



SOCIO-ECONOMIC AND DEMOGRAPHIC DETERMINANTS OF FINANCIAL INCLUSION IN NIGERIA: EVIDENCE FROM THE GLOBAL FINDEX 2025

ABSTRACT

Despite numerous policy initiatives aimed at increasing financial inclusion, a significant portion of the Nigerian population remains excluded from the formal financial system. This study examines the determinants of financial inclusion in Nigeria, with a focus on demographic and socio-economic factors, as well as the rural–urban disparities in access to formal financial services. Using cross-sectional microdata obtained from the World Bank Global Findex database for 2025, the study employs binary logistics models to examine the probability of financial inclusion proxied by formal account ownership, formal savings, and access to formal credit. In addition, a decomposition framework was applied to quantify the contribution of observable characteristics to rural–urban differentials in financial inclusion outcomes. The estimation results indicate that education, income, urban residence, and mobile phone ownership exert positive and statistically significant effects on financial inclusion, employment status is found to have a negative and significant association with formal account ownership, reflecting structural constraints associated with informal sector participation. The rural–urban decomposition results reveal that differences in education, employment status, and mobile phone ownership significantly account for spatial disparities in financial inclusion. The findings suggest that Nigerian financial inclusion policy should combine educational and employment interventions with affordable digital connectivity and targeted rural financial service strategies. Furthermore, policies should focus on income generation and employment opportunities, as well as gender-inclusive financial strategies to reduce disparities. The study concludes that addressing both structural and individual-level barriers is essential for achieving sustainable financial inclusion and fostering inclusive economic growth in Nigeria.

Keywords: Financial inclusion; Formal savings; Rural –urban disparities; Formal credit; decomposition

1.0 Introduction

Financial inclusion gives consumers and businesses access to practical and cost-effective financial services and products such as credit, savings, payments, and other financial services provided in an ethical and sustainable way because inclusive financial systems promote savings, investment, helps in consumption smoothing, aid resilience to economic shocks while enhancing wider involvement in economic activity, their significance goes beyond access to banking service.

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The World Bank is firmly committed to financial inclusion through an enabling infrastructural digitalization, country engagements and support to boost mobile-phone networks while removing regulatory barriers to advance access to finance. Financial inclusion has over the years, become a subject of interest to researchers as well as the governments with the sole aim of promoting sustainable growth and economic development. (Klapper, 2025; Awad & Nada, 2018; Ozili, 2021; World Bank, 2022; Dermirguc-Kunt, Klapper, Singer & Ansar, 2025).

Over the past ten years, financial inclusion has greatly increased on a global scale, especially with the emergence of digital financial services. Over 190 economies are currently covered by financial inclusion metrics, according to the International Monetary Fund (IMF), demonstrating its increasing significance in attaining equitable growth and lowering inequalities. Coordinated regulatory frameworks and the deployment of digital financial infrastructure may quickly improve access to financial services and usage, as demonstrated by comparative data from Brazil (Pix payment system), Kenya (M-Pesa), and India (IMF, 2025). But there are still distinctions between established and developing nations, particularly when it comes to formal financial institutions and digital payment methods. Although it has made significant strides, financial inclusion is still comparatively low in Sub-Saharan Africa. Between 2014 and 2024, the percentage of adults who had access to a bank account rose from 34% to approximately 58% (African Development Bank, 2024; World Bank, 2025). Furthermore, 40% of individuals in the region have mobile money accounts, and 51% of adults utilize digital payments, underscoring the vital role that mobile technology plays in increasing financial inclusion (World Bank, 2023). Despite these advancements, the area still lags below international standards, with notable differences between nations. In order to adjust to and recover from the worldwide economic meltdown, achieving financial inclusion is considered essential (United Nations Secretary General Special Advocate, 2021). Rural banking, microfinance regulations, the cashless policy, agent banking, mobile financial services, and the National Financial Inclusion Strategy are just a few of the measures Nigeria has put in place to increase financial inclusion (CBN, 2023). However, there are still significant differences in access because participation in formal finance is still influenced by a number factors, including poor infrastructure, low income, documentation requirements, limited financial literacy, affordability constraints, and poor access to digital services (Ozili, 2022; World Bank, 2024).

