

## **EXPLORING THE INFLUENCE OF FINANCIAL INCLUSION AND HUMAN CAPITAL DEVELOPMENT ON ECONOMIC GROWTH: AN ANALYSIS OF NIGERIA'S ECONOMIC INDICATORS**

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### **Abstract:**

This study delves into the significant roles played by financial inclusion and human capital development as catalysts for global economic growth, with a specific focus on their contributions to Nigeria's economic landscape. The analysis uses secondary data obtained from the National Bureau of Statistics and the World Bank covering the period 2000–2024. A Pooled Ordinary Least Squares (OLS) estimation technique was employed to assess the relationships among the variables. The findings reveal that bank account penetration (BAP) has a positive and significant effect on Nigeria's GDP growth ( $\beta = 15.28430$ ;  $p < 0.05$ ), indicating that a unit increase in access to formal banking services leads to a 15.3% rise in GDP. Similarly, literacy level (DL) positively influences GDP growth ( $\beta = 9.557163$ ;  $p < 0.05$ ), demonstrating the essential role of human capital development. In contrast, inflation (LI) exerts a negative and significant impact on GDP ( $\beta = -21.48206$ ;  $p < 0.05$ ), as does poverty level (LP) ( $\beta = -19.80323$ ;  $p < 0.05$ ), implying that increases in either variable reduce economic growth. Thus, the study comes to the conclusion that human capital development and financial inclusion have a significant impact on Nigeria's financial industry and economic growth. The study also emphasizes how crucial it is to promote human development and financial inclusion as necessary components of long-term economic growth. Recommendations include advocating for the Central Bank of Nigeria to intervene in reopening closed branches of deposit money banks nationwide, particularly in rural areas. Additionally, the federal government is urged to address economic policies contributing to inflation, naira deregulation, and an increase in the poverty rate, the study also underscore the need for sustained policy efforts that expand financial access and strengthen human development as foundations for long-term economic growth in Nigeria.

**Keywords:** Economic growth, financial inclusion, human capital development

**JEL Code:** G21, E32.

### **1.0 Introduction**

Nigeria, Africa's largest economy by population and GDP, still has the twin problems of low financial inclusion and little development of human capital, even though it has enormous economic potential. The recent national data show that only about 64% of adults have access to formal financial services, while literacy, education quality, and healthcare access remain below the levels required to sustain inclusive development. These structural weaknesses pose serious obstacles to achieving inclusive and sustainable economic growth.

Economic growth is not merely a function of physical capital accumulation but is equally dependent on human capital—the skills, knowledge, and health of the labor force. A productive and educated workforce enhances technological adoption, innovation, and long-term competitiveness, thereby driving improvements in living standards and employment opportunities (Abdulmumin, Etudiaye-Muhtar, Jimoh, & Sakariyahu, 2019; Ahamed & Mallick, 2019). Similarly, by increasing access to payment, credit, and savings systems, financial inclusion plays a vital role in promoting economic growth. By providing financial services to marginalized groups, especially in rural regions, inclusive financial institutions enhance household welfare, encourage entrepreneurship, and lower poverty. (Obayori & George-Anokwuru, 2020; Malinda & Maya, 2018).

Nigeria has made efforts to address these issues through initiatives such as the National Financial Inclusion Strategy (NFIS), which promotes financial literacy, digital banking, and broader access to financial services (Menyelim et al., 2021). Likewise, programs such as the Universal Basic Education (UBE) scheme and the National Social Investment Programme (NSIP) have sought to strengthen education and healthcare delivery. Despite these interventions, the outcomes remain limited. Millions of Nigerians remain unbanked or underbanked, while persistent underinvestment in education and health continues to weaken human capital accumulation (Adedokun & Ağa, 2021). These shortcomings have reinforced poverty, inequality, and reliance on the informal sector, limiting the country's growth potential.

The intersection For Nigeria, the relationship between financial inclusion and the development of human capital is particularly crucial. Financial services accessibility allows households to make educational investments, health, and skill development, while a healthier and more skilled workforce enhances the effective use of financial products and services. Microfinance institutions, digital payment systems, and mobile banking platforms have the potential to close these gaps by providing affordable credit and savings instruments that empower individuals and small businesses (Anarfo, Abor, Osei, & Gyeke-Dako, 2019). Improved financial literacy further strengthens this relationship by enabling households to allocate resources more efficiently towards education and healthcare.

