

Investigating the Influence of Financial Literacy, Socioeconomic and Demographic Factors on Saving Behaviours of Nigerians

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ABSTRACT

Financial product awareness is an efficient remedy for poverty reduction as against lack of money. However, a holistic literature on financial product awareness in the six Geo-Political Zone of Nigeria is scarce. Using data from a quarterly survey of households in Nigeria, this paper investigated the influence of financial literacy, Socioeconomic and demographic factors on saving behaviors of Nigerians, age 15 to 70. With a pool of methods, our finding supported the observation from similar economies, but revealed some differences as well. We observed that financial literacy and proximity to financial products and services among others are the most significant determinants of savings behaviors of Nigerians. It is fair to say financial awareness and factors that influences it are necessary for the formulation of strategies to increase the inclusion of more members of the society into the formal financial stream.

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Introduction

In this paper, financial inclusion means individual participation in formal financial platform. It is the ownership of an account with a formal financial institution in Nigeria. There are ample evidence showing that increased participation of country's citizen to financial platforms encourages economic growth, employment, societal welfare and sound financial system. The literature also argued that widespread financial inclusion reduces prices and income inequality in an economy, (Ray & Prabu, 2013; Swamy, 2014; Sahay et al., 2015; Mehrotra & Yetman, 2015; Lenka & Bairwa, 2016; Musau, et al., 2018; Vo, et al., 2019; Yin, et al., 2019; Cavoli, et al., 2020 and Orazi, et al., 2020). Financial inclusion is an efficient remedy for poverty reduction as against lack of money (Sodipo, et al., 2021). The closure of the Nigeria economy in 2020-2021 left no choice for household members to access financial resources through the online platform of the formal financial institution. The outcome of the lockdown shows an increase in people's access to financial resources from the comfort of their home. See figure 1. The volume of mobile payments was 8237.34, 16933.95 and 35497.11 in December 2019, 2020 and 2021 respectively; it shows an increase of 51.35% of 2020 over 2019 and 76.99% of 2021 over 2019. In addition, it shows the level at which people have embraced financial innovation to foster access to financial products

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and services. The impetus to this growth could be the level of financial literacy among Nigerians on financial innovation. Theoretically, an increased level of financial literacy increases the willingness of the people to access financial products and services in the formal financial sector, (Ozili, 2020).

Financial literacy is the act of understanding the knowledge, mastering of the required skills, attitudes and creation of the necessary awareness in order to make sound financial decisions that spur the welfare of the society, (Organisation Economic Co-operation and Development (OECD), 2013). The importance of financial literacy is paramount to growth and development through accumulation of savings by households and investments by firms.

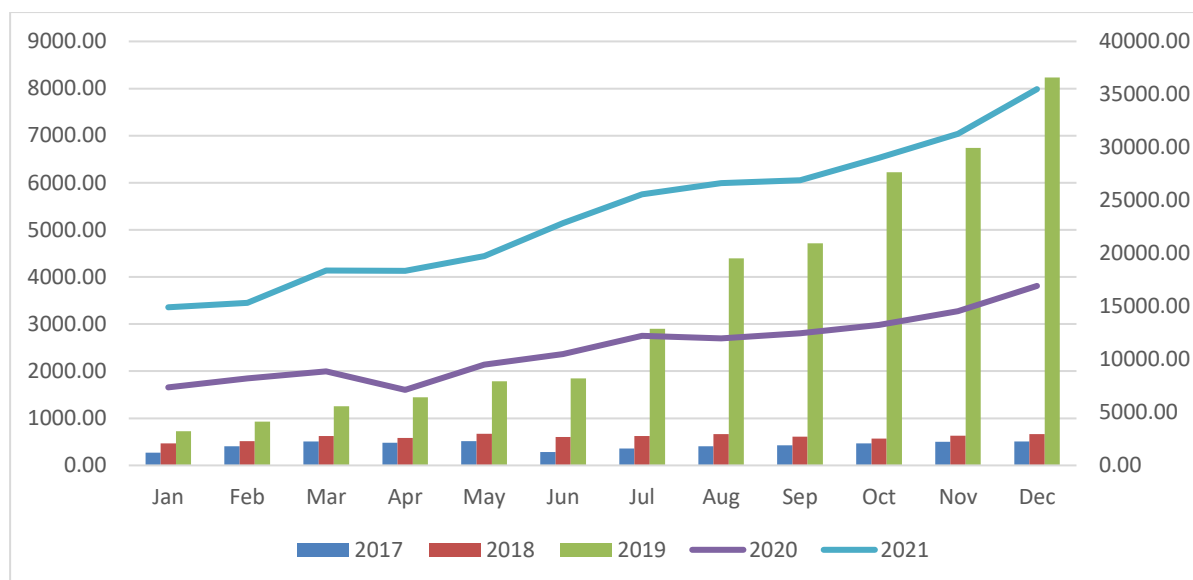


Figure 1: Volume of Mobile Inter-scheme Transactions

Source: Nigeria Inter-Bank Settlement System Plc (NIBSS)

To improve the level of financial literacy and accessibility, various actions and plans were proposed in the local and global scene. For instance, at the global level, in 2008, the OECD countries launched the global initiative to enhance global financial education, in 2010, the G20 countries summit of Seoul, endorse the financial inclusion Action Plan and World Bank (2014) developed financial inclusion strategies. Beside, some countries have initiated financial literacy agencies to improve financial inclusion. The Financial Service Authority established in the United Kingdom in 2000; Financial Consumer agency, in Canada 2001; Financial Literacy and Education Commission, in the United States in 2003; Financial Literacy Foundation in Australia 2005; National Financial Inclusion Strategy, in Nigeria 2012, etc. Despite all these initiatives and programmes on the global and local scene, the level of financial literacy and inclusion especially on the African Continent have remained low. The African Development Bank reported in 2013 that only 23 per cent of adults on the continents are financial included with the formal financial sector. The report shows that Nigeria financial inclusion rates was 30 per cent and was above Ghana by 1 per cent and below South Africa by 24 per cent. Also, the reports by Global Microscope (2020) shows that Nigeria had dropped far below South Africa and Ghana. The report also shows that the direct bank transfer (Targeted Credit Facility) initiated by the central government in Nigeria, 2019 to reduce poverty and foster financial inclusion was criticised for requiring proof of capital and targeting only people with previously verified bank accounts with a balance of less than NGN5,000 which further hinder her rate of financial inclusion. The overtaking of neighboring economies and criticism motivated this study in Nigeria.