Against this background, this study investigates the socio-economic and demographic determinants of financial inclusion in Nigeria and examines rural–urban disparities in formal account ownership, formal saving and formal credit. The paper is organized as follows: the second section presents the conceptual clarification and related literature on financial inclusion and its determinants in Nigeria. The third and fourth sections discuss the methodology and results followed by conclusion and policy implications in the final section, respectively.

2.0 Literature Review

2.1 Conceptual Clarifications

The World Bank (2025), define financial inclusion to mean that individuals and businesses have access to useful and affordable financial products and services; these includes but not limited to transactions,

payments, savings, credit, insurance and services that meet their needs delivered in a responsible and sustainable way. Universal Financial Access (2020), considered financial inclusion as access to and use of financial services offered by regulated financial service providers in a responsible and sustainable way to help manage financial lives.

Enhancing Financial Innovation and Access, (EFInA, 2023) sees financial inclusion as the provision of a broad range of high-quality financial products, such as savings, credit, insurance, payments and pensions, which are relevant, appropriate and affordable for the entire adult population, especially the low-income segment. a common ground on the accepted meaning has not been absolutely established upon, this is not unconnected to the multi-dimensional and diverse approaches with regard to financial inclusion interplay in different countries (Neaime & Gaysset, 2018; Okoye et al., 2017; Tita & Aziakpono, 2017; Ozili, 2022).

Furthermore, financial inclusion is defined by Ahmed and Mallick (2019) as a situation in which all economic actors have access to formal financial services and are able to make efficient use of them. This demonstrates that maintaining an inclusive financial system is essential for both development objectives and bank-prioritized policies that are beneficial to bank sustainability. Lagarde (2014) defines financial inclusion as having access to finance that enables people, particularly the most disadvantaged members of society, to create economic possibilities. Abdu, Buba, Adamu and Muhammad (2015) posit financial inclusion is critical to attaining inclusive growth the world over since it serves as an efficient toll to reducing poverty and ensure improved welfare of the masses. Financial inclusion is broadly defined by the Consultative Group to Assist the Poor (CGAP, 2023) as the underprivileged and excluded having digital access to and using formal financial services. Accordingly, these services should be tailored to the clients' financial needs, provided with responsiveness, and at a cost that is both reasonable and viable for the providers of services.

Consequently, this study state that financial inclusion addresses the need to improve resilience to and recovery from global economic shocks in addition to banking products. Similarly, it guarantees the availability, accessibility, and extent to which people and businesses, particularly those who have been shut out of the official financial system, can use products like savings, financing, transactions, insurance, and pensions at a reasonable cost that guarantees greater well-being and the alleviation of poverty. Aracil et al. (2025) find that mobile money can promote formal deposits and credit in developing economies when the necessary institutional and technological conditions are present.

2.2 Theoretical Framework

The threshold decision-making theory was employed to assess the determinants of financial inclusion in Nigeria for this study, the theory argues that there is a reaction threshold inherent in people which can be said to be dependent on a set of factors affecting their desire to be financially included or not and it, therefore, makes sense to entice these people into the formal financial sector accordingly. The threshold decision-making theory was propounded by Pindick and Rubinfeld (1998) and Greene (2003). At a given level of stimulus below the threshold, the individual will not seek to be included in the formal financial market while at the critical threshold level the desire to be included in the formal

financial sector is stimulated. This viewpoint is especially pertinent to Nigeria as financial exclusion may arise from the combination of many obstacles rather than from a single restriction.