Notwithstanding the expanding body of research on financial inclusion and human capital development, existing studies often examine these factors in isolation or from a generalized global perspective (Akileng, Lawino, & Nzibonera, 2018; Afolabi, 2020; Chiwira, 2021). Few empirical studies have jointly assessed the impact of both financial inclusion and human capital development on Nigeria's economic growth using national economic indicators. This leaves a gap in understanding how these interlinked drivers can be harnessed simultaneously to accelerate inclusive growth. To address this gap, this paper analyzes the impact of financial inclusion and human capital development on Nigeria's economy by examining the degree to which financial inclusion affects GDP growth, assessing the contribution of human capital development to economic performance, and providing policy-relevant recommendations for strengthening both drivers as engines of sustainable development. Given Nigeria's ongoing post-COVID economic recovery and the rapid expansion of digital finance, this study is especially timely. Strengthening financial inclusion and human capital development is critical to achieving long-term economic resilience and inclusive prosperity.

## **2.0 Literature Review**

### **Theoretical Foundation**

The theoretical foundation for this study is anchored on the System Theory of Financial Inclusion (STFC), the Theory of Finance and Growth (TFG), and the McKinnon-Shaw Financial Liberalization Theory. Together, these theories explain the channels through which financial inclusion and human capital development influence economic growth in Nigeria.

The System Theory of Financial Inclusion (STFC), introduced by Ozili (2020), posits that financial inclusion operates as an interconnected system where changes in one subsystem such as access to financial services, savings behaviour, credit availability, or financial literacy produce ripple effects on other subsystems within the economy. In this context, improvements in financial inclusion indicators, such as increased bank account penetration or digital payment adoption, strengthen the formal financial sector by expanding its customer base and deposit mobilization capacity (Adedokun & Ağa, 2021). These strengthened financial subsystems ultimately contribute to broader economic performance through enhanced resource allocation, investment,

and productivity growth (Abor et al., 2021). This theory directly supports the study's model by explaining how financial inclusion acts as a structural catalyst for GDP growth.

Gurley and Shaw's (1955) Theory of Finance and Growth further emphasizes the central role of financial systems in stimulating economic expansion. The theory argues that financial activities including savings mobilization, investment, production, and consumption are key determinants of economic growth (Abdulmumin et al., 2019). Higher financial inclusion facilitates these activities by bringing more individuals and businesses into the formal sector, increasing the pool of deposits that can be used as collateral or loanable funds (Akileng, Lawino & Nzibonera, 2018). By expanding credit accessibility and improving capital formation, financial inclusion becomes a direct pathway through which financial development enhances GDP growth. This theory therefore provides a foundational argument for examining the relationship between financial inclusion and economic growth.

To strengthen the financial intermediation dimension, the McKinnon–Shaw Financial Liberalization Theory is also relevant. McKinnon (1973) and Shaw (1973) argue that financial deepening, driven by reduced financial repression and expanded access to credit, enhances savings and investment, thereby accelerating economic growth. In the Nigerian context, increasing financial inclusion especially through digital banking, microfinance institutions, and mobile payment platforms supports financial deepening by widening access to savings instruments and credit markets. This theory aligns with the study's focus by showing how an inclusive financial system can promote investment, entrepreneurship, and overall economic productivity.

Collectively, these theories demonstrate that financial inclusion contributes to economic growth through multiple channels: deposit mobilization, credit expansion, resource allocation, and financial deepening. In parallel, human capital development enhances labour productivity, innovation, and the effective utilization of financial services further strengthening the link between financial inclusion and growth. While prior studies have often examined these theories separately, this study integrates them to provide a comprehensive theoretical explanation of how financial inclusion and human capital development jointly influence Nigeria's sustainable economic growth.

## **Conceptual Review**

### **Financial Inclusion**

Financial inclusion means to provide financial services that are accessible, inexpensive, and sustainable to people and companies who have previously been cutoff of the official system. According to the World Bank (2023), it involves providing access to a range of financial products such as payments, savings, credit, and insurance in a responsible and secure manner. Afolabi (2020) employed an ARDL approach using data from 1981 to 2017 and found that rural loans, bank branch density, and the ratio of money supply to GDP significantly promote inclusive growth in Nigeria. Similarly, a study by Abor et al. (2021) demonstrated that improved access to formal financial services enhances capital formation and long-term growth across African economies. Conversely, some studies report mixed or even negative effects. For instance, Chiwira (2021) and Ali et al. (2021) argued that financial inclusion does not always translate into growth where institutional weaknesses and macroeconomic instability undermine its effectiveness. Despite divergent findings, most empirical evidence underscores the transformative role of digital finance, mobile banking, and microfinance institutions in broadening access, particularly in rural areas where traditional banks remain scarce (Ifediora et al., 2022; Van et al., 2021). These channels help reduce transaction costs, improve savings behaviour, and strengthen participation in the formal economy.

