key aspect of transport planning, reflecting the frequency and volume of trips made between cities and towns. Efficient intercity travel systems can maximise economic growth by facilitating the movement of people and goods across urban and rural

areas (Gebre & Quezon, 2021). However, intercity travel is complex, as people from diverse socioeconomic backgrounds travel for different purposes at varying times using multiple modes of transport (Usanga et al. 2020). These trips are influenced by the spatial distribution of settlements, economic activities, and transport infrastructure, with well-functioning road passenger systems comprising buses, minibuses, and taxis serving as the major drivers of intercity trip generation (Akinsehinwa, 2023; Green et al., 2023).

In Nigeria, particularly in Niger State, intercity passenger transport remains integral to mobility, connecting dispersed urban and rural areas (Owoeye, 2025). However, challenges such as rising transport costs, long travel times, inadequate terminal facilities, and safety concerns have constrained travel patterns and affected trip generation (Olawole and Aloba, 2014). Understanding these dynamics is crucial for transport planning, as it offers insights into travel demand, socioeconomic determinants of mobility, and the pressures on existing transportation infrastructure (Olorunfemi, 2020). By improving public passenger transport services and their components, it is possible to enhance intercity trip generation, optimise service provision, and support economic and social activities across the State

Despite the critical role of intercity travel in regional mobility, the literature reveals a significant gap: there is no specialised model to estimate intercity trip generation in Niger State, which limits the ability of planners and policymakers to accurately forecast travel demand and design appropriate transportation infrastructure (Ojekunle et al., 2021). This study aims to develop a tailored model for intercity trip generation in Niger State to forecast travel demand accurately, optimise public transport systems, and inform effective transport planning and policy. This study, therefore, seeks to model intercity trip generation of public passenger transport in Niger State, providing data-driven insights to improve mobility, efficiency, and regional integration.

2. Literature Review

This literature review examines intercity trip generation and public passenger transport, focusing on demographic, socioeconomic, and transport-related determinants, current mobility challenges, and the gap in a specialised model for Niger State that this study addresses.

2.1 Conceptual Review

The conceptual review highlights that intercity trip generation, defined as the number of trips originating from or destined to a city over a specific period, is influenced by travellers' characteristics and socioeconomic activities, serving as a key measure for transport planning (Usanga et al. 2020). Key determinants include demographic factors such as age, marital status, and household size; socioeconomic factors, such as educational level and car ownership; and transport-related factors, including trip purpose, trip distance, perceived insecurity, and service quality and availability. These factors are measured using proxies such as weekly trip frequency, trip distances, and categorisations of personal and transport attributes. Together, these variables form a framework that guides the analysis of travel behaviour and the modelling of intercity trip generation in Niger State, providing insights essential for forecasting demand, optimising public transport systems, and improving infrastructure planning.

2.2 Conceptual Framework

The framework in Figure 2 illustrates the relationship between the dependent variable, the frequency of passenger flow, and independent variables such as socioeconomic characteristics, location, cost, distance, trip duration, and others. These variables are interconnected and interrelated. Trip characteristics (such as cost, distance, and purpose) directly impact mode and route choices. For instance, long-distance journeys may lead passengers to opt for more affordable options, such as buses, while shorter trips may encourage the use of private vehicles. Socioeconomic factors play a key role in shaping trip characteristics.

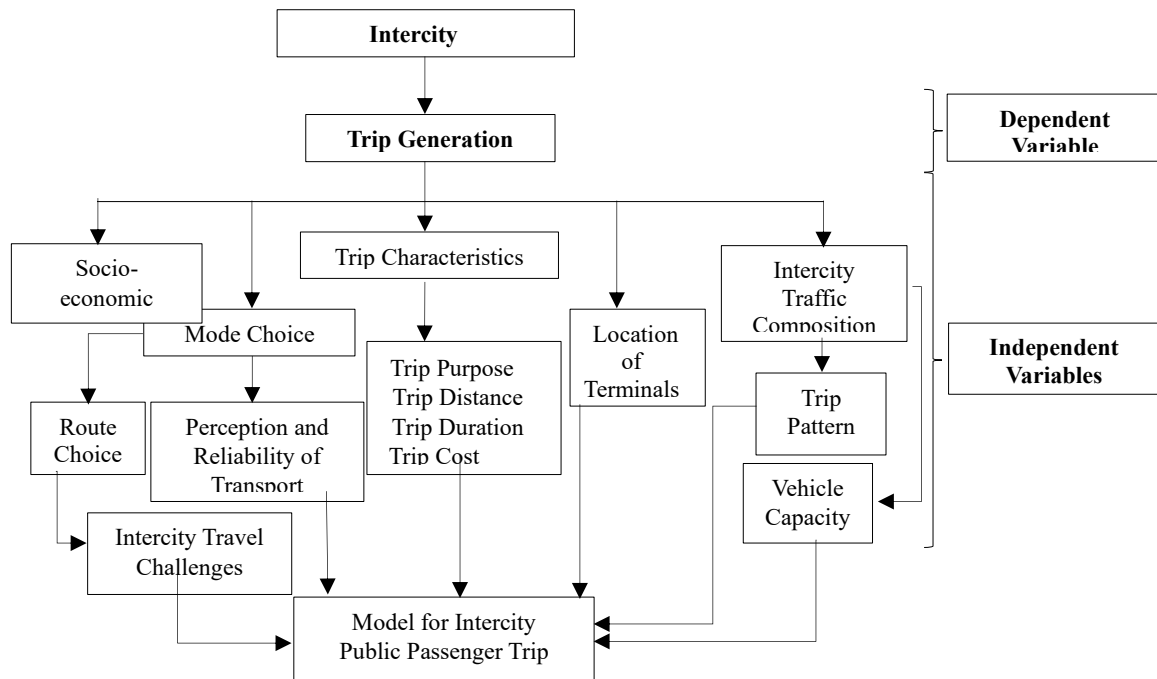


Figure 2: Conceptual Framework for the Study

Source: Author Concept (2025)

2.3 Theoretical Review

The Four-Step Travel Demand Model has been extensively applied in urban transportation planning (Modi et al. 2011). Ortúzar and Willumsen (2011) have further elaborated on this model. Notwithstanding its widespread use, scholars like Gebre and Quezon (2021) have pointed out a notable research gap concerning the adjustment of this model to contemporary transportation systems characterised by dynamic shifts in travel behaviour and an evolving array of mobility options.

Traditionally, within travel demand modelling, trip generation is the initial component that provides the possibility for subsequent steps such as destination choice and mode choice. Regarding intercity travel, a trip is typically classified as either business or non-business (Akpoghomeh and Mbee, 2021; Afolabi et al. 2017). The Trip Generation Model forecasts the number of person-trips that will originate from one end in each traffic zone within the town for a specified period (Okoko, 2006; Akpoghomeh, 2021). In trip generation modelling, two major zones are recognised (i.e. origin and destination zones). The various techniques used to analyse trip generation models, as cited by Okoko (2006), Ekong (2013), Gebre and Quezon (2021) &

Akpoghomeh (2021), include multiple linear regression models, trip analysis and cross-classification or category analysis.

Figure 3 illustrates a four-step transport modelling framework, explaining how travel demand is generated and ultimately results in real traffic flows. The process begins with trip generation, which involves the activity system (e.g., schools, workplaces, households, and businesses) that interacts with the transport system to produce trips. Invariably, these trips are allocated in the distribution, determining the origin-destination patterns. The process begins with trip generation, where the activity system (e.g., households, businesses, schools) interacts with the transport system to produce trips. These trips are then allocated in the trip distribution, determining the origin-destination patterns. The mode choice is the next step, where travellers choose between various transport modes, such as car, train, and bus, based on duration, cost, and convenience. Moreover, route choice allots trips to specific paths in the network, resulting in traffic flows. Lastly, feedback and equilibration loops guarantee the model accounts for congestion and changing travel patterns, creating a dynamic tool for transport planning and policy evaluation.

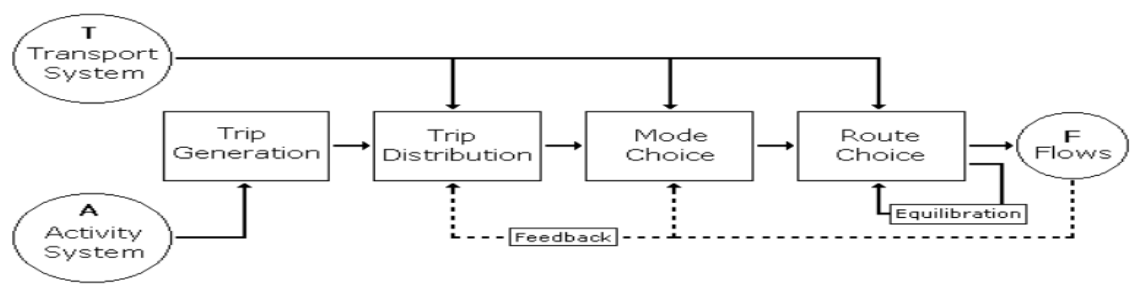


Figure 3: The Four-Step Model

Source: McNally (2007)

2.4 Empirical Review

Empirical studies highlight that public transportation is the most effective means of moving large groups of people, particularly in densely populated urban areas (Gbadamosi & Olorunfemi, 2016). Cities are characterised by clusters of human activities such as manufacturing, trading, transportation, and tertiary services that generate high population concentrations. These activities are functionally differentiated and spatially segregated, shaping the spatial configuration of urban areas and influencing travel patterns (Ojekunle and Owoeye, 2018). The resulting spatial segregation creates imbalances in land use, necessitating consistent spatial interaction to maintain functional interrelationships between urban zones (Zhang et al. 2023). Empirical evidence further shows that rapid urbanisation globally is driving increased population densities in cities, which in turn intensifies demand for efficient and reliable public transport systems to support mobility, accessibility, and economic activity.

Ojekunle et al. (2021) modelled the determinants of inter-urban trip flow patterns of selected cities in Niger State, Nigeria. In the study, the dependent variable was inter-urban travel flow (ITF), while the independent variables included travel distance (TD), travel time (TT), population (PP), public institution (PI), and fare charged (FC), with population (PP) and fare charged (FC) identified as the significant predictors. A multiple stepwise regression model was

adopted. Modi et al. (2011) reviewed the transportation planning model and concluded that trip generation provides an estimate of the total number of trips generated to and attracted from different zones within the study area.

Modi (2010) posited that the gravity model predicts trip movements between zones by considering the population size and the distance that separates them. This foundational approach underscores the model's reliance on socioeconomic and spatial factors in transportation planning. However, scholars such as Okoko (2006) and Akpogomeh (2021) have highlighted a research gap in this domain, emphasising the necessity for enhanced Gravity Model versions encompassing supplementary factors influencing trip generation. These critiques highlight limitations in traditional models, underscoring the need to integrate variables such as travel costs and infrastructure quality to enhance predictive accuracy in empirical studies.

Empirical studies on intercity trip generation demonstrate the use of various models to analyse travel demand and passenger behaviour in urban and regional environments. This study employs the multiple linear regression model to investigate the complex relationships between demographic, socioeconomic, and transport-related factors and intercity travel demand and weekly trip patterns in Niger State. By meeting key statistical assumptions, the model provides a reliable framework for understanding intercity trip generation and offers insights to inform transport planning and policy formulation.