2.3 Empirical Reviews

Financial inclusion is multidimensional and encompasses both access to and use of formal financial services. The literature emphasizes that access to appropriate, affordable and sustainable financial products is particularly important for populations excluded from formal finance (Allen et al., 2016; Demirgüç-Kunt et al., 2022). Several studies have attempted to investigate determinants of financial inclusion for sustainable development through various empirical data and techniques. Scholar such as (Kuri & Laha, 2017; Njanike & Mpofu 2021; Rao & Baza, 2017; Ouma, Odongo & Were 2017; Sharma, Pradhan & Sahu, 2017; Murshed et al., 2022), examined the determinants of financial inclusion in different locations. For example, analysis of the determinants of financial inclusion in West Bengal by Kuri and Laha, (2017) using binary probit model reported that the increase in the asset of household and the desire for savings influence access to financial services, the study also reports that financial literacy through awareness in schools, media and national dailies on the basic financial product such as owning account, saving and credit is a significant determinant of financial inclusion. Similarly, Sharma, Pradhan, and Sahu's (2017) study of the factors influencing financial inclusion in the Odisha district using logistic regression reveals that the availability of employment generation schemes, total yearly income, and the size of privately owned land used as collateral to obtain a loan in the formal financial services have a positive effect on financial inclusion. Njanike & Mpofu, (2021) examined the factors influencing financial inclusion in four chosen African nations. The study used Probit models and data from the FinScope survey to determine and estimate the impact of social media on financial inclusion. It discovered that factors taken into consideration had a positive impact on financial inclusion levels. Mhlanga and Dunga (2020) evaluated the degree of financial inclusion factors among smallholder farmers in Zimbabwe's Manica Land Province. The study found that the factors that significantly explained the drivers of financial inclusion among the smallholder farmers in Zimbabwe's Manica Land Province were off-farm income, education level, distance, financial literacy, and household age. Dar, (2020) sought to investigate the determinants and barriers of financial inclusion in India, using the Global Findex (2017), the study found that gender, age, education and income influence financial inclusion with a significant influence on the informal saving and borrowing. Moreover, Using the ARDL model, Fernandes, Borges, and Caiado (2021) came to the conclusion that financial services, including ATM, point-of-sale, mobile banking, and electronic money transactions, decide and contribute to financial inclusion in Mozambique. According to Ozili (2020), digital finance is pro-poor and has the potential to worsen already-existing disparities, increasing financial inclusion. To protect the impoverished from preventable danger, it is necessary to guarantee that funding is risk-free even throughout the operational stage. Soetan and Umukoro, (2024) have shown that characteristics such as income, gender and education determine one's likelihood of engaging with formal financial inclusion.

Examining financial inclusion using multiple dimensions for formal savings, formal credit, and formal account ownership in a distinct analytical framework has received relatively little attention, whereas

the majority of the literature on financial inclusion in Nigeria either concentrated on general determinants or specific dimensions, such as account ownership. Therefore, the information that is now available does not adequately explain whether the same factors that determine whether a person has a formal account also affect that person's capacity to obtain credit or even save officially. By simultaneously examining financial inclusion using the three measures of formal financial involvement, this study aims to close this gap. A more thorough analysis of the urban-rural breakdown of financial inclusion in Nigeria is necessary as it is equally crucial for policy design and implementation to understand whether the observed disparities in financial inclusion between rural and urban residents are caused by variations in individual characteristics, such as income, employment status, education, and phone ownership, or by variations in the returns to these factors. Therefore, by examining the rural-urban breakdown of financial inclusion in Nigeria, this study aims to add to the body of literature.

3.0 Methodology

3.1 The Data Set

The study utilized individual-level secondary data obtained from the Global Findex Database 2025, a nationally representative survey of about 145,000 adults across 141 economies. The dataset provides comprehensive and comparable information on how individuals access and use financial services, including account ownership, saving, borrowing, and digital financial activities.

Table 1: Variables Definition and Measurement

Variable	Definition	Measurement
Formal Account Ownership	Indicates whether an individual owns an account with a formal financial institution or mobile money provider.	Binary variable (1 = Owns account, 0 = Does not own)
Formal Saving	Indicates whether an individual saved using a formal financial institution or mobile money account in the past 12 months.	Binary variable (1 = Saved formally, 0 = Otherwise)
Formal Credit	Indicates whether an individual borrowed from a formal financial institution in the past 12 months.	Binary variable (1 = Accessed formal credit, 0 = Otherwise)
Age	The age of the individual measured in years (working-age population).	Continuous variable
Gender	The sex of the individual.	Binary variable (1 = Male, 0 = Female)
Income	The income level of the individual.	Categorical variable (Poorest, Poor, Middle, Rich, Richest)
Education Level	The level of formal education attained.	Binary variable (1 = Formal education, 0 = No formal education)
Phone Ownership	Indicates whether the individual owns a mobile phone.	Binary variable (1 = Owns phone, 0 = Does not own)