Using data from a quarterly survey of households in Nigeria and a questionnaire consisting of 21 sections, this paper investigated the influence of financial literacy, socioeconomic and demographic factors on Nigerians savings behaviours. The paper used the outcome of the survey on savings attitude of household members as a measure of financial inclusion. To make a broader analysis, we examined respondent’s ownership of financial products and services with Bank and Nonbanking financial institutions. The questions of whether the respondents owned any of the banking financial Products with either of the Deposit Money Banks (DMBs) and/or Microfinance Banks; owned account with Non-Banking financial institutions with either of Mortgage bank, Pension administrator and/or the Capital Market and; owned financial service products (Debit/Credit-Cards, Mobile banking Application, Internet Banking Application and Wallets) are considered. We also formulated a score for financial literacy and Financial Products Accessibility or proximity to financial service point. We aggregated financial literacy as the combination of financial education and financial knowledge because both scores tested the understanding of the respondents on financial products, service and decision. The questions on financial education tested the respondent’s familiarity with financial products and services. The questions were asked in three categories (i) Familiarity with the products as well as understanding the terms, (ii) Familiarity with the product but cannot offer any

explanation about it and (iii) not familiar with the product. The spirit is to access an in-depth knowledge of the respondents understanding of the financial products. The questionnaire sampled fifteen financial products on the survey of financial education. We equally tested the knowledge of the respondent towards financial decision-making; the questions examined the respondents' skill or knowledge on money market interest rates, inflation, risk, bond price and mortgage. On accessibility, the questionnaire sampled six payment service centers.

Apart from this section, this paper investigated issues in literature in section two, section three offers the methodology used for analysis while section four discusses the findings together with analysis of the data. Section 5 draws conclusion of the work by referring to the findings of the study.

Literature Review

There are two sets of principles outline to address financial inclusion. The theories of beneficiaries of financial inclusion (public good theory, dissatisfaction theory, vulnerable group theory and system theory of financial inclusion), the delivery theories of financial inclusion (community echelon, public services, special agent, financial literacy and collaborative theories) and the financial delivery funding (public money, private money and intervention money theories). These theories in one way or the other illustrate the 'who and where' questions of financial inclusion funding, delivery and beneficiary. For instance, Bhandari, (2018) has argued that the poor should be at the forefront of financial inclusion beneficiary (vulnerable theory), while Swamy, 2014, Mehrotra and Yetman, (2015), Kim, et al., (2018) and Ozili, (2018) resolved that the entire economy partake on the benefit of financial inclusion (public goods theory). Demirguc-Kunt et al., (2013b), Swamy, (2014) and Ghosh and Vinod, (2017), affirmed that women, young people and the aged person should be the target beneficiary of financial inclusion which is in line with dissatisfaction theory.

On delivery theory of financial inclusion, there are debates pointing to who needs the delivery and enlightenment of financial products and services, for example, Aggarwal and Klapper, (2013); Staschen and Nelson, (2013); Chibba, (2009) insisted that financial products and services delivery should be a public cost (public service and community echelon theories). Gabor and Brooks, (2017) and Ozili, (2018) positioned that such product delivery should be a special agent responsibility. On the other hand, Arun and Kamath, (2015) and Pearce, (2011) believed that financial products delivery should be a collaborative project between the private and public sectors. On the funding of financial products, Marshall, (2004) believe that the cost of delivery should rest on the government through taxpayer's money. Mohiuddin, (2015) insists that financial products delivery fund should be privately fund as the private sector contributed widely to the growth and development of the economy. Dashi et al., (2013) and Cobb et al., (2016) believed that financial products program should be a special intervention project between the public and private sectors, in other to reduce the burden, hindrance of one sector taking the responsibility of creating financial products awareness and delivery. These ideas had been echo by various empirical literature.

There are empirical evidence showing that financial literacy is the main factor driving financial inclusion or people savings behaviours around the globe. In a cross-country analysis Morgan and Long, (2020), shows financial literacy significantly influenced the people of Asian community's savings behaviours. In addition, it shows that the influence of financial literacy on savings behaviours varies with the different measures of financial inclusion used, and those with sound financial literacy scores saves in both the formal and informal financial sectors than persons with low financial literacy scores irrespective of the level of income and education of the individuals. In a single country case, Kandari, Bahuguna, and Salgotra, (2021), Akileng, Lawino and Nzibonera, (2018), Abel, Mutandwa and Roux, (2018). Kodongo, (2018), and Mhlanga & Dunga, (2020) demonstrated that financial literacy is the major factor that influences financial decision making. Adetunji & David-West, (2019), argued with 22000 respondents that financial literacy and income significantly influence saving behaviours of Nigerians in a formal and informal financial institution. In addition, they demonstrated that age group significantly determined financial inclusion but older people tend to save more or are financially included than younger persons. While Akileng, Lawino, & Nzibonera, (2018) still on financial literacy, show that financial innovation is a major driver of financial inclusion among the households in Uganda. There are also scholars whose argument support access to financial products and financial inclusion, Ndanshau & Njau, (2021), Mhlanga & Dunga, (2020), Nwidobie, (2019) and Abel, Mutandwa, & Roux, (2018). These studies shows that the main determinants of financial inclusions are greater proximity to financial service point (financial intermediaries). Looking at the role of theory, Maity & Sahu, (2020), investigates the efficiency of public sector bank on financial inclusion. By using a nonparametric method of efficiency measurement or Decision-Making Unit, they observed that public sector banks performed differently on the overall average efficiency of financial inclusion.