3. Methodology

The study employed a cross-sectional survey design to investigate factors influencing intercity trip generation in Niger State, focusing on public transport passengers across nine major cities. A sample of 1,290 respondents was drawn from a population of 90,775 intercity public transport passengers using a multistage and systematic random sampling technique to ensure representativeness. The nine cities selected for the study include: Minna, Bida, Kontagora, Suleja, Mashegu, Mokwa, Shiroro, New Bussa and Lapai. These cities were chosen due to their high population concentration and serve as transport hubs for direct public transport service from the state capital and other urban centres. Additionally, these cities have a well-developed transportation infrastructure, including extensive road networks and organised intercity bus terminals, which aid accessibility and connectivity. The geographical spread of cities and the rural-urban dichotomy also play a role in the selection. Thereby, making them representative of the State's overall demographic and public transportation characteristics. Structured questionnaires were used to collect data on demographic, socioeconomic, and transport-related factors, including trip frequency and purpose. Dillman's (2007) formula was used to draw a sample of 1,290 respondents from a population of 90,775 registered with NURTW, RTEAN, and NSTA. Approximately 95.3% of the questionnaires were returned as valid. Data were analysed using correlation and multiple linear regression, with diagnostic tests for multicollinearity ($VIF < 10$, Tolerance near 1). To calculate the sample size using the formula given below, we need to substitute the values into the formula:

$$N_s = \frac{(N_p)(p)(1-p)}{(N_p-1)\left(\frac{B}{C}\right)^2 + (p)(1-p)} \dots\dots\dots(3)$$

Where;

N_s = Complete sample size needed (notation often used is n)

N_p = Size of the population (notation often used is N) = (90,775)

P = proportion expected to answer a certain way (50% or 0.5 is most conservative)

B = Acceptable level of sampling error (0.03) = (3%)

C = Z statistic associated with confidence interval = (2.17) (for 97% Confidence level)

Substituting the values into the formula:

$$N_s \approx \frac{(90,775)(0.5)(1-0.5)}{(90,775-1)\left(\frac{0.03}{2.17}\right)^2 + (0.5)(1-0.5)}$$

$$\approx \frac{(22,693.75)}{(90,774)(0.000191) + (0.25)}$$

$$\approx \frac{22,693.75}{(90,774)(0.000191) + (0.25)}$$

$$\approx \frac{22,693.75}{17.587834}$$

$$N_s \approx 1,290$$

To model intercity trip generation of public passenger transport in Niger State, a multiple linear regression model (MLR) was used. This model was adopted to estimate intercity flows and leverage the data obtained on trip distances, trip costs, trip durations, population, socioeconomic characteristics, and service satisfaction.

The multiple linear regression model was adopted and adapted from standard statistical modelling techniques (Gujarati and Porter, 2009) and Ojekunle et al. (2021) to estimate the total number of intercity passenger trips generated in cities within Niger State.

The multiple linear regression model equation is expressed as:

$$Y = \beta_0 + \sum_{i=1}^n b_i x_i + \varepsilon \dots \dots \dots (1)$$

This could be expanded to accommodate n number of predictor variables as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + \varepsilon \dots \dots \dots (2)$$

Where:

Y = Dependent variables

β_0 = Y-intercept (it's the value of Y when all X 's are 0)

$X_1, X_2, \dots, X_n$ = Independent variables (the predictors or features)

$\beta_1, \beta_2, \dots, \beta_n$ = Coefficients of the independent variables (these values indicate the change in Y for a one-unit change in the respective X variable, holding all other variables constant)

ε = Error term (captures the variability in Y that the predictors do not explain)

The model used:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_k X_k + \varepsilon \dots \dots \dots (4)$$

For modelling intercity trip generation in the study area, the study model was adopted to estimate the 'total number of passengers' trips generated in cities through multiple linear regression.

Therefore, the multiple linear regression model equation is expressed below:

$$Y = \beta_0 + \beta_1(x_1) + \beta_2(x_2) + \beta_3(x_3) + \beta_4(x_4) + \dots + \beta_{15}(x_{15}) + \varepsilon \dots\dots\dots (5)$$

Y = Total weekly trips of passengers

X₁ is the Age, X₂ is the Income level, X₃ is the Gender, X₄ is the Household size, X₅ is the Occupation, X₆ is the duration of trip, X₇ is the Cost of trip, X₈ is the distance of trip, X₉ is the Marital Status, X₁₀ is the Trip purposes, X₁₁ is the Average waiting time, X₁₂ is the Service satisfaction, X₁₃ is the Education Level, X₁₄ is the Car Ownership, X₁₅ is the Insecurity, Population (X₁₆), type of vehicle travelling with (X₁₇), Time of Day for Trip is the X₁₈, and ε is the Error term of prediction.

Table 1 presents the nine selected cities in Niger State, the sample frame, and the proportion of questionnaires administered, as well as the number of validly returned questionnaires in the study area.

Table 1: Population and Sample Size of Intercity Passengers

S/N o	City	Names of Parks	Population of Passengers (Sample Frame)	No of Questionnaire s Distributed	No of Valid Questionnaire s Returned
1	Minna	Abdulsalam, Mobil & NSTA	18,527	263	255
2	Kontagora	Kontagora Central Park	10,162	145	141
3	Bida	Etsu Nupe Garage	10,267	146	139
4	Suleja	Old Garki Garage	10,637	151	148
5	Mokwa	Mokwa Garage	9,012	128	125
6	Mashegu	Mashegu Garage	5,832	83	83
7	Shiroro	Shiroro Garage	8,572	122	119
8	Lapai	Lapai Garage	8,891	126	122
9	New Bussa	New Bussa Central Garage	6,875	126	98
Total			90,775	1,290	1,230

Source: Author's Field Survey (2025)

Figures 4 and 5 show the map of Nigeria, indicating the study State and selected cities in the study area.

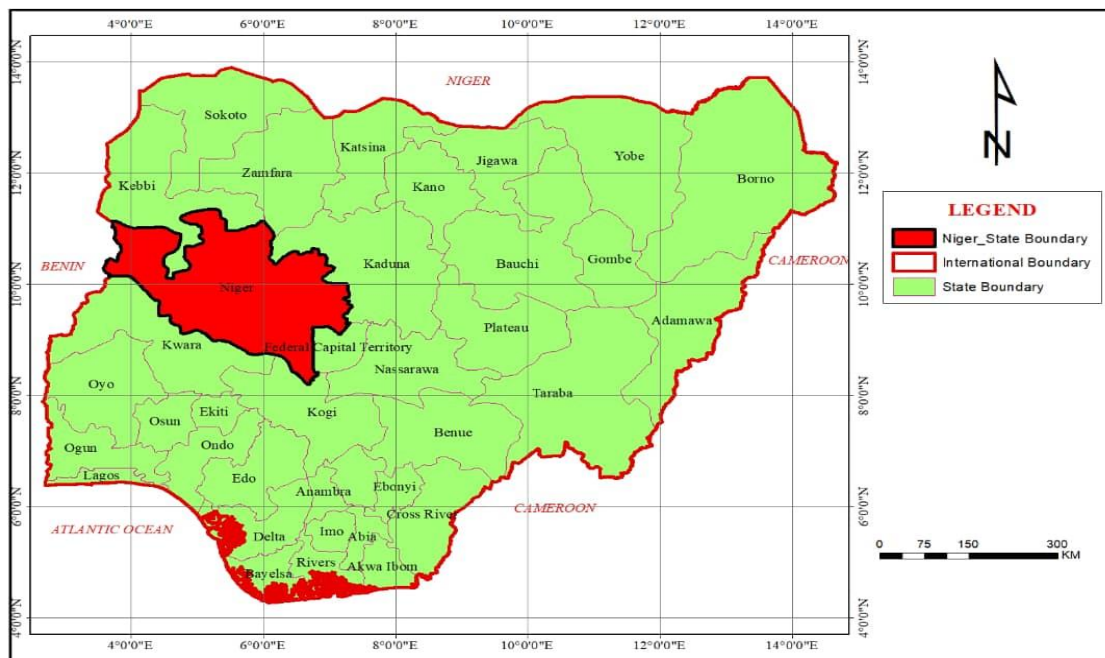


Figure 4: Map of Nigeria showing Niger State
Source: Niger State Ministry of Lands and Housing, Minna (2025)

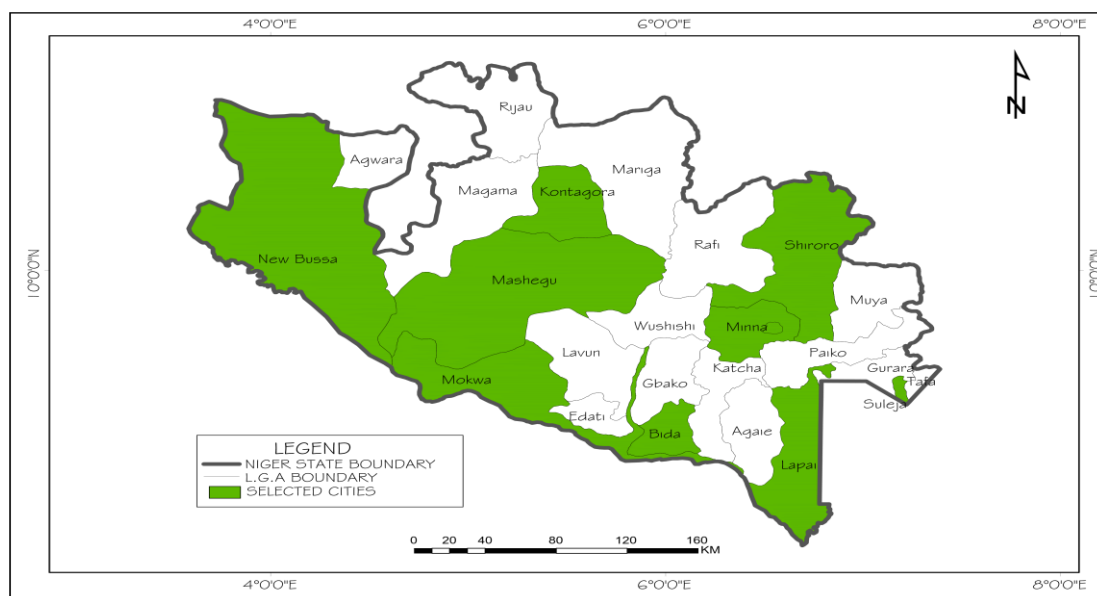


Figure 5: Map of the Study Area Showing the Selected Cities in Niger State
Source: Author's Field Survey (2025)

4. Results and Discussion

4.1 Multicollinearity Diagnostic of the Independent Variables

Table 2: Multicollinearity Diagnostic of the Independent Variables

Variable	Tolerance	VIF	Decision
Age	0.421	2.377	Retain
Marital Status	0.486	2.058	Retain
Occupation	0.06	16.654	Remove (High Multicollinearity)
Household Size	0.416	2.406	Retain
Income	0.027	36.581	Remove (High Multicollinearity)
Educational Level	0.571	1.752	Retain
Type of Vehicle Travelling With	0.037	26.899	Remove (High Multicollinearity)