Variable	Definition	Measurement
Location	Residential status of the individual.	Binary variable (1 = Urban, 0 = Rural)
Age Squared	Captures the non-linear effect of age.	Continuous variable (Age^2)
Employment Status	Indicates whether the individual is employed.	Binary variable (0 = Employed, 1 = Unemployed)

3.2 Model Specification

The model is expressed to reflect the multidimensional nature of financial inclusion, as proxied by formal account ownership, formal saving, and formal credit. The functional form of the model is specified as follows:

$$FI = f(EDU, AGE, AGE^2, INC, LOC, GEN, PHONE, EMP) \quad (1)$$

While the econometric model is specified as:

$$FI_i = \alpha_0 + \alpha_1 EDU_i + \alpha_2 AGE_i + \alpha_3 AGE_i^2 + \alpha_4 INC_i + \alpha_5 LOC_i + \alpha_6 GEN_i + \alpha_7 PHONE_i + \alpha_8 EMP_i + \varepsilon_i \quad (2)$$

FI_i represents financial inclusion of individual i , measured through three indicators: formal account ownership, formal saving, and formal credit; EDU_i denotes the education level of individual i ; AGE_i represents the age of individual i ; AGE_i^2 captures the squared term of age to account for non-linear effects; INC_i represents the income level of individual i , LOC_i denotes the location (urban/rural) of individual i , while GEN_i represents the gender of individual i , $PHONE_i$ indicates mobile phone ownership and EMP_i represents employment status of individual i , α_0 – α_8 are the parameters to be estimated and ε_i is the stochastic error term capturing unobserved factors affecting financial inclusion.

3.3 Estimation Techniques

Logistic Regression

To examine the determinants of socio-economic and demographic variables on financial inclusion, this study employed logistic regression analysis due to the binary nature of the dependent variables. The models were estimated corresponding to a distinct dimension of financial inclusion: (1) account ownership (1 = owns an account, 0 = does not own an account), (2) formal savings (1 = saved formally, 0 = otherwise), and (3) formal credit access (1 = accessed formal credit, 0 = otherwise).

$$\begin{aligned} & \text{Log} \left[\frac{\text{Pr}(FIN)}{1 - \text{Pr}(FIN)} \right] \\ &= \beta_0 + \beta_1 EDU_i + \beta_2 AGE_i + \beta_3 GEN_i + \beta_4 AGE_i^2 + \beta_5 LOC_i + \beta_6 INC_i + \beta_7 EMP_i + \beta_8 PHONE_i \\ &+ \varepsilon_i \end{aligned} \quad (3)$$

In equation 3 above, $\text{Log} \left[\frac{\text{Pr}(FIN)}{1-\text{Pr}(FIN)} \right]$ is the logit or log-odds of financial inclusion while β_0 is the intercept term, β_1 to β_8 are the regression coefficients associated with each explanatory variable (EDU, AGE, AGE², GEN, INC, LOC, EMPL, PHONE) The coefficients represent the change in the log-odds of the outcome for a one-unit change in the corresponding independent variable, holding all other variables constant. A key advantage of the logit model is that the coefficients can be exponentiated to obtain odds ratios, which offer a more intuitive interpretation. An odds ratio greater than 1 indicates that an increase in the independent variable is associated with higher odds of financial inclusion occurring, while an odds ratio less than 1 suggests a negative association. An odds ratio equal to 1 indicates no association. The parameters of the logistic regression model are typically estimated using the method of maximum likelihood rather than ordinary least squares. This iterative estimation procedure identifies the coefficient values that maximize the likelihood of observing the sample data, given the specified model. The maximum likelihood approach is particularly appropriate for binary outcome models because it does not rely on the assumption of normally distributed errors, which is inherent in linear regression.