### **Human Capital Development**

Human capital development (HCD) encompasses investments in education, skills, and healthcare aimed at enhancing the productivity and well-being of the workforce. Isola and Alani (2012) showed that health and education significantly contribute to Nigeria's growth trajectory, while Egbiremolen and Anaduaka (2014), applying an augmented Solow model, confirmed that HCD positively and significantly influences output growth between 1999 and 2012. More recently, Eniekezimene et al. (2023) reported that in the long run, education expenditures and tertiary enrolment had weak or negative effects, while health expenditure and primary enrolment exhibited positive but insignificant effects; in the short run, however, health expenditure significantly stimulated growth. Similarly, Amadi (2023) established a strong positive long-run relationship between government health spending and GDP in Nigeria. These results highlight that while HCD is central to long-term development, the growth impact of education and health investments may vary by level, time horizon, and efficiency of implementation.

### **Linking Financial Inclusion and Human Capital to Economic Growth**

The intersection of financial inclusion and human capital development is conceptually important but empirically underexplored in Nigeria. Financial inclusion provides households and firms with resources to invest in healthcare, education and skill development, while a healthy and educated population enhances the effective use of financial services. This creates a reinforcing cycle where increased access to finance supports human capital formation, while enhanced human capital improves the efficiency and outcomes of financial inclusion. Microfinance, mobile banking and other digital financial services for example, not only expand access to finance but also empower families to fund schooling and healthcare, generating long-term productivity gains (Anarfo et al., 2019). Despite this synergy, most Nigerian studies investigate financial inclusion and human capital separately, leaving limited empirical evidence on their combined effect on economic growth. Addressing this gap is essential for developing holistic policies that simultaneously promote digital financial access and strengthen human capital outcomes to achieve broad-based and sustainable growth.

### **Empirical Review**

#### **Empirical Studies on Financial Inclusion and Economic Growth**

Chude and Chude (2022), using annual Nigerian data (1986-2021), found that ATMs, bank branches, deposits, and loans generally promote growth, although total bank loans sometimes have negative effects due to inefficient credit allocation. Similarly, Musa et al., (2022) used a structural VAR approach for Nigeria (1980-2020) and discovered that positive shocks to financial inclusion indicators such as ATM usage and mobile transactions increase GDP and reduce poverty. Their findings highlight that the strongest effects occur when education levels are higher.

At a broader regional level, Kamara (2024) examined sub-Saharan Africa (2014-2021) using quantile regression, Driscoll-Kraay standard errors, GMM, and fixed/random effects. The study concluded that financial inclusion significantly boosts growth and reduces poverty, especially in lower-income countries. These findings reinforce the growing consensus that financial access facilitates capital accumulation, reduces liquidity constraints, and supports productive activities.

#### **Empirical Studies on Human Capital and Economic Growth**

Opoku et al., (2024), using system GMM estimations for 40 African countries (2005-2018), found that human capital fully mediates the positive effect of financial inclusion on economic growth. Their U-shaped evidence suggests that financial inclusion enhances human capital

accumulation, which in turn drives economic performance. In Nigeria, Musa et al. (2022) showed that financial inclusion shocks have stronger positive effects on GDP when education levels are high, highlighting the complementary relationship between human capital and financial inclusion. These findings demonstrate that human capital is not merely an independent growth driver but may serve as a conduit through which financial inclusion produces long-term gains.

### **Empirical studies on Financial Inclusion and Human Capital on Economic Growth**

Ojeka et al., (2025) examined Nigeria (1990-2022) using ARDL bounds testing and found that the deposit-to-GDP ratio, bank branch density, and mobile money usage significantly promote growth. Importantly, they concluded that financial inclusion alone is insufficient without adequate human capital investment. This highlights the possibility of a complementary or joint effect where financial inclusion and human capital must coexist for sustainable economic progress. Global evidence from Siddiki and Bala-Keffi (2024) further shows that financial inclusion affects growth non-linearly across 153 countries. Their panel threshold regression revealed that the growth impact of financial inclusion depends on the level of financial development: growth effects become stronger once a country crosses a certain financial depth threshold. This suggests that structural conditions including financial sector efficiency and human capacity shape how well financial access translates into growth. Ozili (2024), focusing on Nigeria using Global Findex data (2014-2021) and 2SLS/GMM methods, found that women's digital financial inclusion is positively associated with economic growth. Internet usage played a central role, showing that digital and human capacity dimensions remain essential in linking financial inclusion with broader development outcomes.

### **Gap in the Literature**

Although a growing body of research has examined the relationship between financial inclusion and economic growth in Nigeria (Musa et al., 2022; Chude & Chude, 2022) and across broader African contexts (Kamara, 2024; Siddiki & Bala-Keffi, 2024), the existing evidence remains fragmented. Most studies investigate financial inclusion in isolation, focusing primarily on indicators such as ATM usage, bank branches, mobile transactions, and deposits without integrating the role of human capital in the analysis.