Car Ownership	0.205	4.879	Retain
Trip Purpose	0.257	3.885	Retain
Average Waiting Time at Motor Parks	0.098	10.168	Remove (High Multicollinearity)
Cost of Trip	0.099	10.136	Remove (High Multicollinearity)
Service Satisfaction	0.071	14.105	Remove (High Multicollinearity)
Trip Distance	0.800	1.25	Retain
Gender	0.062	16.165	Remove (High Multicollinearity)
Insecurity	0.186	5.372	Retain
Time of the Day You Make Your Trip	0.061	16.479	Remove (High Multicollinearity)
Population	0.062	16.002	Remove (High Multicollinearity)

Author's Computation (2025)

Table 3: Retained Independent Variables after Multicollinearity Diagnostic

Variable	Tolerance	VIF	Decision
Age	0.421	2.377	Retain
Marital Status	0.486	2.058	Retain
Household Size	0.416	2.406	Retain
Educational Level	0.571	1.752	Retain
Car Ownership	0.205	4.879	Retain
Trip Purpose	0.257	3.885	Retain
Trip Distance	0.800	1.25	Retain
Insecurity	0.186	5.372	Retain

Source: Author's Computation through SPSS (2025)

Table 2 shows the results of the multicollinearity diagnostic using Durbin-Watson, which was performed among the independent variables used for regression analysis to check if two or more independent variables in the regression model are highly correlated with each other, which could result in issues like inflated standard errors and variances, unreliable coefficient interpretation and reduced model reliability. These problems distort regression results without biasing overall predictions, but they undermine inference and variable importance. Specifically, the collinearity statistics looked at the Tolerance and Variance Inflation Factor (VIF) values. A tolerance value quantifies the proportion of variance in an independent variable that remains unexplained by the other independent variables in the model. When the tolerance value is near 1, it suggests that multicollinearity is low. The variance inflation factor (VIF) assesses the extent to which collinearity inflates the variance of a regression coefficient estimate. A VIF surpassing 10 suggests significant multicollinearity.

Based on the Tolerance and VIF values, the following variables were retained, as shown in Table 3: Age, Marital Status, Household Size, Education Level, Car Ownership, Trip Purpose, Trip Distance, and Insecurity. The following variables were removed: Occupation, Income, Type of Vehicle Travelling With, Average Waiting Time, Cost of Trip, Service Satisfaction, Gender, Time of the day you make your trip and population. Therefore, removing the variables with high multicollinearity invariably improves the reliability of the regression model's prediction.

4.3. Multiple Linear Regression Results

Table 4 Regression Analysis Result

Statistic	Value
R ²	0.967
F-statistic	2093.147
Model p-value	0.000

Source: Author's Computation (2025)

The results in Table 4 indicate a highly robust regression model, with an R² of 0.967 showing that nearly all variations in the dependent variable are accounted for by the predictors, leaving only a small fraction unexplained. The exceptionally large F-statistic (2093.147) further demonstrates that the combined influence of the independent variables significantly enhances the model's predictive power compared to a baseline with no predictors. Additionally, the model p-value of 0.000 confirms strong statistical significance, implying that the observed relationships are unlikely to be due to chance. Overall, the combination of a very high R², a strong F-statistic, and a highly significant p-value underscores that the model is reliable, valid, and effective in explaining and predicting the outcome variable.

4.4. Coefficients of Retained Independent Variables of the Regression Analysis

Table 5: The Coefficients of Retained Independent Variables of the Regression Analysis

Variable	B (Unstandardised Coefficient)	Std. Error	Beta (Standardised Coefficient)	T	Sig.
(Constant)	0.594	0.058	—	10.241	0.000
Age	-0.022	0.003	-0.051	-7.333	0.000
Marital Status	0.014	0.005	0.022	2.800	0.005
Household Size	0.002	0.006	0.003	0.333	0.739
Educational Level	0.002	0.002	0.005	1.000	0.318
Car Ownership	-0.050	0.013	-0.045	-3.846	0.000
Trip Purpose	-0.013	0.004	-0.032	-3.250	0.001
Trip Distance	-0.010	0.003	-0.020	-3.333	0.001
Insecurity	0.327	0.012	0.342	27.250	0.000

a. Dependent Variable: Total Number of Weekly Trips

Significant at 0.05 Level

Source: Author's Computation (2025)

$$Y = \beta_0 + \beta_1(x_1) + \beta_2(x_2) + \beta_3(x_3) + \beta_4(x_4) + \dots + \beta_{15}(x_8) + \varepsilon \dots\dots\dots (6)$$

Hence, using equation:

$$\text{Total No of Weekly Trip} = \beta_0 + \beta_1(\text{Age}) + \beta_2(\text{Marital Status}) + \beta_3(\text{Household Size}) + \beta_4(\text{Educational Level}) + \beta_5(\text{Car Ownership}) + \beta_6(\text{Trip Purpose}) + \beta_7(\text{Trip Distance}) + \beta_8(\text{Insecurity}) + \varepsilon$$

Where:

Y = Total Number of Weekly Trips

β_0 : Intercept (constant)

$\beta_1 - \beta_{18}$: Coefficients for each independent variable

Therefore, substituting the coefficients in Table 5 into the regression equation, the model derived for this study is:

$$\text{Total No of Weekly Trip} = 0.594 - 0.022(\text{Age}) + 0.014(\text{Marital Status}) + 0.002(\text{Household Size}) + 0.002(\text{Educational Level}) - 0.050(\text{Car Ownership}) - 0.013(\text{Trip Purpose}) - 0.010(\text{Trip Distance}) + 0.327(\text{Insecurity}) + \varepsilon$$

The regression results in Table 5 indicate how different factors influence the total number of weekly passenger trips in Niger State. The significant constant term ($B = 0.594$, $p < 0.001$) establishes a meaningful baseline level of weekly trips when all predictors are zero. Age has a strong negative effect ($B = -0.022$, $p < 0.001$), showing that older individuals tend to make fewer weekly trips. Marital status has a small but significant positive effect ($B = 0.014$, $p = 0.005$), suggesting that married or cohabiting individuals take slightly more weekly trips. Car ownership has a negative impact on the frequency of weekly trips ($B = -0.050$, $p < 0.001$), indicating a tendency for car owners to rely less on public transportation. Both trip purpose ($B = -0.013$, $p = 0.001$) and trip distance ($B = -0.010$, $p = 0.001$) reduce the number of weekly trips, indicating that longer distances and specific travel motivations may limit trip frequency. Notably, insecurity is the strongest positive predictor ($B = 0.327$, $p < 0.001$), highlighting that perceived safety risks strongly influence intercity travel demand, possibly due to route choices or altered travel behaviour. In contrast, household size ($B = 0.002$, $p = 0.739$) and educational level ($B = 0.002$, $p = 0.318$) do not have a significant effect on the number of weekly trips.

Overall, the study's findings are consistent with previous research, which shows that demographic factors, particularly age, and trip characteristics, such as distance, significantly affect intercity travel frequency. Specifically, older individuals tend to make fewer trips (Ojekunle et al., 2021). The negative impact of car ownership supports earlier observations that private vehicle owners depend less on public transport, while marital status and trip purpose also play a significant role in shaping travel behaviour (Modi et al., 2011; Usanga et al., 2020). Notably, perceived insecurity emerged as the strongest positive predictor, highlighting its critical influence on intercity travel demand. In contrast, household size and educational level showed a limited effect, aligning with prior studies (Borlo et al., 2021).

5. Conclusion and Recommendations

The study concludes that intercity trip generation in Niger State is jointly influenced by demographic, socioeconomic, and transport-related factors, with age, marital status, car ownership, trip purpose, trip distance, and perceived insecurity emerging as significant determinants of weekly passenger trips. Older passengers and car owners tend to travel less frequently, while marital status and certain travel motivations slightly increase the frequency of trips. Importantly, perceived insecurity has the strongest positive effect, highlighting the critical role of safety concerns in shaping travel behaviour, whereas household size and educational level show no significant influence.

This finding demonstrates that intercity travel demand is shaped not only by conventional demographic and trip characteristics but also by safety perceptions, a factor often

underexplored in prior studies. The results provide a strong empirical foundation for transport planning and policy, indicating that addressing safety, managing trip distances, and accounting for passenger demographics are essential for optimising public transport services, and that the derived model can serve as a reliable tool for forecasting travel demand, enhancing mobility, and mitigating challenges such as insecurity and rising transport costs.

Based on the findings of this study, the following four key recommendations are proposed to improve intercity passenger transport and trip generation in Niger State:

1. Given that perceived insecurity is the strongest predictor of intercity travel, transport authorities should implement robust security measures along travel routes and at terminals, including surveillance systems, adequate lighting, and deployment of security personnel to boost passenger confidence.
2. Older passengers and car owners make fewer trips; therefore, age-friendly services, comfortable seating, reduced waiting times, and incentives for private vehicle owners to use public transport (e.g., discounted fares and convenient routes) should be prioritised.
3. Transport planners should design schedules and routes that match travel purposes and distances, ensuring efficient, cost-effective, and reliable services for work, education, social, and long-distance trips, thereby encouraging higher trip frequency.
4. Since household size and educational level were not significant predictors, resources should be concentrated on factors that meaningfully influence intercity trip generation, such as demographic characteristics, travel motivation, trip distance, and security concerns, to maximise transport system efficiency and passenger mobility.

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Parenting Styles and Adolescent Delinquency amongst Secondary School Students in Gwale Local Government Area, Kano State, Nigeria

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Abstract

Delinquency is one of the major challenges facing youths most especially teenagers. It is the role of parents to ensure their wards are properly socialised to function well in the society. However, many teenagers are engaged in delinquencies in environments that fall outside the purview of their parents, such as schools. The study adopted a descriptive survey design with a multistage stratified sampling technique used to select participants. Relevant data were collected from a sample of 396 adolescents determined using Taro Yamane formula from a total population of 44,235. Questionnaires and Key Informant Interview (KII) were used as the research instruments. The data obtained from the field were analysed using Statistical Package for Social Sciences (SPSS version 23) through descriptive and inferential statistics such as frequencies, percentages and correlation. Content analysis was used to present (KII) in order to corroborate the quantitative data. Findings from the field revealed major types of parenting styles such as Religious, Authoritarian and Neglectful. Similarly, it was found that major types of adolescence delinquency include the following: bullying, substance abuse, vandalism truancy, sexual offences, stealing, disruption of class activities, possession of light weapons like knives, cables and examination malpractices. Lastly, a positive and significant relationship (0.8) between the types of parenting styles and adolescence delinquency in the study area. Recommendations given includes parental engagement, revise school discipline policies to conform to existing realities and the implementation of a comprehensive life skills programs to support students in secondary schools.

Keywords: Adolescent Delinquency, Parenting Styles, Secondary School Students, and Gwale

1.0 Introduction

Adolescence is a necessary stage in the life of all humans. It is a crucial developmental phase characterised by rapid physical, emotional and social changes, often accompanied by the search for identity and independence (Ugboko, Enakpoya & Onayase, 2025). It is a critical developmental stage marked by identity creation, emotional turbulence, and social experimentation. During this period, parental influence continues to play a vital role, particularly through parenting styles. Delinquent behaviours are offences committed by young people which include legal infractions ranging from littering to murder (Silas et al, 2023). The influence of parents on the training and development of their teenage wards is paramount. In secondary schools (both public and private), there are several cases of students going to school not in complete school uniforms, carrying illegal items such as handset phone, weapons, bullying fellow students, stealing, drug abuse, involve in examination malpractice, giving bad names to teachers among other deviant act exhibited by secondary school students in Gwale Local government.