To analyze the drivers of financial inclusion disparities between rural and urban households in Nigeria, this study employed a nonlinear Fairlie decomposition approach. The Fairlie decomposition is an extension of the Blinder–Oaxaca (1973) decomposition, developed to address limitations associated with the original methods when the dependent variable is binary or nonlinear in nature. The Fairlie method allows for the direct use of coefficient estimates from logit or probit models in the decomposition framework, making it more appropriate for nonlinear probability models (Fairlie, 2006; Jann, 2008). This technique is especially useful where assuming a linear relationship between the dependent and explanatory variables would be inappropriate. It further enables the decomposition of differences in average predicted probabilities between groups into components attributable to differences in characteristics and those due to differences in coefficients or unobserved factors (Fairlie & Meyer, 1999). By sequentially replacing the distribution of explanatory variables from one group with another while holding other factors constant, the contribution of each variable to the observed gap can be assessed.

$$\frac{\bar{y}_U}{Y_U} - \frac{\bar{y}_R}{Y_R} = \left[\sum_{i=1}^{N_U} \frac{f(xu_i\hat{\beta})}{N_U} - \sum_{i=1}^{N_R} \frac{f(xR_i\hat{\beta})}{N_R} \right] = \left[\sum_{i=1}^{N_U} \frac{f(xR_i\hat{\beta})}{N_U} - \sum_{i=1}^{N_R} \frac{f(xR_i\hat{\beta})}{N_R} \right] + \left[\sum_{i=1}^{N_U} \frac{f(xU_i\hat{\beta})}{N_U} - \sum_{i=1}^{N_R} \frac{f(xR_i\hat{\beta})}{N_R} \right] \quad (3)$$

The terms $\frac{\bar{y}_U}{Y_U}$ and $\frac{\bar{y}_R}{Y_R}$ represent the average predicted probabilities of financial inclusion for urban (U) and rural (R) groups, respectively. The function $f(xu_i\hat{\beta})$ and $f(xR_i\hat{\beta})$ refers to the logistic cumulative distribution function used to estimate these probabilities. The vector X contains the explanatory variables such as education, income, employment, and other socioeconomic characteristics, while $\hat{\beta}$ represents the estimated coefficients derived from the pooled regression model. The explained component of the decomposition captures the portion of the urban–rural gap that is attributable to differences in observable characteristics between the two groups. In contrast, the

unexplained component reflects the portion of the gap that arises from differences in coefficients and unobserved factors that are not captured by the included explanatory variables.

4.0 Empirical Results

4.1 Descriptive Characteristics

Variable	Frequency	Percentage	Cum. Frequency	
Gender				
Female	490	49.00	49.00	
Male	510	51.00	100.00	
Location				
Rural	440	44.00	44.00	
Urban	560	56.00	100.00	
Education				
completed primary school or less	213	21.30	21.30	
completed secondary school	746	74.60	95.90	
completed tertiary education or more	40	4.00	99.90	
Missing	1	0.10	100.00	
Income quintile at 20%				
Poorest	160	16.00	16.00	
Poorer	148	14.80	30.80	
Middle	178	17.80	48.60	
Richer	205	20.50	69.10	
Richest	309	30.90	100.00	
Employment Status				
Not in workforce	206	20.60	20.60	
In workforce	794	79.40	100.00	
Mobile phone owner				
No mobile phone	159	15.90	15.90	
Own mobile phone	840	84.00	99.90	
Missing	1	0.10	100.00	
Descriptive statistics				
	Mean	Sd. dev	Min	Max
Age	31.54154	11.80709	15	94
Age ²	1134.276	950.2367	225	8836

The sample is relatively balanced by gender, with males accounting for 51% and females 49%. Urban respondents constitute 56% of the sample, while 44% reside in rural areas. Approximately 74.6% have secondary education, while about 21.3% have primary education or less and approximately 4% have tertiary education or higher. About 79.4% of respondents are in the workforce and 84% report owning a mobile phone. The mean age is approximately 31.5 years, with ages ranging from 15 to 94 years.