Similarly, recent studies that incorporate human capital either treat it as a mediating or moderating variable within cross-country settings (Opoku et al., 2024) or examine its indirect relevance to financial inclusion outcomes (Musa et al., 2022). However, these studies do not provide a Nigeria-specific model that jointly estimates the simultaneous impact of financial inclusion and human capital on economic growth.

While Ojeka et al., (2025) highlight that financial inclusion alone cannot drive long-term growth without parallel human capital development, their study stops short of modelling both variables together within a unified empirical framework. Likewise, existing cross-country analyses (Siddiki & Bala-Keffi, 2024; Kamara, 2024) provide valuable insights but may not fully capture Nigeria's institutional, digital, and socio-economic characteristics.

Therefore, a clear gap exists in the literature: no recent Nigerian study (2020-2024) has jointly examined financial inclusion and human capital development as combined determinants of economic growth using a single empirical model. The absence of such integrated analysis limits understanding of whether the two variables operate independently, complementarily, or interactively in driving Nigeria's growth trajectory. This study fills this gap by empirically assessing the combined and interactive effects of financial inclusion and human capital development on Nigeria's economic growth using recent data and an econometric framework designed to capture both long-run and short-run dynamics.

**Table 1:**  
**Summary of Reviewed Studies**

<i>Author(s) &amp; Year</i>	<i>Country/Scope</i>	<i>Method</i>	<i>Key Findings</i>
Ojeka et al. (2025)	Nigeria	ARDL	FI promotes growth; human capital is essential for sustaining the effect.
Opoku et al. (2024)	Africa (40 countries)	System GMM + mediation tests	Human capital fully mediates FI → growth relationship.
Ozili (2024)	Nigeria	2SLS, GMM	Women’s digital FI promotes growth; internet usage critical.
Siddiki & Bala-Keffi (2024)	153 countries	Panel threshold regression	FI’s effect depends on financial development thresholds.
Kamara (2024)	Sub-Saharan Africa	Quantile regression, GMM, etc.	FI reduces poverty and increases GDP; strongest in poorer regions.
Musa et al. (2022)	Nigeria	Structural VAR	FI shocks increase GDP and reduce poverty; effect stronger with higher education.
Chude & Chude (2022)	Nigeria	OLS + cointegration	FI indicators mostly boost growth; inefficient credit weakens impact.

**Source:** Author’s Compilation, 2025.

### 3.0 Methodology

In this study, a quantitative approach is employed to thoroughly examine the specific influence of financial inclusion and the contribution of human capital development to economic growth in Nigeria. The research utilizes secondary time-series data, covering the period 2000-2024, sourced from the World Bank development indicators (WDI), the central bank of Nigeria (CBN) statistical bulletin, the national bureau of statistics (NBS), and the IMF International financial statistics (IFS). These sources provide consistent macroeconomic indicators such as GDP growth, bank account penetration, literacy rate, inflation, and poverty levels.

The empirical strategy combines estimation techniques such as descriptive statistics, the pooled ordinary least squares (OLS) method and a series of diagnostic tests to ensure the robustness and reliability of the results. The choice of the OLS method for regression analysis is employed because the study focuses on identifying linear relationships among the variables within a time-series framework, similar to approaches used by Afolabi (2020) and Abdulmumin et al. (2019). The technique is appropriate given the model's structure and the need to interpret the direct marginal effects of financial inclusion and human capital indicators on economic growth.

To verify the stationarity properties of the variables, the study conducts Augmented Dickey-Fuller (ADF) unit root tests. The ADF test is selected due to its strong reliability in detecting unit

roots and its extensive usage in related empirical studies such as Ali et al. (2021). If variables are found to be integrated of different orders, the study proceeds with OLS in levels but interprets results alongside unit-root outcomes.

Additionally, several diagnostic and stability tests, such as White's test for heteroskedasticity, normality test, lag-range multiplier (LM) test for autocorrelation and Ramsay reset test were conducted to enhance the robustness of the results. These tests aim to uncover distinct insights into the impact of financial inclusion and human capital development on economic growth in the Nigerian context. Furthermore, they emphasize the significance of fostering economic growth indicators such as literacy levels, inflation rates, poverty levels, among others, as crucial factors for sustained economic progress.

More so, where data gaps exist, linear interpolation and cross-source validation are applied. Structural breaks often arising from policy shocks or crises are assessed visually through plotted series and statistically through CUSUMSQ results. This prevents biased estimation caused by abrupt changes in Nigeria’s economic environment.