The rate at which these students engage in antisocial behaviour in Gwale Local Government area is alarming which poses a great threat to the peace and security of the state in general. Ajah and Ugwuoke (2018) noted that in the past, children were known to be involved in minor

offences such as robbing their playmates of toys, stealing meat from the pot among others. Unfortunately, children and adolescents these days have gone beyond these minor offences to more serious ones like using weapons to rob phones, kidnapping, armed-robbery, abuse drug, rape, and other unethical behaviours.

Over the years, delinquent behaviour among secondary school students in Gwale Local Government has become a growing concern for educators, policymakers, and society at large. Several schools in Kano have reported frequent incidents of vandalism, gang fights, and substance abuse, especially among male students. Teachers often face challenges in managing classroom behaviour, and many students are less interested in learning due to involvement in delinquent activities (Ahmed & Yusuf, 2021). Furthermore, many of these students come from homes where parental supervision is weak or non-existent, while some are influenced by peers or exposed to negative role models in their communities. If not properly addressed, the issue could negatively impact students' academic achievement and hinder effective school administration, potential leading to fear and uncertainty regarding school discipline ethical standards.

To corroborate the above assertion, Adeniyi and Akinola (2020) also opined that failure to check the situation of secondary school students' misbehaviour may create threat to the students' academic performance and impede the effectiveness of school management because it may give rise to fear and frustration about school ethics and conduct if the situation is not adequately checked. Kano State, one of the most populous states in Nigeria and a cultural hub of northern Nigeria, has witnessed an increase in antisocial behaviour among adolescents, particularly those enrolled in secondary schools-ranging from truancy and theft to drug abuse and violence-pose to educational sector and community safety (Auwalu & Ibrahim, 2023).

Gwale Local Government Area (LGA), being one of the most densely populated local governments in the state, experiences unique socio-cultural dynamics that contribute to youth behaviour such as rapid urbanization, economic disparity, weak family structures, and overcrowded schools have compounded the problem (Ahmed & Yusuf, 2021). Parenting styles is a psychological construct representing standard strategies that parents use in their child-rearing. Parenting styles can be viewed as specific behaviours that parents deploy during their interaction with their children and the emotional environment created by parents as they raise their children (Okorodudu, 2010).

Adolescent delinquency among secondary school students has become a significant concern in Gwale Local Government, posing a threat to the educational system, community safety, and national development. In recent years, educators, parents, and policymakers in Kano have observed a disturbing rise in antisocial behaviours such as truancy, cultism, theft, drug abuse, examination malpractice, gang fight, and violent conduct among adolescents (Abdullahi & Haruna, 2019). These behaviours not only disrupt academic performance and social discipline but also lay the groundwork for future adult criminality.

Despite government efforts to retype the educational sector and promote youth development, the problem persists and appears to be escalating. Research suggests that parenting styles, socioeconomic hardship, peer influence, school environment, and community disorganization contribute significantly to the problem (Yahaya & Lawal, 2018; Nuhu et al., 2017). In Gwale Local Government, there remains a gap in localised research that explores the specific drivers of delinquency among in-school adolescents, particularly in relation to family background, school factors, and peer pressure.

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This paper therefore, intends assess the effects of the various types of parenting styles and adolescent delinquency among secondary school students in Gwale Local Government area, taking into account the relationship between parenting styles and adolescent delinquency.

The study therefore aims to achieve the following objectives:

- (i) To identify the major types of parenting styles in Gwale Local Government Area of Kano state, Nigeria.
- (ii) To explore the major types of adolescence delinquency in Gwale Local Government Area of Kano state, Nigeria.
- (iii) To establish the relationship between parenting styles and adolescent delinquency among secondary school students in Gwale Local Government Area of Kano state, Nigeria.

2.0 Literature Review

2.1 Parenting Styles

Parenting styles refer to the psychological and emotional climate in which parents raise their children, typically categorised into four types: authoritative, authoritarian, permissive, and neglectful (Baumrind, 1991; Darling & Steinberg, 1993). This typology has been widely applied to Nigerian contexts, including in Kano state.

The authoritarian style is characterized by high demands and low responsiveness. Parents set strict rules and expect obedience without question. They often use punishment to enforce discipline and may not provide much warmth or nurturing (Ojo & Ajayi, 2020). Authoritarian parenting is prevalent, influenced by cultural norms that emphasize respect for elders and authority. It is common for parents to have strict control over their children's activities and decisions. The authoritative style on the other hand, involves high demands coupled with high responsiveness. Parents set clear rules and expectations but also provide support, warmth, and open communication (Ahmed & Salisu, 2021). They encourage independence while maintaining structure. Authoritative parenting is on the rise, particularly among educated and urban families. These parents balance discipline with understanding and dialogue.

Permissive parents are highly responsive but have low demands. They provide a lot of warmth and support but set few rules and rarely enforce discipline (Abdullahi et al., 2022). Children often have a high level of freedom and autonomy. This style is less common due to cultural values that emphasize discipline and respect. However, it can be observed in some families, particularly those influenced by Western parenting practices. The neglectful parenting style is characterized by low responsiveness and low demands. Parents are often detached and provide little guidance, warmth, or attention to their children's needs (Lawal & Ibrahim, 2023). Neglectful parenting is not widespread but can be found in cases where parents are overwhelmed by economic pressures or other personal issues. It is more likely in situations where children are left to fend for themselves.

The Religious/Traditional Parenting style is deeply rooted in Nigerian cultural and traditional values. It often combines elements of authoritarian and authoritative parenting, emphasizing respect for elders, communal values, and discipline (Usman & Musa, 2022). Religious/Traditional parenting is very common, especially in rural areas and among families that adhere strongly to cultural norms (Eze & Chinedu, 2022). It involves a mix of strict discipline and community involvement in raising children. Each of these parenting styles can have different impacts on adolescents in Nigeria, influencing their behaviour, academic performance and emotional development. The choice of parenting style often reflects a combination of cultural values, socioeconomic factors, and personal beliefs.

Recent research in northern Nigeria confirms the presence of diverse parenting approaches influence by religious, cultural and socio-economic dynamics (Ahmed & Salisu, 2021).

Understanding these types of parental styles among adolescents in Nigeria is crucial for promoting healthy development and well-being of adolescence in Nigeria. Each parenting style has unique characteristics and outcomes, influenced by cultural, social, and economic ramifications.

2.2 Adolescent Delinquency

Adolescent delinquency on the other hand is a multifaceted issue that has garnered significant attention in Nigeria, particularly within the context of the educational system. As adolescents navigate the complexities of their developmental stage, various factors can lead to deviant behaviour, impacting both their academic and the overall school environment. This review explores the types of adolescent delinquency prevalent in Nigerian schools. Vandalism refers to the wilful destruction of property, which is seen as one of the common types of delinquency in Nigerian schools. This behaviour can manifest as graffiti on school walls, destruction of school furniture, or damage to educational resources. According to Oduyoye and Olusola (2022), vandalism in schools can stem from a lack of respect for property, peer influence, and inadequate supervision.

Substance abuse among adolescents is a growing concern in Nigeria. Many students experiment with drugs and alcohol, leading to poor academic performance and increased delinquent behaviour. A study by Adebayo and Ogunleye (2021) indicates that the availability of substances and peer pressure significantly contribute to this issue. Schools often struggle to implement effective prevention programs, allowing substance abuse to proliferate. Bullying is another prevalent type of delinquency in Nigerian schools. It can take various types, including physical violence, verbal harassment, and cyberbullying. According to Omoigberale (2020), bullying not only affects the victim's emotional and psychological well-being but also disrupts the learning environment. The lack of effective anti-bullying policies in many schools exacerbates this issue.

Truancy, or the act of skipping school without permission, is a significant problem in Nigeria. Factors contributing to truancy include socio-economic challenges, familial issues, and lack of interest in academic activities. A study by Eze (2021) found that students who are disengaged from school are more likely to engage in delinquent behaviours. Truancy can lead to a cycle of academic failure and increased exposure to delinquency. Adolescent sexual offenses, including sexual harassment and exploitation, are alarming trends in Nigerian schools. Factors such as peer pressure, lack of sexual education, and societal norms contribute to this issue. According to Nwankwo and Okafor (2023), schools often lack comprehensive sexual education programs, leaving students ill-equipped to navigate these challenges.

A body of empirical literature establishes a strong association between parenting styles and adolescent delinquency. However, authoritative parenting has consistently been linked to positive adolescent outcomes, including academic success, psychological well-being, and lower levels of delinquency (Okonkwo & Ibe, 2021). Conversely, authoritarian and neglectful parenting styles are associated with externalizing behaviours such as aggression, truancy, and theft (Abdullahi et al., 2022).

In Nigeria, Ojo and Ajayi (2020) found that adolescents exposed to harsh or inconsistent parenting were significantly more likely to engage in delinquent acts. Similarly, a study conducted in Kaduna and Kano revealed that permissive and neglectful parenting styles correlated with higher incidences of juvenile crime among secondary school students (Abubakar & Umar, 2023). In Gwale LGA, where family structures range from extended polygyny to single-parent urban, the variation in parenting styles plays a critical role in shaping adolescents' behaviour. Researchers have observed that students from homes lacking emotional support and clear boundaries are at increased risk of engaging in deviant behaviours such as

gang affiliation, and substance use (Abdullahi et al., 2022; Eze & Chinedu, 2022; Lawal & Ibrahim, 2023).

2.3 Theoretical Framework

2.3.1 Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's Ecological Systems Theory (EST) is the theoretical guide used in this study and was first introduced in 1979 which posits that an individual's development is influenced by several interrelated environmental systems that operate at varying levels of proximity and complexity. These systems include the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Each layer interacts with and shapes the individual's development over time. These are discussed hereunder.

(i) The Microsystem: This intel the immediate environment in which the adolescents interact daily-such as home, school, and peer mates in this scenario. Parenting styles are a fundamental part of the micro system because they directly involve the adolescents' primary caregivers. In the study area, the nature of the parent-child relationship, whether authoritative, authoritarian, permissive, or neglectful types the basis for the adolescent's behaviour and decision-making processes that are influenced by this level.

(ii) The Mesosystem: This consists of interconnections between the family and the school, or between peer groups and religious institutions. Hence, mesosystem explore the relationship between home and school that navigates delinquent behaviour. For example, poor communication and cooperation between parents and school staff may limit the schools' ability to detect and prevent early signs of misconduct in school environment which can escalates to societal delinquency. Conversely, a supportive home-school connection will promote positive behaviour and sound academic engagement, reducing the risk of delinquency.

(iii) The Exosystem: This includes broader social systems that do not directly involve the adolescent but still influence their behaviour, such as parents' workplace, community structures, media exposure, neighbourhood safety and the availability of youth services. For instance, parental unemployment or long working hours may result in reduced supervision, increasing the likelihood to curtail odd behaviours which can promote adolescent delinquency.

(iv) The Macrosystem: This encompasses cultural norms, societal values, religious beliefs, legal structures, and economic policies. In Gwale LGA, these may include Islamic cultural expectations, regional poverty levels, and government education policies that shape adolescent behaviour. For example, religious/cultural views on gender roles between males and females and their discipline may affect how adolescents are raised and how misconduct is perceived and controlled which may propel or deter delinquency.

(v) The Chronosystem: This includes changes over time in family structure such as divorce, separation, family crisis, changes in neighbourhood dynamics, or life transitions. These long-term patterns and transitions can impact adolescents' vulnerability to delinquent behaviour.