Table 2: Pairwise Correlation

N/S	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	FIN_INCL	1								
2	EDUC	0.401	1							
3	AGE	0.138	-0.143	1						
4	AGE ²	0.095	-0.170	0.972	1					
5	FEMALE	-0.136	-0.107	-0.080	-0.069	1				
6	EMPL	0.212	0.159	0.077	0.015	-0.204	1			
7	INC	0.263	0.239	0.081	0.063	-0.146	0.106	1		
8	URBAN	0.213	0.212	0.023	0.012	0.007	0.000	0.126	1	
9	PHONE	0.351	0.278	0.060	0.023	-0.217	0.190	0.190	0.131	1

Source: Author's computation using Stata 13.0

The preliminary correlations are consistent with the expected direction of several relationships. As shown in the table, education (EDUC) has a moderately strong positive correlation ($r = 0.401$) with financial inclusion, indicating that higher educational attainment is associated with greater access to and usage of financial services. Income quintile (INC) and mobile phone ownership also exhibit positive correlations with financial inclusion, with coefficients of 0.263 and 0.351, respectively. This suggests that individuals with higher income levels and those who own mobile phones are more likely to be financially included. Employment status (EMPL) and urban residence (URBAN) also show positive relationships with financial inclusion, with coefficients of 0.212 and 0.213, respectively. This implies that being employed and living in urban areas are associated with higher financial inclusion levels.

In contrast, female gender (FEMALE) shows a negative correlation (-0.136) with financial inclusion, suggesting that women are less likely to be financially included compared to men within the sample. Regarding the relationships among the independent variables, education is weakly negatively correlated with age ($r = -0.143$) and gender ($r = -0.107$), while age and age squared are highly correlated ($r = 0.972$), which is expected due to their mathematical relationship. The generally low-to-moderate correlation values among most independent variables indicate minimal multicollinearity concerns, except between age and age², which will be addressed during regression analysis by including both terms appropriately to capture non-linear age effects. Therefore, these results indicate that education, income, employment, urban residence, and mobile phone ownership are positively associated with financial inclusion, while being female is negatively associated. These findings provide preliminary evidence supporting the hypothesized determinants of financial inclusion in Nigeria and justify their inclusion in the subsequent regression models for further statistical testing.

Table 3: Logistic Regression

Variables	Formal Account	Formal Saving	Formal Credit
Age	1.2372*** (0.0495)	1.0046 (0.0321)	1.0286 (0.0337)
Age Squared	0.9977*** (0.0005)	1.0000 (0.0004)	0.9997 (0.0004)
Male (Ref: Female)	1.4981** (0.2851)	1.1306 (0.1962)	1.1045 (0.1891)
Education (Ref: No education/Primary)			
Secondary Education	5.5209*** (1.2973)	1.0752 (0.2518)	0.4165*** (0.1199)
Tertiary Education	4.3667** (2.9663)	2.5432 (1.6947)	0.4134* (0.2177)
Income (Ref: Poorest)			
Poor	1.2219 (0.3554)	0.8530 (0.2412)	0.9058 (0.2879)
Middle	1.7558* (0.5276)	1.1710 (0.3475)	0.8790 (0.2839)
Rich	3.4210*** (1.0690)	1.8639** (0.5613)	1.0253 (0.3220)
Richest	3.1853*** (0.9711)	1.2205 (0.3382)	0.5398** (0.1568)
Employment (Ref: Employed)			
Out of Workforce	0.4581*** (0.1011)	0.2653*** (0.0507)	0.4084*** (0.0808)
Location (Ref: Rural)			
Urban	2.0652*** (0.3954)	0.5719*** (0.1031)	0.4754*** (0.0862)
Phone Ownership			
No Phone	0.1811*** (0.0626)	0.2885*** (0.0818)	0.2070*** (0.0639)
Constant	0.0061*** (0.0046)	5.3873*** (3.4966)	12.7570*** (8.6398)
Model Summary			
Observations	998	998	998
LR Chi ²	349.89	124.64	104.62
Prob > Chi ²	0.0000	0.0000	0.0000
Log Likelihood	-379.011	-449.841	-454.487

Note: Standard errors are reported in parentheses below the odds ratios. ***p<0.01, **p<0.05, Reference categories are indicated in parentheses. (Source: Author's computation using STATA 13)

Logistic regression results

The logistic regression models examine three dimensions of financial inclusion: formal account ownership, formal saving, and formal credit access. All three models are jointly statistically significant, with LR chi-square statistics of 349.89, 124.64, and 104.62, respectively, and $p < 0.001$. This indicates that the explanatory variables collectively have significant predictive power for the three financial inclusion outcomes.