Sound financial decision-making had correlate better with socioeconomic and demographic factors such as education, age, wealth/income, marital status, gender, location/environment, occupation, and social relationship. In supporting the socioeconomic and demographic factors relationship to financial inclusion, some scholars (Lusardi & Mitchell, 2011; Atkinson, 2012; Allen, Demirguc-Kunt, Klapper, & Peria, 2016; Asuming, Osei-Agyei, & Mohammed, 2018; Esquivias, Sethi, Ramandha, & Jayanti, 2020 and Ndanshau & Njau, 2021) put forward that low-income earners are more prone to low financial decision-making than high-income earners. Esquivias, et al., (2020), observed a significant gap between financial inclusion dynamics of South Asian countries (Vietnam, Indonesia and Philippines). They argued that the drivers of this gap are gender and age disparity, income and educational disparity, social location, and job status. On the side of gender disparity, they observed that Females have a higher probability of being financially included than males. Females are more likely to hold savings accounts, to participate in informal finance institutions because they perceived fewer barriers to formal banking. Their conclusion is not the same with the observation of Kandari, Bahuguna,

& Salgotra, (2021), Kim, Yu, & Hassan, (2020) and Adetunji & David-West, (2019) whose study argued that being a female shows higher financial exclusion than being a male. However, on literacy level, Agarwal et al., (2009); Hastings, and Mitchell (2011); Atkinson and Messy (2012); OECD (2013); Scheresberg (2013) mentioned that men are more financially literate than their women counterpart is, also men’s financial literacy increases faster than that of women.

Others (Amadeu, 2009; Lusardi and Mitchell 2011; Asuming, Osei-Agyei, & Mohammed, 2018) have identified that higher education increases the chance of being financially included than those with low education background. Dew (2008); Brown and Garf (2013) stated that married individuals have higher financial literacy than singles. On average, those who aged between 30 and 40years are associated with higher financial literacy level than younger and elderly individuals (see Agarwal et al., 2009; Lusardi and Mitchell, 2011; Atkinson and Messy, 2012; OECD, 2013 and Scheresberg, 2013). Kim & Garman (2004) stressed that individuals with longer labour experience have significantly high financial literacy due to familiarity with economic and financial subjects while the unskilled and unemployed have lower financial literacy that affects their saving behaviours.

Research and Methodology

This paper examined the factors that influence Nigerians saving behaviours. The data collected was online from the File Transfer Protocol (FTP) server in October 2021 on the survey of Households Finances and Consumption in Nigeria. A nationwide collaborative survey by staff of National Bureau of Statistics, National Population Commission and State Statistics Offices of the Central Bank of Nigeria. The survey investigated 31,228 households’ members of aged 0 to 140. Nineteen thousand, one hundred and fifty-eight (19158), households’ members of aged 15 to 70 were selected for this paper because they are the active labour force of the sample. The questionnaire had 21 sections. This paper is only concerned with five sections, Demographics, Education of Households member, income of household members, employments of household members and Financial Inclusion Survey.

Model Specification

Following the financial literacy and collaborative theory, the determinants of financial inclusion (or savings behaviour) in Nigeria is model as;

$$\Pr(Y_i = 1 | X_i) = g(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_n X_n) \quad (1)$$

$$Y_i = \alpha_0 + \alpha_1 FLS_i + \alpha_2 FAP_i + \alpha_3 X_i + \mu_i \quad (2)$$

Equation (1) defines the conditional probabilities of $Y_i=1$ (i.e. Y occurring) given X.

$\beta_0, \beta_1, \beta_2, \dots, \beta_n$, are the parameter to be estimated in the models

For a more compact representation:

$$\Pr(Y = 1 | X) = g(X\beta) \quad (3)$$

In the Logit form, the model can be express $\Lambda(X\beta)$

Or

$$\Lambda(X\beta) = \frac{\exp(X\beta)}{1 + \exp(X\beta)} \quad (4)$$

The equation above is the cumulative (logistic) distribution function (cdf) and it ranges between zero and one for all values of $(X\beta)$.

The non-linearity of $\Lambda(X\beta)$ may have violated the use of the Ordinary Least Square (OLS) estimator but the sample size are large and dismissed any possibility of heteroscedasticity, hence, the model are estimated with the OLS and the Maximum Likelihood estimator.

The Odds Ratio is the probability of

$Y=1$ to the probability that $Y=0$.

It is express as

$$\exp(X\beta) = \frac{\Lambda(X\beta)}{1 - \Lambda(X\beta)} \quad (5)$$

Modern Statistical Packages reports the coefficients of equations (5).

Mathematical Illustration of the coefficients determination

The paper is interested in how the saving behaviour of Nigerians are determined,

Such that the response variable is binary (Yes/No).

The model is express as follows:

$$Y_{bi} = \beta_{b0} + \beta_{b1}\overline{FLS}_i + \beta_{b2}\overline{FAP}_i + \beta_{b3}\overline{X}_i \quad (6)$$

Equation (6) shows whether Nigerians own either of Savings, Current, Loan and Domiciliary accounts with or Deposit Money Banks (DMBs) or of Microfinance banks.

$$Y_{ni} = \beta_{n0} + \beta_{n1}\overline{FLS}_i + \beta_{n2}\overline{FAP}_i + \beta_{n3}\overline{X}_i \quad (7)$$

Equation (7) shows whether Nigerians own either of Mortgage Products, Insurance Products, Non Interest, Pension Products, and the Capital Market, Cryptocurrency with a non-banking financial institutions.

$$Y_{si} = \beta_{s0} + \beta_{s1}\overline{FLS}_i + \beta_{s2}\overline{FAP}_i + \beta_{s3}\overline{X}_i \quad (8)$$

Equation (8) shows whether Nigerians own any of financial service products such as Debit-Card, Credits-Card, and Mobile Banking Application, Internet Banking Application and Wallets App.

Where;

\overline{FLS}_i = the Mean of financial Literacy Score

\overline{FAP}_i = The Mean of financaill product accessibility score

\overline{X}_i = the Mean Age of the Respondents, Marital Status, Educational Level, Income Group, Primary Employment, Area of Employment, Social Residential Area and Geographical Residential Area in the Country.

Y_i is the outcome of survey on saving attitude of the household members. The respondents are assign one if they own any of the listed bank account, Non-banking financial products and financial service products otherwise zero. Y_{bi} Represent whether an individual owned any of the banking financial product, Non-Banking financial Products (Y_{ni}) and financial Service product (Y_{si}).