Bronfenbrenner's ecological systems theory was criticized of not focusing on biological traits that helps in learning. However, delinquency here is viewed as a social construct that viewed all teenagers having the required biological abilities that enables this study to explore the complex, layered influences on adolescent delinquency, providing a robust framework to analyse the relationships between parenting styles and adolescence delinquency in shaping youth behaviour in Gwale LGA.

2.4 Empirical Review

Adolescents from authoritative families show lower rates of delinquent behaviour and better academic and psychosocial adjustment across multiple studies (Climent-Galarza et al, 2022). Authoritarian parenting shows mixed relations: strict control without warmth sometimes links to conformity but also to internalizing and externalizing problems, depending on cultural context and measurement (Vasiou et al., 2023). Permissive/indulgent and

uninvolved/neglectful parenting are more consistently associated with higher delinquency and behavioural problems (Climent-Galarza et al., 2022; Hoeve et al., 2009). Parental monitoring (such as parents' knowledge of adolescents' activities, friends, and whereabouts) consistently shows one of the strongest inverse associations with delinquency (Hoeve et al., 2009; Flanagan et al., 2019). Longitudinal evidence suggests that declines in parental supervision during early adolescence predict increased delinquent behaviours, and interventions that improve parental supervision can reduce risk. Parental psychological control (e.g., guilt induction, love withdrawal, intrusiveness) is positively associated with delinquency and externalizing problems and negative emotional climates (rejection, hostility) are similarly linked to higher delinquency risk (Xu et al., 2023).

Attachment and emotional bonding with parents are protective. A meta-analysis focused on attachment and delinquency (Hoeve et al., 2012) found small-to-moderate associations: weaker parent attachment correlated with higher delinquency ($r \approx .18$), with somewhat stronger effects for mothers' attachment. A consistent theme is that parenting influences delinquency both directly and indirectly (mediated) through peer processes. For example, low parental monitoring and permissive parenting increase adolescents' likelihood of affiliating with deviant peers, which in turn raises delinquency risk. Meta-analytic and primary research indicate moderation by child sex, adolescent age, and parent gender. Some parenting predictors (e.g., monitoring) may be more consequential for boys' overt delinquency, while attachment and psychological control show different patterns across genders and developmental stages (Hoeve et al., 2009; Hoeve et al., 2012; Xu et al., 2023). Parenting styles and specific parenting behaviours (monitoring, warmth/attachment, and low psychological control/rejection) show consistent associations with adolescent delinquency among secondary-school students based on the above review.

Most foundational work comes from regional studies (including several conducted in Nigeria) document similar patterns: permissive or uninvolved parenting and weak supervision are associated with higher delinquent behaviours among secondary-school students in Nigerian states (e.g., Okorodudu, 2010; local studies in Delta State, Dutsin-Ma and other Nigerian settings; Ifedigbo et al., 2023; Michelle, 2024; Almeida et al., 2024; Wallace et al., 2022). However, effect sizes and the protective value of certain practices (like authoritarian control) sometimes vary with cultural norms. Thus, culture moderates how parenting behaviours are interpreted by adolescents and their social environments.

However, empirical reviews presented above emphasize that relatively few studies directly operationalize full parenting styles consistently; many focuses on dimensions (e.g., monitoring, warmth), which complicates style-level meta-synthesis while this paper focuses on the nature/types, causes and relational description of parenting styles and juvenile delinquency in the study area.

3.0 Methodology

The study is a descriptive survey design and mixed (quantitative with questionnaire as the tool and qualitative with Key Informant Interview as the tool) method of data collection was used in this study. The questionnaire and Key Informant Interview were administered within three (3) months (1st June – 30th August, 2025) of the research. The entire study covered five (5) months that started from 9th May to 10th September, 2025. There are thirty-two (32) public secondary schools in Gwale Local Government Area (LGA) of Kano State, with the total population of 44,235 of students (Gwale Education Survey, 2024). A sample size of approximately 396 was adopted using Taro Yamane's (1967) sample size formula.

The sampling procedure adopted involved a multistage stratified sampling technique in selecting respondents for the study. This method involves dividing the schools into Junior Secondary School (JSS) and Senior Secondary Schools (SSS) strata respectively that are systematically sampled due to the large population of secondary schools and students in the study. In the first stage, Gwale LGA which has ten (10) political wards was clustered into two: those schools in interior (centre of Gwale LGA) and those in the exterior (outside the centre of Gwale LGA) which gave (4) wards in the centre and (6) wards in the exterior of the LGA. In the second stage, 1/3 of the wards was selected giving (1) ward from the interior and (2) wards from the exterior part of Gwale LGA making a total of (3) wards. The third stage, a simple random sampling technique was used to select one (2) secondary school from each of the (3) political wards giving the total of (6) schools selected for the study. In the fourth stage, each of the sampled secondary school was stratified into JSS and SSS strata giving a total of (6) JSS and (6) SSS. Finally, (396) questionnaires were shared equally across all sampled JSS and SSS schools where each JSS has (33) and each SSS has (33). Statistical Package for Social Sciences (SPSS) version 23 was used in analysing the quantitative data while KII were transcribed thematically to corroborate the quantitative information.

4.0 Results and Discussion

This section presents the data collected from the field to address the research objectives of this work.

4.1 Socio-demographic Variables of Respondents

Table 1: Socio-Demographic Characteristics of the Respondents

Demographic Characteristics of respondents		Frequency(N=400)	Percentage (%)
Gender	Male	228	57.0
	Female	172	43.0
	Total	400	100.0
Age	10-12 years	103	25.8
	13-15 years	186	46.4
	16-18 years	111	27.8
	Total	400	100.0
Religious Affiliation	Christianity	127	31.7
	Islam	273	68.3
	Total	400	100.0
Class of Study	JSS 1-3	116	29.0
	SSS 1-3	284	71.0
	Total	400	100.0

Source: Field Survey, 2025

The socio-demographic characteristics of respondents are expected to have a significant consideration on parental styles and adolescent delinquencies in secondary schools. Incidentally, the socio-demographic information in Table 1 shows that the respondents are composed of 57% males and 43% females. The meaning of the data above signified that there are mostly male children in schools to female gender. This data was further supported by the KII conducted with participant 1 (school admission officer 1) and corroborated as thus below:

Most of the pupils we admitted into secondary classes are more boys to girls. The school registration in the past (3) years statistics shows that: in 2023, we have 61% boys to 39% girls admitted. In 2024, we have admitted 59% boys to 41% girls while this year we are having 55% boys to 45% girls' admission. Generally, we are having a total average of 58% boys to 42% girls' enrolment in the school. However, there is improvement of female enrolment possibly of government intervention in free schooling and feeding programmes that allows parents to send their children to school, most especially the girl child and limits hawking, to after school to support the family income among others. Also, even after admission, most girls were taken into marriage at their early ages of 16-18 years with a lot leaving school from Senior Secondary School classes (KII, school admission officer 1, 2025).

This finding above, to a great extent supports the widespread stereotypic perception in the study area that female child gets married at early age. As a result, there was more tendency of finding more male secondary school students than female in the study. The Table 1 also shows that the most significant percent of the respondents under the age category between 13-15 years with 46.4%, while the least significant percent of respondents were from 10-12 years amounting to 25.8%. This reflects that majority of the respondents were from the normal ages of schooling if a child is taken to school at the age of 4 years. This data was attested by the KII conducted with participant 2 and corroborated as thus: The majority of pupils admitted were between the ages of 12-16 years. Generally, the school population is averaging 14.7 years old as most students were between the age brackets of 13 to 15 years (KII, registration officer 2, 2025).

From the above data, pupils are taken to school at a good age (within 10-12 years) of schooling that allows them to develop academically without any delay and mostly graduated within the ages of 18 years. Furthermore, Table 1 shows that the most significant percent of the respondents are Muslims as depicted by 68.3% while the least significant percent of respondents who are Christians with 31.7%. As expected, no respondent is affiliated to other religion. These data show a significant relationship with case study which is a Muslim dominated environment. The above data is supported by the KII generated from the field participant 3 and presented as: Gwale is one of the core local government in Kano metropolis. It is dominated by Muslims. I can say about 80% of residence in Gwale LGA are belonging to Islamic religion (KII, principal 1, 2025). The above data shows that the predominant study population are Muslims.

Lastly, the respondents were asked to identify their class of study. This is based on the fact that class level to a great extent determines an individual knowledge and understanding as regards to parenting and adolescent delinquency. This shows that the most significant percent of the respondents are students of Senior Secondary School (SSS 1-3) with 71%, while 29% are from Junior Classes (JSS1-3). This correlate with the findings in age distribution of respondents which depicts that majority of the respondents (71%) is between 14-18 years. The above data was reaffirmed by the KII conducted with participant 4 and corroborated as thus below: If you asked me to grade the most age population in secondary schools, I will say they are within the ages of 14-18 years which has classes of JSS 3-SS3 with a few are within the ages of 10-13 years old (KII, principal 2, 2025).

The above data buttressed that the majority of the students in the study area are from the SSS class levels. With the above from Table 1, the researchers generalised that, the demographic characteristics of the study population are majorly male, aging between 13-15 years, practicing Islam and within the SSS class levels in the study area.

4.2 Research objective 1: To identify the major types of parenting styles in Gwale LGA, Kano State.

Table 2: Major Types of Parenting Styles in the Study Area

Type of Parenting Styles	Frequency(N=400)	Percentage (%)
Authoritative	44	11.0
Permissive	24	6.0
Neglectful	69	17.3
Authoritarian	113	28.3
Religious	150	37.5
Total	400	100.0

Source: Researchers' Field Survey, 2025

In order to identify the major types of parenting styles in Gwale LGA, Kano State, the researchers administered questionnaires on the reviewed major parenting styles and came up with data in Table 2. This Table 2 shows that the most significant response generated from the study respondents opined that the most common type of parenting style adopted by parents in their locality is religious with 37.5% responses. That is, the parents train their children based on the tenets of Islamic and Christian religion. Although, it is pertinent to understand that the Islamic teachings and parenting is of a higher degree due to the dominant population of the Muslims in the study area. Parents expect much of their children to abide by the doctrines of their religion without opposition and do not explain the reason, they are less responsive to their children's needs, and are more likely to spank a child rather than discuss the problem with children. The above result was not covered in the works of Vasiou, et al., (2023); Climent-Galarza, et al., (2022); Hoeve et al., (2009) that didn't find religious as a common parenting style in their study. This could be with the nature of religious attachment that is culturally attached to Nigerians.

The least significant response is derived from the permissive parenting with just 6% showing that a very negligible number of parents do allow their children to express themselves and listen to them. However, other parenting styles includes Authoritative parenting with 11%, Neglectful parenting with 17.3% and authoritarian style of parenting constituting 28.3%. The above data is supported by the KII generated from the field participant 5 and corroborated below: We train our children according to Islamic teachings. They have to pray, go to school (both Islamiyah and western school), obey us as their parents and follow the Islamic teachings. Islamic religion is a religion that everything has been prescribed and one's idea or innovation is not entertained as long as it contradicts the teachings of Islam. So, we have to obey that as Muslims (KII, Parent 1, 2025).