**Model Specification**

This study’s model is specified below:

$$GDP = f(BAP, DL, LI, LP) \text{ ----- (3.1)}$$

Econometrically, the model is stated as;

$$GDP_t = \beta_0 + \beta_1 BAP_t + \beta_2 DL_t + \beta_3 LI_t + \beta_4 LP_t + \varepsilon_t \text{.....(3.2)}$$

Where:

**GDP<sub>t</sub>** =Gross Domestic Product (Proxy with growth rate of Gross Domestic Product) in Nigeria for year t;

**BAP<sub>t</sub>** = Bank account penetration in Nigeria for year t;

**DL<sub>t</sub>**= Degree of literacy in Nigeria for year t;;

**LI<sub>t</sub>** = Level of inflation in Nigeria for year t; and

**LP<sub>t</sub>** = Level of poverty in Nigeria for year t.

**Table 2:**

**Variable Identification**

Type of Variable	Variable Proxy	Measurement	Source
Dependent variables: Economic Growth	Gross Domestic Product (GDP)	Annual GDP growth rate	National Bureau of Statistics (Nigeria) (2022)
Independent variable Financial inclusion Human capital development	Bank account penetration (BAP)	Percentage of population with access to formal banking services	World Bank (2022)
	Degree of literacy (DL)	Literacy rate per annum	World Bank (2022)
Control variable Inflation Poverty	Level of inflation Level of poverty	Inflation rate per annum Poverty rate per annum	National Bureau of Statistics (Nigeria) (2022)

**Source:** Author’s Compilation, 2025.

## 4.0 Results and Discussion

### Descriptive Analysis

**Table 3:**

#### *Descriptive Statistics Result*

Variables	GDP	BAP	DL	LI	LP
Mean	0.745969	0.661130	0.561702	0.125836	0.918130
Median	0.060594	0.662000	0.547732	0.125378	0.908000
Maximum	15.32920	0.897000	0.701983	0.188736	0.940000
Minimum	-0.017943	0.345000	0.510777	0.053880	0.895000
Std. Dev.	3.183067	0.119841	0.061467	0.037870	0.017089
Jarque-Bera	384.6312	3.004184	4.135568	0.613899	2.431200
Probability	0.000000	0.002664	0.000466	0.000688	0.000532

**Source:** Author's Compilation, 2025.

Table 3 presents the results of the descriptive analysis. The average GDP growth rate over the study period is 0.75%, with values ranging from -0.02% to 15.33% and a standard deviation of 3.18. This indicates considerable fluctuations in growth, reflecting Nigeria's vulnerability to economic shocks.

For bank account penetration (BAP), the mean is 0.66, suggesting that about two-thirds of the population has access to formal banking services. However, with values ranging from 0.35 to 0.90 and a standard deviation of 0.12, the data highlight significant disparities in financial inclusion. This implies that roughly one-third of Nigerians remain outside the formal financial system, relying instead on informal mechanisms.

Literacy levels (DL) average 0.56, with a relatively narrow range (0.51-0.70) and a standard deviation of 0.06. This suggests that just over half of the population is literate, leaving a substantial segment still unable to benefit fully from financial innovations such as mobile or digital banking.

Inflation (LI) records an average of 0.13 (13%), with fluctuations between 5% and 19% and a standard deviation of 0.04. This persistent inflationary pressure undermines household purchasing power and constrains savings and investment.

The poverty index (LP) has a mean of 0.92, with minimal variation across the period (0.90-0.94). While this does not literally mean that 92% of Nigerians live in poverty, it underscores the severity and persistence of widespread deprivation in the country.

Taken together, these indicators paint a picture of modest growth overshadowed by structural challenges, including limited financial access, low literacy levels, persistent inflation, and entrenched poverty. Notably, the Jarque-Bera test statistics show significant results ( $p < 0.05$ ), indicating that the variables deviate from normality, an outcome common in macroeconomic time-series data.

### Unit Root Test= ADF Technique

**Table 4: Group Unit Root Test: Summary**

Series: GDP, BAR, DL, LI, LP

Unit Root Test Automatic selection of maximum lags Automatic lag length selection based on SIC: 0 to 1 Newey-West automatic bandwidth selection and Bartlett kernel
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Methods	Statistic	Prob.	Cross-section
Null: Unit root (assumes common unit root process)			
Levin, Lin & Chu t*	-2.53844	0.0056	5
Methods	Statistic	Prob.	Cross-section
Null: Unit root (assumes individual unit root process)			
LP	-19.80323	45.10859	5
Im, Pesaran and Shin W-stat	-2.77225	0.0028	5
ADF - Fisher Chi-square	26.5245	0.0031	5
PP - Fisher Chi-square	29.7168	0.0010	5
Probabilities for Fisher tests are computed using an asymptotic Chi-square Distribution. All other tests assume asymptotic normality.			