X_i is the socioeconomic and demographic factor variables. It includes respondent's age, income range, marital status and gender. Others are level of formal education, location type, types of employments and Geopolitical zone. We generated a series of dummy for the categorical variables in the models. Pre-school and primary school education was regroup into primary education, Junior-Secondary and Secondary schools were regrouped into secondary education, Post primary specialized training or certificate and Post-secondary specialized training or certificate were regrouped into Specialized education. Other members of the level of formal education group are in figure 1 and primary education are the reference group. The income group is in figure 1 and respondents with income below 30,000 naira are use as the reference group. Other reference groups are male for gender, married for marital status, urban for location type, North Central for geopolitical zone and Government workers for employment type.

FLS_i is the index of Financial Literacy Score and $FPAS_i$ represent Financial Products Accessibility Score. FES_i is the combination of Financial Education Score and Financial Knowledge Scores, (i.e., $FLS_i = FES_i + FKS_i$). The questions on financial education were asked to know the respondents familiarity with financial products. The questions were asked in three categories (i) Familiar with the products and can explained what the term means; (ii) Familiar with the product but cannot explained what it means and; (iii) not familiar with the product. The essence is to access an in-depth knowledge of the respondents in understanding the meaning of the financial product. To obtain the financial education score we assigned 1 to those who are Familiar with the products and can explained what the term means, 0.5 to those who are Familiar with the products but cannot explained what it means and zero (0) to those who are not familiar with the products. The study sampled fifteen financial products on the survey of financial education score, thus, the highest score is 15 and the lowest is zero. We generated a score for the access and or availability of payments service points to household members. We computed the score by assigning 1, if the accessibility of a payment services centre is a walking distance, 0.5 if the respondents must take a bike or vehicle and zero if there is none. The study sampled six payment service centres, thus, the highest score is six and the lowest is zero. We tested the knowledge of the respondents to identify their financial decision-making skill on money market interest rates, inflation, risk, Bond price and mortgage. The computation of the financial knowledge score was on the number of correct answers; thus, each respondent could attain a maximum financial knowledge score of five. We address the issues of financial literacy with financial education score and financial knowledge because both scores tested the understanding of the respondents on financial products. The study estimated Equation (2) with the probit and the linear probability regressions.

To ascertained reliability and unbiased estimate of the probit models, the assumptions below are tested. The assumption includes but not limited to;

- i. The models are correctly specify or Hat-Test: The test instruments are the hat-statistics and hat-square-statistics. The models are correctly specify if the hat-statistics are significant and the hat-square-statistics are insignificant.
- ii. The models are better fit or Goodness-of-fit test: The instruments are Likelihood Ratio (LR), Pseudo-R² and Hosmer & Lemeshow's (HL) goodness-of-fit test. The coefficients of the Likelihood Ratio (LR) and Pseudo-R² are default coefficients

from the regression models. The models are better fits if the HL coefficients are statistically insignificant, LR are significant and the size of the Pseudo-R-Square are large enough.

Findings

Figure 2 & 3 and table 1&2 shows the demographic and socioeconomic characteristics of Nigerians. It shows that the distribution of the questionnaires among genders was 50.7 per cent of the female and 49.3 per cent of male. Almost half of the respondents are below 30 years of age. The lowest age group is 60years and above. The computation of marital status is unbalance, 63.8 per cent of the respondents either are currently in marriage, separated, divorced or widowed, while those that had never been married are 36.2 per cent. About 46.8 per cent had completed either junior/senior secondary school education and only 0.9 percent had completed a post-graduate program. Over half the respondents created jobs for themselves (self-employed). Others either works for government institutions or privately owned organizations, while 15.5 and 9.9 per cent are students and unemployed, respectively. We also observed that 60 percent of the respondents are from the northern part of Nigeria and 73 per cent are urban dwellers.