The above result revealed that children are more likely to come from a restricted family, where he/she is expected to comply with parental rules and direction drawn majorly from religious and traditional dictates. Furthermore, the data also indicates that the major types of parenting styles in the study are area religious, authoritarian and neglectful styles with other insignificant parenting styles such as Authoritative and Permissive in nature.

The above result was supported by the works of Eze and Chinedu (2022), Usman and Musa (2022), Ojo and Ajayi (2020), Ahmed and Salisu (2021), Lawal and Ibrahim (2023), Ahmed and Salisu (2021) who advocated for religious, authoritarian and neglectful parenting styles in

nurturing siblings into the socio-cultural norms and values of the society. This is also attested in the ecological system theory which shows the interplay between microsystem (immediate environment like the parents) and macrosystem (the cultural belief and values in Gwale LGA).

4.3 Research objective 2: To explore the major types of adolescence delinquency in Gwale LGA, Kano State.

Table 3: Major Type of Adolescence Delinquency in the Study Area

Types of Adolescence Delinquencies	Frequency(N=400)	Percentage (%)
Vandalism	88	22.0
Substance Abuse	120	30.0
Bullying	121	30.2
Truancy	32	8.0
Sexual Offences	20	5.0
Others	19	4.8
Total	400	100.0

Source: Researchers' Field Survey, 2025

From the above Table 3 shows that, there are (5) major types of adolescence delinquencies found in secondary schools in the study area among others. The most significant adolescence delinquency in the study is bullying with 30.3% followed by substance abuse with 30%, vandalism with 22%, truancy with 8% and sexual offences with 5%. However, there are other types of adolescence delinquency such as stealing, disruption of class activities, possession of light weapons like knives and cables and examination malpractices with a total percentage of 4.8% responses. The above data illustrated that the major types of adolescence delinquencies in the study are: bullying, substance abuse, vandalism truancy and sexual offences. The above data is supported by the KII by participant 6 and corroborated as follows: Most of the cases of delinquency that we encounter in this school are mainly stealing as a result of breaking of student lockers/boxes, bullying by senior prefects and students and drug abuse. However, there are other cases that are very minimal and do not occur more frequently like fighting, sexual harassment, exam malpractices and absenteeism in school despite this is a boarding school (KII, Senior Mistress 1, 2025).

From the above, it was inferred that, the major types of adolescence delinquency in the study area are: bullying, substance abuse, vandalism truancy, sexual offences, sexual offences, stealing, disruption of class activities, possession of light weapons like knives and cables and examination malpractices. These were acknowledged in the works of Eze (2021); Omoigberale (2020); Adebayo and Ogunleye (2021); Oduyoye and Olusola (2022) who attested to the various delinquencies amongst adolescents in the study area. Also, these can be explained by the ecological system theory level of mesosystem which explores the relationship between home and school that navigates delinquent behaviour. Due to the presence of a disjuncture between the parental style (religious parenting which is normally rigid) and the school via poor communication and cooperation between parents and school staff limit the schools' ability to detect and prevent early signs of misconduct in the school environment which escalates to major delinquencies recorded by the study.

4.4 Research Objective 3: To investigate the relationship between parenting styles and adolescent delinquency among secondary school students in Gwale Local Government Area, Kano State

Table 4: Correlation Between Parenting Styles and Adolescent Delinquency in the Study Area
Note: Level of Significance: 0.05

Correlation		Types of Adolescent Delinquency	Types of Parenting Style
Pearson Correlation	Types of Adolescent Delinquency	1.000	.782
	Type of Parenting Style	.782	1.000
Sig. (1-Tailed)	Types of Adolescent Delinquency	.	.000
	Type of Parenting Style	.000	.
N	Types of Adolescent Delinquency	400	400
	Type of Parenting Style	400	400

Source: Field Survey, 2025

From Table 4, the Pearson correlation value between types of adolescent delinquency and types of adolescent delinquency is perfect (1.000) and also, between types of parenting style and types of parenting style is perfect (1.000). However, it has been observed that; the correlation between types of parenting style and types of adolescent delinquency is significant (0.000). This is so, when the significant tabulated value (sig, 1 tailed) is less than the alpha value of 0.05. This implied that there is a strong positive relationship between the types of parenting styles used in the study area and the type of adolescence delinquency the youths in the study area engages in. This relationship can be attributed to the strict adherence of the religious style of parenting where in the face of parents, adolescent is coarse to follow tailored guideline without any room of suggestion or rejection. In the absence of the parental strict guidance, the adolescence is faced with making a choice which he/she has never been built to do hence engaging in delinquencies.

The above finding was in line with the theoretical foresight of macrosystem where the adolescence has been programmed to follow physical religious parenting styles without intuition or personal opinion, the juvenile will engages in delinquencies where there is a disconnect between the immediate environment (which in this case their parents religious parenting style that provides answers to all situation) and the reality on ground to make in the absence of the immediate environment as supported by Abubakar and Umar (2023), Okonkwo and Ibe (2021), Abdullahi et al. (2022) and Bronfenbrenner (1979). This instigates a behaviour that will be influenced by friends that would lead to delinquencies as the adolescents have no ability to make informed decisions independent of their immediate environment. Bronfenbrenner's ecological systems theory enables this study to explore the complex, layered exigencies, providing a robust framework to analyse the relationships between parenting styles and adolescence delinquency in shaping youth behaviour in Gwale LGA.

5.0 Conclusion and Recommendations

5.1 Conclusion

The following were conclusions drawn from the study. The major types of parenting styles in the study are area Religious, Authoritarian and Neglectful styles in the study area. The major types of adolescence delinquency in the study area are: bullying, substance abuse, vandalism, truancy, sexual offences, stealing, disruption of class activities, possession of light weapons like knives and cables and examination malpractices in Gwale LGA. There is a positive and significant relationship between the types of parenting styles and the types of adolescence delinquency in the study area.

5.2 Recommendations

Based on the findings of the study, the following recommendations were proffered.

(i) Enhance parental engagement in their ward's education in schools: Since most parental styles are religious and authoritative in nature, the need to organize regular parent-teacher meetings and workshops to keep parents informed and engaged in their children's education as top priority. Also, the school management can establish a parent support group (social media platforms) that shares resources and strategies for managing adolescent behaviour at home.

(ii) Revise school discipline policies: Review disciplinary actions to ensure they are restorative and educational rather than solely punitive by school administrators. Also, create a tiered response strategy that escalates interventions based on the severity and frequency of the behaviours so as to curtail the delinquencies in schools.

(iii) Implement comprehensive life skills programs to support students in secondary schools: Schools in Gwale LGA should offer courses on decision-making, problem-solving, and critical thinking to equip students with the tools to navigate challenges in addressing issues like substance abuse prevention, healthy relationships, and financial literacy in order to minimize adolescence delinquency since there is a strong relationship between parenting styles and delinquencies in the study area.

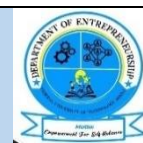
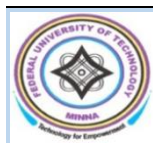
By taking a proactive, multifaceted approach that emphasizes prevention, support, and parent involvement, schools can create a safer and more supportive environments for adolescents. Implementing these recommendations can help mitigate delinquent behaviours and promote positive development among adolescence in Gwale (LGA) secondary schools.

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Bridging the Skills Gap: Integrating Employer Feedback into University Curriculum Development

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Abstract

The disconnect between university curricula and labour market requirements has emerged as a major challenge in contemporary higher education, particularly in developing economies like Nigeria. This systematic review synthesizes literature on mechanisms for integrating employer feedback into curriculum development processes, examining theoretical frameworks, practical models, and documented outcomes. A comprehensive search of Web of Science, Scopus, Google Scholar, ERIC, and African Journals Online yielded 78 peer-reviewed articles, books, and institutional reports published between 2010 and 2024. Thematic analysis revealed six major themes: the multidimensional nature of graduate skills gaps, diverse models for employer engagement ranging from advisory boards to technology-enabled feedback platforms, theoretical perspectives anchored in Human Capital Theory and the Triple Helix Model, documented improvements in graduate employability and employer satisfaction, persistent barriers including institutional inertia and resource constraints, and critical success factors such as leadership commitment and structured feedback mechanisms. The review identifies significant gaps in African empirical research, limited longitudinal impact studies, and insufficient attention to small and medium enterprise engagement. The findings suggest that while employer integration improves curriculum relevance and graduate outcomes, implementation requires context-specific adaptation, balanced stakeholder governance, and sustained institutional commitment. For Nigerian universities, the review recommends institutionalising employer engagement structures, developing national labour market intelligence platforms, and conducting rigorous implementation studies to inform evidence-based curriculum reform policies.

Keywords: Skills gap, employer feedback, curriculum development, graduate employability, university-industry collaboration.

1.0 Introduction

The global discourse on graduate employability has intensified in recent decades, driven by rapid technological transformations, evolving labour market demands, and the Fourth Industrial Revolution's disruptive impacts on skills requirements (Schwab, 2016). Universities worldwide face mounting pressure to produce graduates equipped not only with disciplinary knowledge but also with competencies that match contemporary workplace needs. This challenge is particularly acute in developing economies, where educational systems often lag behind economic transitions and technological advancements. In Nigeria, the mismatch between university curricula and labour market requirements has reached critical proportions. Despite substantial expansion in higher education enrollment, with university student population exceeding 2 million as of 2020, graduate unemployment and underemployment rates remain persistently high Oladeinde and Eze, 2018. The National Universities Commission recognizes that many Nigerian graduates lack essential competencies valued by employers, including critical thinking, problem-solving, communication skills, and practical application

abilities. This skills deficit undermines Nigeria's economic development aspirations and leaves graduates struggling to secure meaningful employment in an increasingly competitive labour market.

The problem extends beyond Nigeria to encompass broader Sub-Saharan Africa, where employers consistently report graduate skill deficiencies across technical, cognitive, and socio-emotional domains. A multi-country study by the Association of African Universities found that over 60% of employers in surveyed nations rated university graduates as inadequately prepared for workplace demands. This disconnect generates high economic and social costs: prolonged graduate unemployment, productivity losses, wasted educational investments, and diminished returns on human capital development (Hanushek, 2012). Traditional approaches to curriculum development in many universities have operated largely within academic silos, with limited systematic engagement of external stakeholders, particularly employers (Knight, 2001). Curriculum decisions often reflect faculty expertise and disciplinary conventions rather than labour market intelligence or employer insights (Lauder *et al.*, 2012). While universities appropriately prioritize academic rigour and intellectual development, the relative isolation of curriculum processes from workplace realities contributes to the observed skills mismatch (Jackson, 2014; Tomlinson, 2012).

Increasingly, scholars and practitioners advocate for more participatory, industry-responsive curriculum development models that systematically integrate employer perspectives while maintaining academic integrity (Boden and Nedeva, 2010; Pitan and Muller, 2019). Such approaches recognise employers as legitimate stakeholders in higher education governance and curriculum design, capable of providing valuable labour market intelligence and practical insights (Jongbloed *et al.*, 2008). The Triple Helix framework of university-industry-government collaboration offers theoretical grounding for these partnership models, emphasising knowledge co-creation and mutual benefit (Etzkowitz and Leydesdorff, 2000; Leydesdorff and Meyer, 2006). Despite growing recognition of this imperative, systematic understanding of how employer feedback can be effectively integrated into curriculum development remains limited, particularly in Africa, particularly in Sub-Saharan Africa and Nigeria, to be specific. While isolated case studies and institutional reports document various engagement mechanisms, a comprehensive synthesis of models, outcomes, challenges, and success factors is lacking. This knowledge gap impedes evidence-based curriculum reform efforts and leaves university administrators and policymakers without clear guidance on optimal approaches for their contexts.