**Source:** Author’s Compilation, 2025.

Table 4 presents the outcome of the unit root test conducted using the Augmented Dickey Fuller (ADF) test. The test assumes that if the null hypothesis that the time series data is not stationary is rejected (i. e the data is stationary), then the data has no unit root, and vice versa (Afolabi, 2020). Based on ADF result in table 4, the statistics value is 26.5245 and its corresponding probability is 0.0031, implying that variables’ data are stationary at the first order. Consequently, the null hypothesis is rejected, signifying the absence of unit roots in the data series. The utilization of the ADF test was preferred due to its robust output results as indicated by Abdulmumin et al. (2019), and it is widely adopted by researchers, as noted by Afolabi (2020).

### Regression Analysis

#### Table 5: Pooled Least Square (POLS) Result

SERIES: GDP, BAR, DL, LI, LP

Method: Pooled Least Squares Sample Period: 2010- 2022				
Variables	Co-efficient	Std. Error	t-Statistic	Probability
Constant	20.96135	40.69120	0.515132	0.6127
BAP	15.28430	7.068803	-2.162219	0.0443
DL	9.557163	12.83100	0.744849	0.0060
LI	-21.48206	19.83223	1.083189	0.0030
LP	-19.80323	45.10859	-0.439012	0.0059
R <sup>2</sup>	0.719072			
Adjusted R <sup>2</sup>	0.645532			
F-Stat.	1.262373 (P=0.021)			
Durbin-Watson	2.198974			

**Source:** Author’s Compilation, 2025.

Table 4 discloses the R-square value of 0.719072 indicates that a remarkable 72% of the changes in bank account penetration (BAP) measured in term of percentage of Nigerian’s population with access to formal banking services, literacy level (DL), increased level of inflation (LI) and poverty level (LP) can be attributed to growth in gross domestic product (GDP) in Nigeria; while the remaining 28% growth in GDP is accounted for by the error term. Additionally, the adjusted R-square of 0.645532 implies that even if other variables accounted for in the stochastic errors are included in the model, the Nigeria economic indicators would still account for 65% increase in the Nigeria GDP growth. This shows that the economic indicators have global impact on the GDP Growth. Additionally, the F-statistics value of 1.262373 with its probability value of 0.021 indicates that the models used in this study disclose a linear relationship between the financial inclusion, human capital development and the GDP growth rate, meaning that the employed

variables employed fit this research. Durbin-Watson value of 2.836764 is above the minimum value of 2 showing the absence of serial correlation in the error term.

Furthermore, the coefficient of BAP is positive (15.28430) and significant ( $0.0443 < 0.05$ ) meaning a unit increase in the percentage of Nigerian’s population with access to formal banking services will lead to 15.3% growth in Nigeria GDP, this lead to expansion in banking access especially through digital finance can strengthen household savings, increase investment, and stimulate economic growth. In addition, the coefficient of DL is positive (9.557163) and significant ( $0.0060 < 0.05$ ) indicating that a unit increase in literacy level will cause 9.6% in human capital development and growth in Nigeria GDP, strengthening education and skill development will enhance Nigeria’s long-term growth potential.

In addition, the coefficient of LI is negative (-21.48206) and significant ( $0.0030 < 0.05$ ) meaning that a unit increase in the level of inflation will lead to 21.5% decrease in the growth of Nigeria GDP, Price stability is essential for financial inclusion and overall economic stability. Also, the coefficient of LP is negative (-19.80323) and significant ( $0.0059 < 0.05$ ) indicating that a unit increase in the poverty level in Nigeria will lead to 19.8% decrease in Nigeria’s GDP growth rate, Financial inclusion initiatives must be pro-poor to effectively stimulate growth..