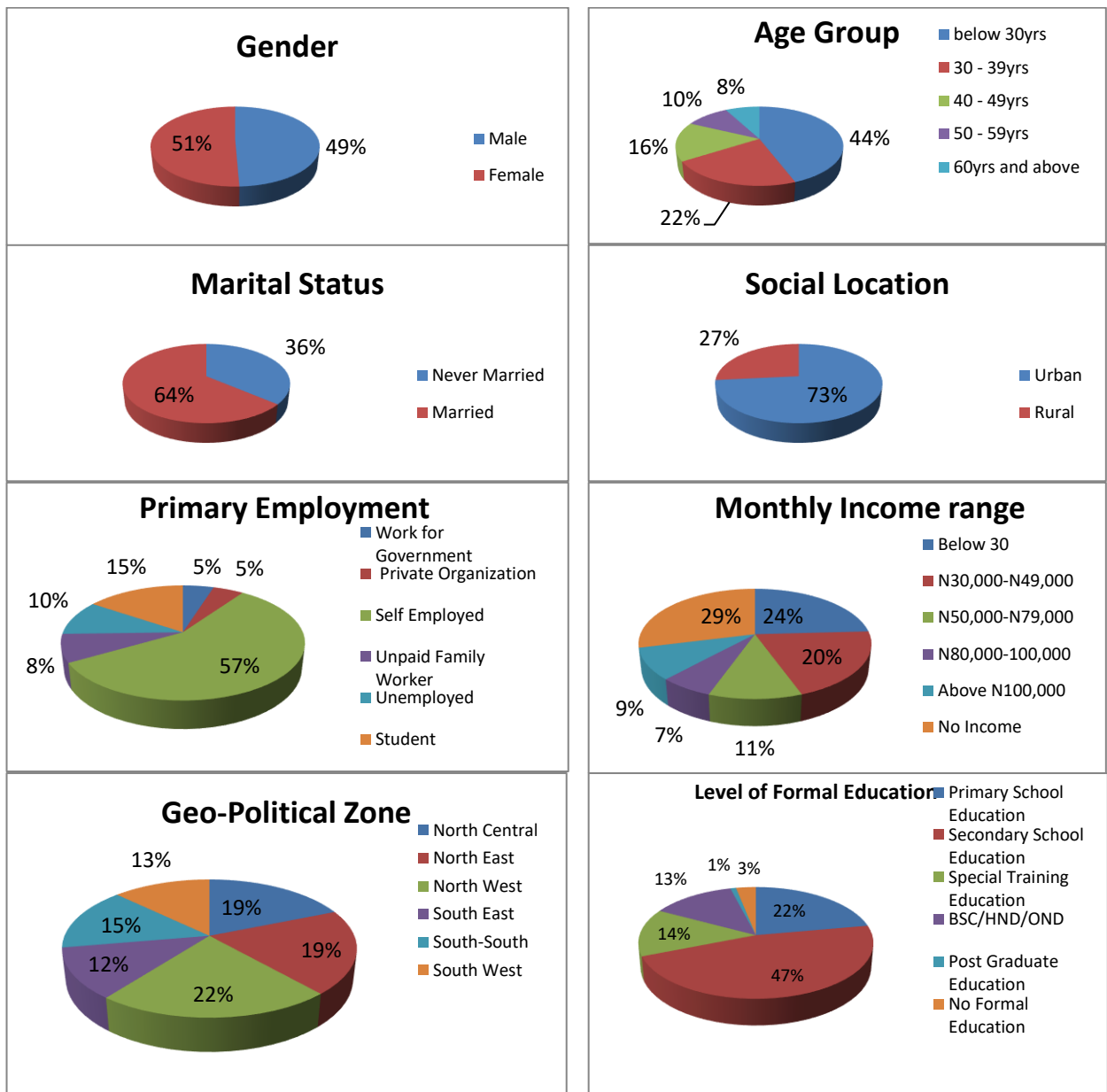


Figure 2: Distribution of Sample

Source: Author's Computation

Table 1 shows the cross analysis of gender, social-location and marital status within geopolitical zone. We observed a balance distribution of the questionnaires among gender within the zone. However, the distribution skewed to the urban, with South-West and North-Central having the highest and lowest distributions respectively. The table equally shows that more of the respondents were married within zone, South-South champion the highest participation of unmarried or single persons and South-West the highest of married persons. Table 2 shows distribution of gender, location and marital status within income range and figure 3 shows the distribution of income among geopolitical zone.

Table 1: Cross Analysis of Zone with Gender, Location and Marital Status

Zone	Gender (%)		Social Location (%)		Marital Status (%)	
	Male	Female	Urban	Rural	Never Married	Married
North Central	49.99	50.01	68.86	31.14	33.78	66.22
North East	50.83	49.17	78.49	21.51	34.60	65.40
North West	50.98	49.02	69.91	30.09	39.49	60.51
South East	46.92	53.08	75.40	24.60	36.40	63.60
South –South	48.04	51.96	74.30	25.70	42.76	57.24
South West	47.02	52.98	75.80	24.20	28.78	71.22
Total	9452	9706	14074	5084	6936	12222

Source: Author’s Computation

Table 2: Cross Analysis of income with Gender, Location and Marital Status

Monthly Income	Gender (%)		Social Location (%)		Marital Status (%)	
	Male	Female	Urban	Rural	Never Married	Married
Below N30,000	32.74	67.26	71.05	28.95	32.74	67.26
N30,000-N49,000	53.67	46.33	72.51	27.49	25.13	74.87
N50,000-N79,000	65.29	34.71	71.74	28.26	19.77	80.23
N80,000-N100,000	72.67	27.33	72.91	27.09	13.34	86.66
Above N100,0000	77.37	22.63	75.51	24.49	10.44	89.56
No Income	39.96	60.04	76.27	23.73	66.43	33.57
Total	9452	9706	14074	5084	6936	12222

Source: Author’s Computation

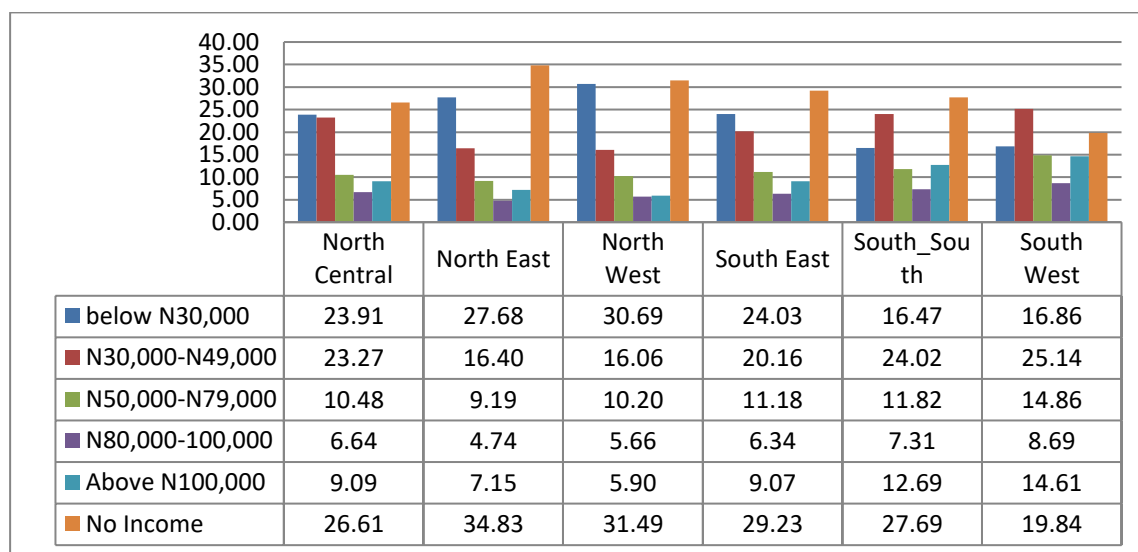


Figure 3: Cross Analysis of income with Geo-Political Zone. The Values are in Percentages