The result for formal account ownership indicates that, age, education, gender, income, employment, location and mobile-phone ownership are particularly important. Age increases the likelihood of account ownership (Odd Ratio = 1.2372, $p < 0.01$), although the negative age-squared coefficient (0.9977, $p < 0.01$) indicates a nonlinear relationship. Males have higher odds of account ownership than females (1.4981, $p < 0.05$). Education has a strong positive association: respondents with secondary and tertiary education have substantially higher odds of owning formal accounts than those with no/primary education. Higher income also increases the likelihood of account ownership, particularly among rich and richest respondents. Conversely, being out of the workforce is associated with substantially lower odds of account ownership (0.4581, $p < 0.01$). Urban residence strongly increases the odds of account ownership (2.0652, $p < 0.01$), while individuals without a mobile phone are considerably less likely to own a formal account (0.1811, $p < 0.01$).

For formal saving, most demographic characteristics are statistically weak. However, income and employment are important. Respondents in the rich income category are more likely to save formally (1.8639, $p < 0.05$), while individuals outside the workforce have substantially lower odds of formal saving (0.2653, $p < 0.01$). Interestingly, urban residence is negatively associated with formal saving (0.5719, $p < 0.01$), while lack of mobile-phone ownership also significantly reduces the likelihood of formal saving (0.2885, $p < 0.01$).

For formal credit, education, income, employment, location and mobile-phone ownership are the major determinants. Secondary education is negatively associated with formal credit access (0.4165, $p < 0.01$), while tertiary education is also negative and weakly significant (0.4134, $p < 0.10$). Individuals in the richest income category have lower odds of accessing formal credit (0.5398, $p < 0.05$). Those outside the workforce are substantially less likely to obtain formal credit (0.4084, $p < 0.01$). Urban residents have lower odds of formal credit access than rural residents (0.4754, $p < 0.01$), while individuals without mobile phones are much less likely to access formal credit (0.2070, $p < 0.01$). Gender and age are not statistically significant determinants of formal credit.

Fairlie decomposition

The Fairlie decomposition reveals a different pattern across the three dimensions of financial inclusion. For formal account ownership, the predicted probability is 0.834 for urban respondents compared with 0.670 for rural respondents, producing an urban–rural gap of 0.1641. Observable characteristics explain 0.0772, or 47.03%, of this gap, while the remaining 52.97% is unexplained.

Education is the largest contributor to the account-ownership gap (0.0428, $p < 0.01$), followed by phone ownership (0.0277, $p < 0.01$) and income (0.0126, $p < 0.05$). Age also contributes positively, while employment contributes negatively, suggesting that differences in employment distribution partly reduce the urban advantage. Overall, the account-ownership disparity is largely associated with differences in education, income and digital access between rural and urban populations.

In contrast, formal saving shows a rural advantage. The predicted probability is 0.760 for urban respondents and 0.825 for rural respondents, generating a gap of -0.0652 . Observable characteristics explain only 0.0059 (-9.0%), while the unexplained component is -0.0711 (109%). This indicates that differences in observed characteristics do not explain the rural advantage in formal saving; rather, the disparity is predominantly associated with differences captured by the unexplained component. Employment contributes negatively and significantly, whereas phone ownership contributes positively and significantly. The same pattern is observed for formal credit, where rural respondents have a higher predicted probability (0.859) than urban respondents (0.737), producing a rural advantage of -0.1220 . Only -0.0166 (13.58%) of the gap is explained by observable characteristics, whereas -0.1055 (86.42%) remains unexplained. Education, income and employment make negative and significant contributions to the decomposition, while phone ownership contributes positively and partly offsets the rural advantage. The relatively large unexplained component suggests that institutional, behavioural or other unobserved factors may be important in explaining the rural advantage in formal credit access.