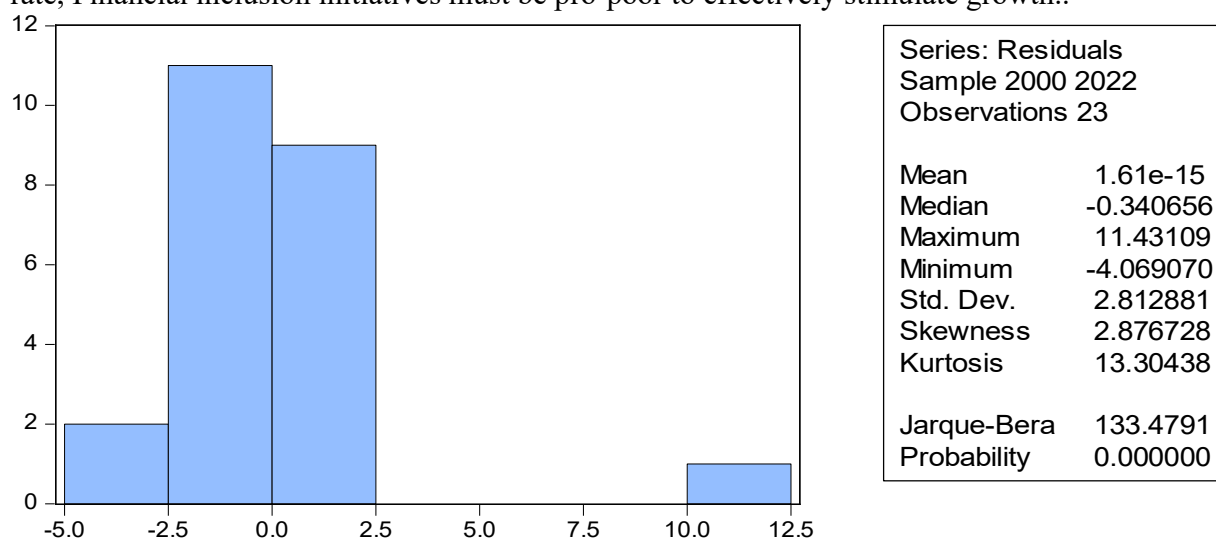


Figure 1: Normality Test

Source: Author’s Compilation, 2025.

The outcome of the normality test indicates a positive skewness (2.8776728) and a Kurtosis value of 13.30438. The Jarque-Bera statistic is also positive (133479), accompanied by a probability value of 0.0000000. This suggests the presence of positive skewness with leptokurtic characteristics. Taken together, these findings suggest that the variables in the study follow a normal distribution.

The results of the normality test show a skewness value of 2.88 and a kurtosis value of 13.30. Both statistics deviate considerably from the benchmark values for a normal distribution (skewness = 0, kurtosis = 3). In addition, the Jarque–Bera statistic of 133,479, with a probability value of 0.0000, leads to the rejection of the null hypothesis of normality at the 1% significance level. This indicates that the variables are positively skewed and exhibit leptokurtic characteristics, suggesting long right tails and the presence of extreme observations in the dataset.

While these results highlight deviations from normality, such departures are not uncommon in macroeconomic and financial time series data. More importantly, Gujarati and Porter (2009)

argue that the Ordinary Least Squares (OLS) method retains its unbiasedness and efficiency in large samples even when normality is violated, provided the assumptions of homoscedasticity and no serial correlation hold. Similarly, Wooldridge (2016) emphasizes that, with sufficiently large observations, the Central Limit Theorem ensures that sampling distributions of estimators approximate normality, making inference reliable. Therefore, although the data are not perfectly normally distributed, the robustness of the estimation techniques applied in this study supports the validity of the regression results.

**Table 5:**  
**Other Diagnostic and Stability Tests**

Variables	Statistics	Probability
Ramsey Reset test	1.392154	0.00180
White's test for heteroskedasticity	$X^2= 19.8448$	0.13511
LM test for autocorrelation	LMF = 0.471981	0.50134

**Source:** Author's Compilation, 2025.

Table 5 reports the results of the diagnostic and stability tests conducted to validate the robustness of the estimated model. The Ramsey RESET test produced a statistic of 1.3922 with a probability value of 0.0018. Since the p-value is below the 5% significance level, the null hypothesis of correct functional form is rejected. This suggests potential misspecification in the model, possibly arising from omitted variables or incorrect functional form. However, the relatively modest value of the test statistic implies that any misspecification may not be severe and can be addressed in future studies through model re-specification or the inclusion of additional explanatory variables (Gujarati & Porter, 2009).

The White test for heteroskedasticity yielded a chi-square statistic of 19.8448 with a p-value of 0.1351. Because the probability exceeds the 5% threshold, the null hypothesis of homoscedasticity cannot be rejected. This indicates that the residuals are homoscedastic, confirming that the assumption of constant variance is satisfied.

Similarly, the Breusch-Godfrey LM test for autocorrelation returned a statistic of 0.4719 with a p-value of 0.5013. Since the probability is greater than 0.05, the null hypothesis of no autocorrelation cannot be rejected, confirming that the residuals are free from serial correlation. This finding further supports the reliability of the regression estimates (Wooldridge, 2016).

In summary, despite the indication of potential misspecification from the Ramsey RESET test, the absence of heteroskedasticity and autocorrelation demonstrates that the model is generally stable and reliable for drawing valid inferences.

### **Discussion of Results**

The results underscore the importance of financial inclusion and human capital development in driving Nigeria's economic growth, especially in the context of rising inflation, persistent poverty, and policy shocks such as cashless reforms and the removal of fuel subsidies. The analysis shows that bank account penetration has a positive and significant effect on GDP growth, supporting the argument that financial inclusion broadens participation in the formal financial system and enhances monetary circulation within the economy. This outcome rejects the null hypothesis that financial inclusion has no impact on growth. It is consistent with the findings of Allen, Demirgüç-Kunt, Klapper, and Peria (2016), who reported that greater access to financial services improves household welfare and fosters business growth in developing economies. Similarly, Asuming, Osei-Agyei, and Mohammed (2018) emphasized that inclusive financial systems enhance productivity and reduce poverty.