Source: Author’s Computation

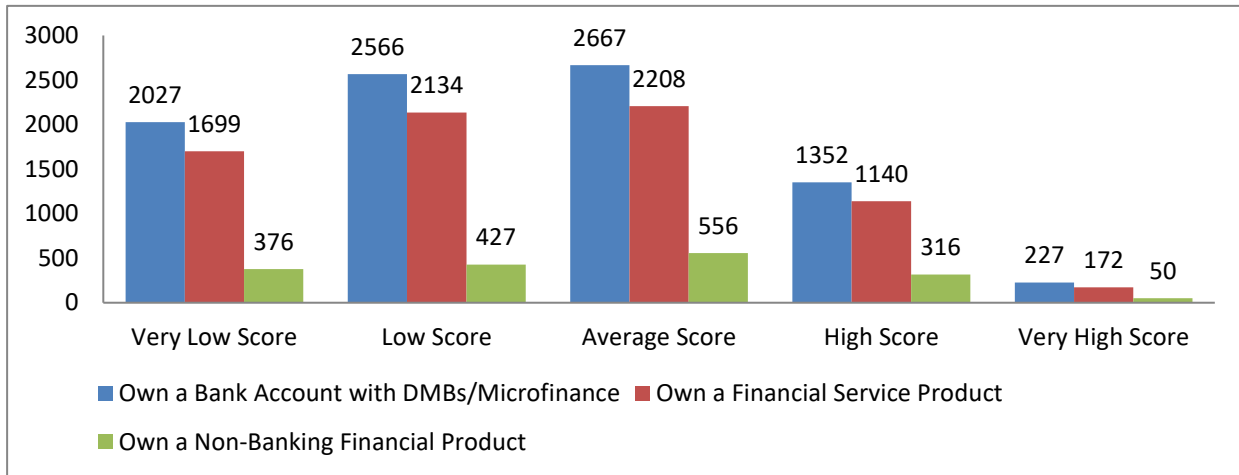


Figure 4: Ownership of Financial Products and Financial Literacy Score by Group

Source: Author's Computation

Table 3: Financial Literacy Scores and Ownership of financial Products Groups (Values are in Percentages)

Financial Literacy Score	Own a Banking Financial Product	Own a Banking Service Product	Own a Non-Banking Financial Product
Very Low Score	10.58	8.87	1.96
Low Score	13.39	11.14	2.23
Average Score	13.92	11.53	2.90
High Score	7.06	5.95	1.65
Very High Score	1.18	0.90	0.26
Total	46.14	38.38	9.00

Source: Author's Computation

For the sake of the analysis on figure 4 and table 3, we define financial literacy score as the summation of financial education score and financial knowledge score. The highest score is 20, and the lowest is zero. We divided the score of each respondent into five groups. The groups are, very low score (fewer than or equal 4.5), Low score (between 5 and 8.5), Average score (between 9 and 12.5), High score (between 13 and 16.5) and Very High score (between 17 and 20). Table 3 shows that only 9% of the respondents own either of the Non-Banking Financial Products (Mortgage, Insurance Non-Interest, Pension, Capital Market and Cryptocurrency). Whereas, 46.14 per cent own either of the banking financial products (Saving Account, Current Account, Loan Account and Domiciliary account) with Deposit Money Banks (DMBs) or Microfinance Bank. Figure4 shows that there is a close relationship of owning a banking financial product and owning a financial service product.

Table 4: Cross-Tabulation of Geographical Location and Financial Inclusion in Nigeria

	Banking Financial Institution		Non-Banking Institution	Financial	Financial Service Product	
	No	Yes	No	Yes	No	Yes
North Central	1907	1690	3336	261	2208	1389
	53.0%	47.0%	92.7%	7.3%	61.4%	38.6%
North East	2473	1302	3581	194	2616	1159
	65.5%	34.5%	94.9%	5.1%	69.3%	30.7%
North West	2806	1398	4000	204	3102	1102
	66.7%	33.3%	95.1%	4.9%	73.8%	26.2%
South East	971	1301	1913	359	1263	1009
	42.7%	57.3%	84.2%	15.8%	55.6%	44.4%
South-South	1138	1722	2565	295	1433	1427
	39.8%	60.2%	89.7%	10.3%	50.1%	49.9%
South West	1024	1426	2038	412	1183	1267
	41.8%	58.2%	83.2%	16.8%	48.3%	51.7%
Total	11805	7353	17433	1725	11805	7353
	61.6%	38.4%	91.0%	9.0%	61.6%	38.4%

Source: Author's Computation

Table 5: Cross-Tabulation of Social Location and Financial Inclusion in Nigeria

	Banking Financial Institution		Non-Banking Institution	Financial	Financial Service Product	
	No	Yes	No	Yes	No	Yes
Urban	6919	7155	12633	1441	8107	5967
	49.2%	50.8%	89.8%	10.2%	57.6%	42.4%
Rural	3400	1684	4800	284	3698	1386
	66.9%	33.1%	94.4%	5.6%	72.7%	27.3%
Total	10319	8839	17433	1725	11805	7353
	53.9%	46.1%	91.0%	9.0%	61.6%	38.4%

Source: Author's Computation

Table 4 is the distribution of the measures of financial inclusions in the six geopolitical zones in Nigeria and table 5 is the distribution of the measures of financial inclusion in the urban and rural areas. In table 5, North-West is the region that had persons with lowest (33.3%) bank account with banking financial institution and South-South region is the highest with 60.2%. North-West is the region that had persons with lowest (4.7%) accounts with Non-Banking Financial institution and South-West region is the highest with 16.8%. North-West is the region that had persons with lowest use of financial service products (26.2%) and South-West have the highest users of 51.7%.

In the urban area, 50.8% of the dwellers have accounts with either of DMBs or Microfinance banks, while only 33.1% of rural dwellers had an account with the banking financial institution. These statistics shows that the increased in the accessibility of financial products in the country is not encompassing.

The models on table 6 were test to see whether they satisfy the assumptions of the Qualitative Response Model (QRM) stated in section 3 of this paper. The summary result of the tests is on table 6.