This review addresses this gap by systematically synthesising literature on integrating employer feedback into university curriculum development. The review pursues four primary objectives: first, to map the current state of knowledge regarding graduate skills gaps and their dimensions; second, to identify and analyze theoretical frameworks and practical models for employer engagement in curriculum processes; third, to examine documented outcomes and impacts of employer-informed curricula on graduate employability; and fourth, to identify barriers, enablers, and best practices, with particular attention to Nigerian and Sub-Saharan African contexts. The review addresses six research questions: What is the current state of skills mismatch between university graduates and employer expectations? What theoretical frameworks explain university-industry collaboration in curriculum development? What models and mechanisms exist for integrating employer feedback into curriculum design? What are the documented outcomes of employer-engaged curriculum development? What challenges and success factors characterise employer-curriculum integration efforts? What lessons can Nigerian universities learn from global experiences?

2.0 Conceptual and Theoretical Framework

2.1 Human Capital Theory

Human Capital Theory, pioneered by Schultz (1961), provides a foundational justification for investing in education to develop productive capabilities that generate economic returns. The theory posits that education increases individual productivity and earnings potential by imparting knowledge, skills, and competencies valued in labor markets. From this perspective, curriculum relevance directly affects human capital formation quality and subsequent economic outcomes. Misalignment between curricula and labor market needs represents inefficient human capital investment, generating suboptimal returns for individuals, employers, and society (Psacharopoulos and Patrinos, 2018). Employer feedback mechanisms serve as information channels that improve the efficiency of human capital investment by aligning educational outputs with market demands (Sweetland, 1996).

2.2 Stakeholder Theory

Stakeholder Theory was developed in corporate governance contexts and it has been applied to higher education governance and accountability (Jongbloed *et al.*, 2008; Mainardes *et al.*, 2011). The theory recognizes that universities serve multiple constituencies with legitimate interests in institutional decisions and outcomes. Employers constitute a primary external stakeholder group, with direct interests in graduate quality and curriculum relevance (Benneworth and Jongbloed, 2010). Stakeholder Theory suggests that universities should systematically engage employers in governance processes, including curriculum development, to ensure accountability and responsiveness to labour market needs while balancing competing stakeholder demands (Burrows, 1999). This theoretical lens legitimises employer participation in traditionally faculty-dominated curriculum processes.

2.3 Triple Helix Model

The Triple Helix Model of university-industry-government relations (Etzkowitz and Leydesdorff, 2000; Leydesdorff, 2012) provides a framework for understanding collaborative knowledge production and institutional transformation. In this model, universities, industries, and governments form interconnected helices that increasingly assume each other's roles while maintaining distinct identities. Curriculum development becomes a site of knowledge co-creation where academic expertise meets workplace practice and policy guidance. The model emphasizes reciprocal benefits: industries gain access to skilled graduates and academic knowledge; universities enhance curriculum relevance and research opportunities; governments advance economic development objectives (Ranga and Etzkowitz, 2013). Applied to curriculum development, the Triple Helix framework suggests that systematic employer engagement facilitates knowledge exchange and institutional learning that improve educational outcomes and economic competitiveness (Perkmann *et al.*, 2013).

2.4 Competency-Based Education Framework

Competency-Based Education (CBE) frameworks orient curriculum design toward demonstrable learning outcomes and performance capabilities rather than content coverage or seat time (Voorhees, 2001; Mulder *et al.*, 2009). CBE emphasizes defining explicit competencies, integrations of knowledge, skills, and attitudes that graduates should possess, then designing learning experiences to develop these competencies (Wesselink *et al.*, 2010). Employer feedback becomes essential in CBE approaches for identifying valued workplace competencies and validating outcome definitions (Mulder *et al.*, 2012). This outcomes-oriented philosophy aligns naturally with employer interests in graduate capabilities and provides practical mechanisms for translating employer input into curricular specifications (Schippmann *et al.*, 2000).

2.5 Social Partnership Theory

Social Partnership Theory examines collaborative governance arrangements that bring together multiple actors to address shared challenges (Osborne, 2010). Applied to education, social partnerships involve structured collaboration between educational institutions, employers, government agencies, and other stakeholders in designing and delivering programs (Raffe, 2003). The theory emphasises trust-building, shared decision-making, and mutual accountability as partnership foundations (Dhillon, 2009). For curriculum development, social partnerships provide governance structures that institutionalise employer engagement while preserving academic autonomy through balanced representation and negotiated agreements (Wheelahan, 2015). Partnership approaches recognise that effective collaboration requires ongoing relationship maintenance, not just episodic consultation (Gannon-Cook *et al.*, 2010).

2.6 Quality Assurance Frameworks

Quality assurance frameworks in higher education increasingly incorporate stakeholder engagement and labour market relevance as quality indicators (Newton, 2010). External quality assurance processes, including accreditation and program reviews, often mandate employer consultation and labour market analysis (Vlasceanu *et al.*, 2007). These frameworks position employer feedback as integral to demonstrating curriculum fitness for purpose and graduate preparedness. Quality assurance requirements create institutional incentives and accountability mechanisms for systematic employer engagement, embedding such practices in routine curriculum governance rather than leaving them to individual faculty discretion (Hoecht, 2006).

2.7 Integrated Conceptual Model

Synthesizing these theoretical perspectives, we propose an integrated conceptual model that depicts the relationships among employer feedback mechanisms, curriculum development processes, and graduate outcomes. The model positions employer feedback mechanisms as inputs into curriculum development processes, mediated by institutional governance structures and faculty expertise. These processes generate curriculum outputs, content, pedagogy, and assessment that shape student learning experiences and competency development. Graduate outcomes encompass employability, time-to-employment, job performance, and career progression. The model incorporates feedback loops whereby graduate outcomes inform subsequent employer engagement and curriculum revision. Contextual factors, institutional culture, resource availability, policy environment, and labour market characteristics moderate relationships throughout the model. This framework guides the review's analysis of empirical studies and practical experiences.

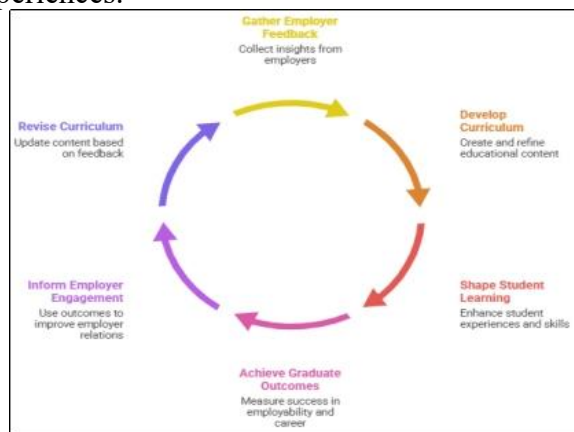


Figure 2.1: Integrated Conceptual Model

Source: Authors Draft

3.0 Methodology

This systematic review synthesizes literature on employer feedback integration in university curriculum development following established protocols for literature reviews in education and social sciences (Gough *et al.*, 2012; Davis *et al.*, 2014). This section details the search strategy, inclusion criteria, selection process, quality assessment, and data synthesis approach.

3.1 Search Strategy

A comprehensive literature search was conducted across five major databases: Web of Science, Scopus, Google Scholar, ERIC (Education Resources Information Center), and African Journals Online (AJOL). The search utilized Boolean operators to combine key concepts: ("skills gap" OR "graduate employability" OR "skills mismatch" OR "competency gap") AND ("employer feedback" OR "employer engagement" OR "industry engagement" OR "stakeholder engagement" OR "employer involvement") AND ("curriculum development" OR "curriculum design" OR "curriculum reform" OR "curriculum innovation") AND ("higher education" OR "university" OR "tertiary education"). The primary search timeframe covered publications from January 2010 to November 2024, capturing contemporary developments and recent scholarship. However, seminal works published prior to 2010 that foundationally inform current discourse were also included when referenced frequently in recent literature.

Supplementary search strategies included: examining reference lists of key articles for additional relevant sources (snowball sampling), searching institutional websites of major organizations (World Bank, UNESCO, ILO, NUC, British Council) for policy documents and reports, and consulting with subject matter experts to identify significant publications potentially missed by database searches. All searches were restricted to English language publications due to linguistic limitations of the review team.

3.2 Inclusion and Exclusion Criteria

Inclusion criteria were: (a) peer-reviewed journal articles, books, or book chapters from academic publishers; (b) authoritative institutional reports from recognized international organizations or government agencies; (c) empirical studies (quantitative, qualitative, or mixed methods) or conceptual/theoretical papers; (d) focus on higher education curriculum development processes; (e) substantive discussion of employer engagement, feedback, or collaboration mechanisms; (f) relevance to at least one review research question. Studies were excluded if they: (a) focused exclusively on K-12 education or non-formal education; (b) addressed employer engagement in contexts other than curriculum development (e.g., research collaboration, philanthropy); (c) were conference abstracts without full papers; (d) were from predatory or non-peer-reviewed journals (except major institutional reports); (e) were not available in English.

3.3 Selection Process

The initial database searches yielded 1,847 potentially relevant publications. Following de-duplication, 1,523 unique records remained for screening. Two reviewers independently screened titles and abstracts against inclusion criteria, resolving disagreements through discussion. This process yielded 243 publications for full-text review. Full-text assessment further reduced the sample to 78 publications that met *all* inclusion criteria and provided substantive content addressing review questions. The final corpus comprised 62 peer-reviewed journal articles, eight books or book chapters, and eight institutional reports from authoritative sources.

3.4 Quality Assessment

Quality assessment employed criteria appropriate to different publication types. For empirical studies, assessment considered: methodological rigor (appropriate research design, transparent

data collection and analysis, consideration of limitations); result credibility (adequate sample size for quantitative studies, sufficient data saturation for qualitative studies, triangulation where applicable); and relevance to review questions. For theoretical papers, the assessment focused on: conceptual clarity, logical argumentation, integration with existing scholarship, and contribution to theoretical understanding. For institutional reports, criteria included: organisational credibility, methodological transparency, evidence quality, and policy influence. Publications scoring below the threshold on quality criteria were excluded during full-text review. The geographic and contextual diversity of included studies was tracked to ensure representation of Nigerian, African, and international perspectives.

3.5 Data Extraction and Synthesis

Data extraction employed a structured template that captured: study characteristics (author, year, country, study design), employer engagement mechanisms described, theoretical frameworks employed, documented outcomes, identified barriers and enablers, and key findings relevant to the review questions. Given the heterogeneity of included studies spanning different methodologies, contexts, and educational levels, narrative synthesis was deemed most appropriate for data integration (Popay *et al.*, 2006). Thematic analysis identified recurring themes, patterns, and relationships across studies (Braun and Clarke, 2006). Studies were organised by theme, with systematic comparison within themes to identify convergences, divergences, and explanatory factors. Cross-case comparison highlighted contextual variations and transferable lessons across settings, with particular attention to Nigerian and Sub-Saharan African contexts.