The study also reveals that improvements in literacy, as a proxy for human capital development, significantly stimulate GDP growth. This aligns with Isola and Alani (2012), who showed that education and human capital formation are essential drivers of long-run growth in Nigeria. In addition, Obayori and George-Anokwuru (2020) found that higher educational attainment expands employment opportunities and supports financial inclusion through enhanced financial literacy. By contrast, some studies, such as Pelinescu (2015), caution that the effect of human capital on growth may depend on institutional quality and absorptive capacity, suggesting that education alone is insufficient without complementary policies.

Inflation, on the other hand, exerts a negative and significant influence on GDP growth, corroborating the work of Siyan, Lawal, and Olasunkanmi (2016), who noted that persistent inflation distorts investment decisions and undermines macroeconomic stability in Nigeria. The detrimental impact of inflation is further highlighted by Folawewo and Osinubi (2006), who argued that inflation above threshold levels erodes real income and weakens capital formation. Similarly, poverty was found to depress economic growth, supporting the findings of Iorember, Jelilov, Alymkulova, and Yua (2022), who emphasized the poverty–growth trap in Nigeria. This suggests that unless poverty is reduced, the benefits of financial inclusion and human capital development may be undermined.

Despite these negative effects, the findings suggest that fostering financial inclusion and investing in education and skill development remain viable strategies to stimulate growth. This is consistent with Afolabi (2020), who found that improved financial services enhance economic outcomes in Nigeria. However, contrasting evidence exists: Chiwira (2021) noted that in some contexts, financial inclusion has had weak or insignificant effects due to limited financial literacy and structural barriers. Similarly, Ali, Hashmi, Nazir, Bilal, and Nazir (2021) highlighted that while financial inclusion promotes growth in many cases, it may also exacerbate financial instability if not accompanied by sound regulatory frameworks.

Taken together, the results provide a nuanced picture: while financial inclusion and human capital development are essential for Nigeria's growth, their effectiveness is conditioned by macroeconomic stability, poverty reduction, and supportive institutional policies. Therefore, sustaining economic growth requires a balanced approach that simultaneously expands financial access, strengthens education systems, and addresses inflationary and poverty pressures.

## **5.0 Conclusion and Recommendations**

The findings of this study contribute to the growing body of literature on the roles of financial inclusion and human capital development in advancing economic growth in developing economies. Consistent with earlier studies such as Asuming, Osei-Agyei, and Mohammed (2018) and Chiwira (2021), the results indicate that access to formal financial services and improvements in literacy levels are positively associated with economic performance. The evidence suggests that financial inclusion measured through indicators such as account ownership and access to financial institutions remains an essential driver of growth, particularly in economies where large segments of the population are excluded from formal financial systems. Similarly, the positive effect of human capital development reinforces the argument that education enhances productive capacity and supports long-term economic transformation.

However, this study also highlights persistent structural challenges that mirror those documented in the literature. Inflationary pressures and high poverty rates continue to undermine the benefits of financial sector reforms, limiting the capacity of households to engage with formal financial services. The uneven penetration of banking infrastructure, particularly in rural areas, further constrains inclusive development outcomes. These trends reaffirm findings from prior empirical

studies that emphasize the importance of combining financial sector development with broad-based social investments to achieve sustainable growth.

While the study provides valuable insights, it is not without limitations. As highlighted in methodological literature, reliance on national-level secondary data restricts the ability to capture regional variations in financial inclusion and human capital outcomes. The econometric approach employed does not account for potential non-linear or interactive effects that may exist among the variables. In addition, omitted variables such as institutional quality, digital infrastructure, and financial literacy may influence the observed relationships. Acknowledging these limitations is consistent with best practices in empirical research and provides direction for further scholarly inquiry.

In line with the study's findings, several policy recommendations emerge. First, expanding financial access should remain a priority, particularly through the reopening of bank branches in underserved rural communities and the strengthening of mobile and digital banking platforms. Second, government-led financial literacy and education programs should be enhanced to equip individuals with the skills required to participate effectively in the financial system. Third, macroeconomic stabilization remains critical; efforts to reduce inflation and mitigate the adverse effects of recent economic reforms will help protect household incomes and support financial inclusion. Lastly, poverty reduction initiatives should be aligned with financial sector policies to ensure that vulnerable populations are not excluded from economic opportunities.

Future research may build on this study by employing regional or panel data approaches to better capture spatial disparities. Scholars may also explore non-linear dynamics, threshold effects, or the role of digital financial innovations in strengthening inclusion. Such extensions would enrich the literature and provide deeper insights into the complex interplay between financial inclusion, human capital development, and economic growth.

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