Table 6: Summary of Diagnostic Test

Hypothesis Test	Test-stat	Model_1	Model_2	Model_3	Remark
The models are correctly Specified	Hat	1.0072***	0.8694***	0.9826***	Accept
	Hat-sq.	0.0098	0.0450	0.0484	
the overall model statistically significant or have Goodness-of-fit test (P-Values)	LR	5139.35***	2096***	6426.56***	Accept
	HL	11.75 (0.1626)	10.28 (0.1437)	12.10 (0.0892)	
McFadden R ² or	Pseudo R ²	0.3294	0.2504	0.2519	Reject

Source: Researcher Computation. Note: *, ** and *** indicates significance at 10%, 5% and 1% respectively. The hypothesis tested are in null form.

Results on table 6 shows that the ‘Hat-Statistics’ is statistically significant and ‘hat-square’ is not. It implies that the models are correctly specified. It also shows that the LR statistic is significant, and the chi-statistic of HL is insignificant implying that the models are better fit. Overall, the validity of the estimated models is justifiable by the diagnostic results. However, McFadden Pseudo R-square suggested a weaker goodness-of-fit of the models. Nevertheless, Frost, (2013) recommended that the prediction of human behaviour typically has R-squared values lower than 50% because human behaviour is simply harder to predict than, say, physical processes.

The summary of the estimated coefficients on the determinants of saving behaviour of Nigerian’s is on table 7 The table has three models, model_1, Model_2 and model_3, which are models for the decision of Nigerians to own any of banking financial products, non-banking financial products and financial service products respectively. The equation for linear probability regression is label OLS and the equation for the discrete regression is label Prob.

The result shows that financial knowledge (Ability to analyse money market interest rates, inflation, risk, Bond price and mortgage instruments) spurs Nigerians to own an account with banking and non-banking financial institutions as well as financial service products. This implies that an increase in financial knowledge influences positive saving attitude of Nigerians. A one percent increase in financial knowledge increases the likelihood of financial inclusion by 4.5 to 6.6 for the products of banking financial institution, 1.3 for non-banking financial institution products and 1.3 to 2.8 chances of having either of Debit/Credit-Cards, Mobile banking Application, Internet Banking Application and Wallets. Thus, having a sound financial knowledge increases the chance of having all three financial inclusion products sampled.

Financial education score was positive and statistically significant to drive financial inclusion in Nigeria. The higher the familiarity of the respondents to financial products the lower their chances of financial exclusion. The result shows that a percentage increase in respondent familiarity with financial products will increase their likelihood of owning an account with a banking financial institution by 4.1 to 5.5, with non-banking financial institution by 1.7 to 2.2 and owning financial service products by 3.4 to 4.2. The empirical findings are statistically significant and corroborated with the findings of Adetunji & David-West, (2019) in nigeria, Morgan & Long, (2020) in Asian countries, Kandari, Bahuguna, & Salgotra, (2021) in India, Akileng, Lawino, & Nzibonera, (2018) in Uganda, Kodongo, (2018) in Kenya, Abel, Mutandwa, & Roux, (2018) and Mhlanga & Dunga, (2020) in Zimbabwe. These shows financial literacy (financial knowledge and education) is a major factor for driving financial inclusion around the globe. Although, we observed similarity with other empirical literature, our findings advance this literature by using at least three indicators of financial inclusion as against using only banking financial institution instruments, and the breakdown of financial literacy into two components give a better understanding of the variable that have a stronger impact on financial inclusion. This finding is also a frontier by looking at respondent’s willingness to hold any of financial service products.

Table 7: Models of the Determinants of Financial Inclusion in Nigeria

Models		Model_1		Model_2		Model_3	
		OLS	Prob.	OLS	Prob.	OLS	Prob.
Financial Score	Knowledge	0.0451**	0.0662***	0.0129**	0.0128***	0.0157**	0.0284***
		(0.0122)	(0.0179)	(0.0122)	(0.0177)	(0.0114)	(0.0199)
Financial Education Score		0.0412***	0.0545***	0.0166***	0.0219***	0.0415***	0.0342***
		(0.0016)	(0.0063)	(0.0017)	(0.0060)	(0.0011)	(0.0030)
Financial Accessibility	Products	0.0191***	0.0569***	-0.0239**	-0.0804**	0.0649***	0.0881***
		(0.0046)	(0.0174)	(0.0117)	(0.0406)	(0.0031)	(0.0222)
Age		0.0337***	0.0132***	0.0339***	0.0142***	0.0216***	0.0155***
		(0.0003)	(0.0013)	(0.0003)	(0.0012)	(0.0003)	(0.0016)
Being A female		-0.0750**	-0.2342***	-0.0704***	-0.2252***	-0.0129***	-0.1344***
		(0.0066)	(0.0242)	(0.0068)	(0.0233)	(0.0045)	(0.0323)
Never Married		-0.0329	-0.0153***	-0.0289**	-0.1158***	-0.0169**	-0.0279***
		(0.0089)	(0.0336)	(0.0092)	(0.0322)	(0.0060)	(0.0452)
Education Level							
Secondary Education		0.2295***	0.7764***	0.1857***	0.6526***	0.2437***	0.2473***
		(0.0079)	(0.0297)	(0.0077)	(0.0295)	(0.0046)	(0.0425)
Special Training/Skills		0.0929***	0.3352***	0.1000***	0.3790***	0.0087***	0.0855***
		(0.0099)	(0.0382)	(0.0097)	(0.0376)	(0.0053)	(0.0583)
Graduate		0.4993***	2.0236***	0.4600***	1.4979***	0.0745***	0.4592***
		(0.0094)	(0.0510)	(0.0109)	(0.4122)	(0.0037)	(0.0506)
Post-Graduates		0.3949***	1.6749***	0.3735***	1.2227***	0.1258***	0.5390***
		(0.0203)	(0.2015)	(0.0289)	(0.1274)	(0.0343)	(0.1162)
No Formal Education		0.0795**	-0.2208***	-0.0438**	-0.1356***	-0.0235**	-0.5639***
		(0.0172)	(0.0737)	(0.0176)	(0.0717)	(0.0062)	(0.1611)
Income Range							
N30,000-N49,000		0.1061***	0.3233***	0.0882***	0.2680***	0.0021***	0.0697***
		(0.0100)	(0.0337)	(0.0102)	(0.0327)	(0.0058)	(0.0509)
N50,000-N79,000		0.1703***	0.5554***	0.1367***	0.4029***	0.0549***	0.3770***
		(0.0113)	(0.0401)	(0.0120)	(0.0384)	(0.0083)	(0.0520)
N80,000-N100,000		0.1928***	0.6684***	0.1649***	0.4967***	0.0684***	0.4150***
		(0.0134)	(0.0515)	(0.01467)	(0.0481)	(0.0112)	(0.0598)
Above N100,0000		0.2073***	0.7926***	0.1830***	0.5688***	0.1226***	0.5865***
		(0.0121)	(0.0492)	(0.0135)	(0.0448)	(0.0108)	(0.0532)
No Income		0.0031***	-0.1069***	0.0167***	0.0005***	0.0476***	0.4862***
		(0.0172)	(0.0802)	(0.0171)	(0.0760)	(0.0118)	(0.1193)
Employment							
Work for Organization	Private	0.0153***	1.2665***	0.0091***	-0.0674***	0.0978***	0.2206***
		(0.0137)	(0.1842)	(0.0194)	(0.0817)	(0.0214)	(0.0673)
Self-Employed		0.1259***	1.8735***	0.1205***	0.4458***	0.2238***	0.7370***
		(0.0099)	(0.1742)	(0.0149)	(0.0651)	(0.0171)	(0.0548)