4.0 Thematic Findings

Analysis of the 78 included publications revealed six major themes regarding employer feedback integration in curriculum development: the nature and dimensions of graduate skills gaps, models and mechanisms for employer engagement, theoretical perspectives on university-industry collaboration, documented outcomes and impacts, barriers and challenges, and enablers and success factors. This section presents findings organized by these themes.

4.1 The Nature and Dimensions of Graduate Skills Gaps

Graduate skills gaps exist worldwide, including Nigeria, across technical, cognitive, and socio-emotional areas. Employers report dissatisfaction, noting deficiencies vary by context, discipline, and employer type. Technical gaps include poor practical skills and technological proficiency, especially in engineering and IT, worsened by fast tech changes. Discipline-specific gaps show business graduates lack analysis and entrepreneurial skills, healthcare grads have weak communication, and engineers lack design and management skills. Geographic differences show developed economies prioritize advanced cognitive and digital skills, while Nigeria struggles with basic literacy, numeracy, and entrepreneurial mindset. Rapid tech and globalisation shift skills needs toward creativity, critical thinking, digital literacy, and adaptability. Studies reveal high unemployment and skills mismatch, highlighting flaws in curricula and the importance of involving employers in curriculum design.

4.2 Models and Mechanisms for Employer Engagement in Curriculum Development

Advisory boards and industry panels involve employer reps, alumni, professional groups, and officials, advising on curriculum and labor trends with diverse members and clear roles (Hagel and Shaw, 2010; Berdrow and Evers, 2011; Gannon-Cook *et al.*, 2010). Examples include Australian engineering advisory boards conducting employer surveys and site visits, and US business school councils guiding program updates (King and Cattlin, 2015; Gardiner and Kline, 2008). Nigerian professional bodies like the Nigerian Society of Engineers and Institute of Chartered Accountants offer industry input, though influence varies (Osi, 2018). Curriculum

co-design workshops foster faculty-employer collaboration on learning outcomes, modules, and assessments, often during curriculum reviews (Kettunen, 2015). Finnish universities run multi-day competency and work-based learning design workshops, similar to South African programs involving employers, creating shared curricula.

4.3 Theoretical Perspectives on University-Industry Collaboration

Theoretical views on employer engagement in curriculum development highlight tensions between market demands and academic independence, raising governance issues in university-industry partnerships. Frameworks justify employer involvement, but empirical studies show complex dynamics. The Triple Helix model (Ranga and Etzkowitz, 2013; Leydesdorff, 2012) explains university-industry-government relations, emphasising understanding each other's roles (Perkmann *et al.*, 2013). Universities focus on knowledge and graduate skills; industries prioritise skills and innovation; governments aim for economic growth and social equity (Etzkowitz, 2008). Navigating these priorities is difficult (Ranga *et al.*, 2016). In Nigeria, weak government coordination and lack of intermediaries hinder collaboration, highlighting infrastructure needs (Eun *et al.*, 2006).

4.4 Documented Outcomes and Impacts

Graduate employability, the most measured outcome, improves with employer engagement. Studies show programs with strong employer input lead to higher employment, quicker transitions, and better salaries (Jackson, 2015). Australian and South African programs with industry partnerships saw employment jumps from 45% to 73%. Employer satisfaction and graduate readiness increase with feedback and curriculum reforms (Mason *et al.*, 2009; Andrews and Higson, 2008; Wedekind and Mutereko, 2016). Structured employer feedback raised satisfaction scores (Zegwaard *et al.*, 2019). Co-design workshops improved curricula relevance (Kettunen, 2015). Employer engagement enhances curriculum relevance by aligning content with workplace needs, introducing practical skills, emerging needs, and authentic learning (Oliver *et al.*, 2011). Partnerships foster pedagogical innovations, including problem-based learning, industry projects, simulation, and technology integration (Frenk *et al.*, 2010; Galan-Muros and Davey, 2019). Research spin-offs from curriculum collaborations broaden university-industry ties and boost research capacity and regional innovation (Perkmann and Walsh, 2007; D'Este and Perkmann, 2011). Alumni from industry-linked programs tend to advance faster and report higher satisfaction, though data limitations restrict causal conclusions (Cabrera *et al.*, 2005; Shivor *et al.*, 2018; Jackson, 2015). In Nigeria, partnerships like SIWES and with professional bodies improve employment outcomes (Osi, 2018).

4.5 Barriers and Challenges to Employer Integration

Despite benefits, employer integration in curriculum development faces barriers across institutional, cultural, structural, and methodological areas. Institutional barriers include bureaucratic approval, lack of engagement mechanisms, and no accountability, with many universities relying on faculty initiatives rather than institutional policies (Wheelahan, 2015; Berdrow and Evers, 2011). Lengthy approval processes and quality assurance systems often lack guidance on effective employer feedback (Knight, 2001; Newton, 2010). In Nigeria, centralized standards and cumbersome approvals hinder timely changes (Onyene and Olusola, 2016). Cultural barriers stem from academic conservatism and concerns over education integrity, with resistance to external influence varying across disciplines (Naidoo and Jamieson, 2005; Marginson, 2016). Some see employer emphasis on competencies as conflicting with broader educational aims. Structural barriers include resource limits, coordination issues, lack of liaison staff, and geographic challenges, especially in developing countries (Gannon-Cook *et al.*, 2010; Ankrah and Al-Tabbaa, 2015; Okebukola, 2015). Methodological barriers relate to diverse employer perspectives and their integration into curriculum, with challenges in

translating workplace skills into educational outcomes (Mason *et al.*, 2009; Andrews and Higson, 2008; Voorhees, 2001). In Nigeria and Sub-Saharan Africa, issues include limited formal employment, weak organisations, brain drain, and policy instability, requiring localised engagement models (Okafor and Amadi, 2017; Okebukola, 2015).

4.6 Enablers and Success Factors

Leadership commitment and clear policies enable sustained university employer engagement, with dedicated staff managing relationships and feedback channels. Structured feedback and regular engagement in curriculum review ensure accountability and continuous improvement. Diverse advisory groups balance external input and academic control, fostering collaboration while respecting autonomy. External accreditation standards and technology facilitate systematic employer involvement, with hybrid face-to-face and virtual interactions overcoming barriers. Incentives like recognition, workload credits, and professional development motivate faculty participation. These strategies collectively enhance engagement, ensuring alignment with institutional goals and standards.

4.7 Discussion of Findings

The review shows that global graduate skills gaps persist across different development stages, including technical, soft, and readiness skills. The Fourth Industrial Revolution worsens these, supporting curriculum reform. Employer engagement models vary, from advisory boards to feedback platforms, and success depends on context, stakeholder commitment, and effective methods, such as combining feedback sources and integrating them into curriculum reviews. Positive outcomes include improved employment rates and curriculum relevance, but methodological issues and barriers like bureaucracy and cultural factors hinder progress. In Nigeria, challenges include limited formal jobs, weak organisations, infrastructure, and unstable policies, requiring tailored solutions such as leadership, feedback systems, and incentives.

Different engagement frameworks exist that emphasise reciprocal learning and mutual benefits, though evidence is limited. Tensions involve balancing employer input with academic judgment, short-term skills versus adaptability, and standardisation versus flexibility. Applying global models to Nigeria demands contextualization, with curricula focusing on entrepreneurship and informal skills, collaboration with SMES, and strengthening regulatory bodies. Resource constraints and instability require scalable, affordable strategies like mobile tech and regional hubs. Cultural factors influence engagement, and models should be adapted to local contexts for sustainability.

5.0 Conclusion

The skills gap between graduates and labour market needs is a persistent challenge affecting careers, productivity, and development. Literature shows that deficiencies in technical, cognitive, and socio-emotional skills frustrate employers globally, especially in Nigeria, due to economic changes and education constraints. Employer involvement in curriculum design offers promising solutions. Engagement methods include advisory boards, co-designed curricula, work-integrated feedback, and digital platforms, which improve relevance, employment outcomes, satisfaction, and innovation. Success depends on quality, adaptation, and commitment, not just the model used. Effective employer integration involves balancing market needs with academic independence, focusing on short-term employability and long-term skills development, and ensuring transparent governance. Theories such as Human Capital, Stakeholder, Triple Helix, and others help us understand engagement dynamics. No single theory suffices; a mix addressing economics, governance, knowledge sharing, pedagogy, relationships, and accountability is needed. Barriers include bureaucracy, cultural resistance, resource constraints, coordination challenges, employer-perspective translation, and Nigerian-

specific issues such as limited formal employment, weak organisations, infrastructure, and policy instability. Success factors include leadership, dedicated staff, feedback systems, governance, review cycles, accreditation, tech, and faculty incentives. Research gaps include limited African data, few long-term impact studies, and inadequate focus on SMEs, disciplines, scalability, sustainability, and costs. Methodological limitations hinder evidence strength. Addressing these gaps with rigorous, local research is urgent.

Nigerian universities have opportunities through partnerships, tech adaptation, entrepreneurship curricula, and global contributions, but face resource, regulation, capacity, coordination, and policy challenges. Tailored approaches reflecting local realities are essential. Stakeholders, policymakers, universities, departments, employers, and researchers must collaborate: policies for engagement, institutional structures, incentives, feedback mechanisms, active employer participation, research, and documentation of best practices. This review offers frameworks and guidelines for Nigerian higher education, demonstrating that bridging skills gaps is both necessary and achievable through collective, adaptive efforts supported by policy, employers, and research, and is essential for 21st-century educational excellence.

5.1 Implications and Recommendations

University leaders should institutionalise employer engagement through formal policies for stakeholder consultation in curriculum reviews, program approvals, and quality assurance. Creating advisory boards with clear responsibilities ensures ongoing feedback influences curriculum decisions, establishing continuity beyond individual champions. Investing in liaison staff with industry expertise improves engagement, while recognising faculty efforts through workload credits and professional development encourages participation. Regular curriculum review cycles with employer input via advisory boards, surveys, and feedback loops promote continuous improvement and accountability. Advisory boards should be diverse, including employers, alumni, students, and faculty, to gain comprehensive labor market insights and prevent employer dominance. Multiple feedback channels like surveys and workshops, with trend analysis tools, inform decisions and avoid bias. Embedding work-integrated learning with structured feedback enhances curricula and faculty skills. Employer input is advisory; faculty retain control over core academic elements, with industry insights informing practical competencies.

The National Universities Commission should develop guidelines emphasizing engagement quality, with exemplar practices and capacity building. Strengthen criteria to reward meaningful partnerships and penalize superficial compliance. Create national labor market platforms to standardise curriculum planning and reduce institutional burdens. Incentivize collaboration through grants for engagement projects, infrastructure, and faculty training, including pilot programs. Support faculty capacity with professional development and international partnerships. Employers should participate in curriculum development, designating personnel for advisory boards and co-design workshops, viewing partnerships as strategic investments rather than philanthropy. Offer internships and mentorships with clear objectives and supervision. Invest in supervisor training for student learning, share labour market insights regularly, and provide feedback on graduate readiness. Facilitate faculty industry exposure through sabbaticals and collaborations to enhance curricula and research. Conduct local studies on employer engagement, challenges, and outcomes using mixed methods. Develop context-appropriate frameworks for curriculum relevance, exploring innovative models, and documenting best practices.

Acknowledgements

This work is Supported by the Tertiary Education Trust Fund (TETFUND) Institution-Based Research Intervention (IBRI)

Fund of the Federal University of Technology, Minna, Nigeria.

Reference No: TETFUND/FUTMINNA/2024/072

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