Diagnostic Test

Diagnostic tests conducted to verify the accuracy and reliability of the regression models used in the study. These tests help confirm that the model is properly specified, free from harmful multicollinearity, and provide good predictive performance. Examining indicators such as Hosmer–Lemeshow test and linktest, ensures that the estimated results are statistically sound and suitable for policy implementation.

Table 4: Hosmer–Lemeshow Goodness-of-Fit Test

Test	Chi-square (χ^2)	df	P-value
Hosmer–Lemeshow GOF	6.73	8	0.5665

Source: Author’s Computation, using STATA 13

The Hosmer–Lemeshow Goodness-of-Fit test evaluates how well the logistic regression model fits the observed data by comparing the predicted probabilities with the actual outcomes. A high p-value (greater than 0.05) indicates that the model’s predicted values are not significantly different from the observed values, meaning the model fits the data well. The Hosmer–Lemeshow chi-square statistic is $\chi^2 = 6.73$ with 8 degrees of freedom, and the corresponding p-value is 0.5665. Since this p-value is far above the conventional 0.05 threshold, it suggests that there is no evidence of poor model fit. In other

words, the differences between the predicted and observed financial inclusion outcomes are statistically insignificant. This result confirms that the logistic regression model used in the analysis is appropriately specified, and its predictions are consistent with the actual distribution of financial inclusion among the sampled population. Therefore, the model can be considered reliable for drawing inferences as well as for policy conclusions.

Table 5: Model Specification Test (Linktest)

Fin_inc	Coefficient	Std. err.	P-value
Hat	1.002563	.072166	0.000
Hatsq	-.0071551	.0419252	0.864
Cons	.0092197	.1005312	0.927

Source: Author's Computation using STATA 13

The coefficient of hat is 1.0026 with a p-value of 0.000, which is highly significant. This means that the model's predicted values appropriately explain financial inclusion and contain meaningful information. Conversely, hatsq has a coefficient of -0.0072 with a p-value of 0.864, which is far above the conventional 0.05 threshold. The insignificance of hatsq indicates that there is no evidence of model misspecification, and no important nonlinear terms appear to be omitted from the model. Similarly, the constant term is not statistically significant, which is expected in a well-specified linktest. Overall, the results of the Linktest confirm that the logistic regression model estimating the socio-economic and demographic determinants of financial inclusion in Nigeria is correctly specified. This strengthens confidence in the validity and reliability of the model's coefficients and the conclusions drawn from the analysis.

5.0 Conclusion and Policy Implications

The study demonstrates that financial inclusion in Nigeria is shaped primarily by socioeconomic capacity and digital access. Education, income, employment and mobile-phone ownership are important determinants of participation in formal financial services, while age exhibits a nonlinear relationship with financial inclusion. The Fairlie decomposition further shows that the rural–urban divide is particularly pronounced for formal account ownership, where nearly half of the gap is attributable to differences in observable socioeconomic characteristics. Conversely, rural households exhibit higher probabilities of formal saving and credit access, with most of these differences remaining unexplained by the observed characteristics. The findings also reveal important rural–urban differences, with observable characteristics such as education, employment and mobile-phone ownership contributing significantly to spatial disparities (El-Zoghbi et al., 2016; Ozili, 2025). These results support the Threshold Decision-Making Theory, which suggests that individuals are more likely to participate in formal finance when informational, financial and access barriers are sufficiently reduced.

The findings have several policy recommendations. First, government should strengthen education and financial literacy to improve individuals' capacity to understand and use formal financial services (Demirguc-Kunt et al., 2022). Second, affordable mobile-phone access, network expansion and digital

financial services should be prioritized, particularly in rural areas (Klapper et al., 2025; Ozili, 2023). Third, employment creation, entrepreneurship development and affordable financing for small businesses should be promoted to improve household income and financial capacity. Fourth, rural financial infrastructure, particularly agent banking and digital financial services, should be expanded to address spatial inequalities. Finally, policymakers should adopt dimension-specific strategies because the factors associated with formal account ownership differ from those associated with saving and credit.

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