Unpaid Family Worker	-0.2684*** (0.0179)	-2.3409*** (0.1894)	-0.2245*** (0.0209)	-0.8669*** (0.0902)	-0.2376*** (0.0196)	-1.0900*** (0.1316)
Unemployed	-0.1218*** (0.0200)	-1.8651*** (0.1867)	-0.0958*** (0.0230)	-0.3832*** (0.0909)	-0.1406*** (0.0221)	-0.1444*** (0.1012)
Student	0.1367*** (0.0205)	1.8469*** (0.1861)	0.0990*** (0.0233)	0.3365*** (0.0901)	0.1806*** (0.0208)	0.4925*** (0.1013)
Area of Employment						
Mining & Querying	-0.0293*** (0.0611)	-0.3097*** (0.2760)	-0.0308*** (0.0599)	-0.1531*** (0.2200)	0.5045*** (0.0559)	0.2827*** (0.2626)
Manufacturing	0.1443*** (0.0213)	0.4880*** (0.0765)	0.1695*** (0.0225)	0.5323*** (0.7530)	0.0452*** (0.0139)	0.2390*** (0.1027)
Services Sector	0.1698*** (0.0100)	0.5549*** (0.0352)	0.1771*** (0.0102)	0.5375*** (0.0341)	0.0494*** (0.0064)	0.3069*** (0.0500)
Other Services	0.1042*** (0.0100)	0.3297*** (0.0361)	0.0966*** (0.0101)	0.2960*** (0.0351)	0.0115*** (0.0058)	0.2455*** (0.0535)
Not-Working	-0.0349*** (0.0217)	-0.0227*** (0.0936)	-0.0426*** (0.0212)	-0.1480*** (0.0906)	-0.0760*** (0.0217)	-0.7506*** (0.1401)
Living In the Rural Area	-0.0956*** (0.0068)	-0.3472*** (0.0256)	-0.0752*** (0.0067)	-0.2726*** (0.0247)	-0.0213*** (0.0040)	-0.2282*** (0.0362)
Zone						
North East	-0.0343*** (0.0096)	-0.1097*** (0.0359)	-0.0025*** (0.0097)	-0.0021*** (0.0345)	-0.0017*** (0.0056)	-0.0440*** (0.0539)
North West	-0.0746*** (0.0091)	-0.2662*** (0.0354)	-0.0727*** (0.0093)	-0.2736*** (0.0347)	-0.0094*** (0.0053)	-0.1574*** (0.0524)
South East	0.0836*** (0.0111)	0.2899*** (0.0401)	0.0406*** (0.0117)	0.1242*** (0.0392)	0.0836*** (0.0083)	0.5257*** (0.0500)
South –South	0.0838*** (0.0105)	0.2978*** (0.0379)	0.0747*** (0.0109)	0.2499*** (0.0360)	0.0217*** (0.0069)	0.1816*** (0.0513)
South West	0.0396*** (0.0109)	0.1285*** (0.0390)	0.0738*** (0.0112)	0.2281*** (0.0371)	0.0832*** (0.0080)	0.4846*** (0.0483)
R ² /Pseudo R ²	0.3643	0.3294	0.2963	0.2504	0.3643	0.2519
Observations	19158	19158	19158	19158	19158	19158

Source: Researcher Computation. Note. *, ** and *** indicates significance at 10%, 5% and 1% respectively

With the increased in mobile banking, we included the accessibility of respondents to financial service points to the models. The results show that proximity to financial service point accelerates the ownership of an account with banking financial institution in Nigeria. We observed that, the closer the respondents is to payment centre, the more possibility of being financially included and usage of financial service products, especially, the debit cards. In model 1 a percentage closer Nigerian get to point of Sales (PoS), ATM, Bank Branches, etc., the likelihood of opening a bank account with either of DMBs or Microfinance Banks increase by 1.9 to 5.7, the likelihood of using any of banking service products increase by 6.5 to 8.8. However, we observed that the relationship between proximity to financial service point negate owning account with non-banking financial institution in Nigeria. Our results is in line with Ndanshau & Njau, (2021), Mhlanga & Dunga, (2020), Nwidobie, (2019) and Abel, Mutandwa, & Roux, (2018), whose studies shows that greater proximity to service point or financial intermediaries increases the chances of financial inclusion.

Demographic characteristics of the respondents also have implications on the individual savings behaviours. We observed that age positively influences financial inclusion; the older the individual become the likelihood for them to own an account, but the likelihood is more favourable for owning non-banking financial products (Mortgage Products, Insurance Products, Non Interest, Pension Products, and the Capital Market). Being a female discourage financial inclusion or saving in the formal financial institution of

Nigeria, with a higher probability to non-banking products. Being single also discourage financial inclusion or having a poor saving attitude in the formal financial institution. Having no form of education discourage saving attitudes of Nigerian. The probability is more with the ability to use financial service products. We also observed that living in the rural area and living in the northern part of Nigeria negate financial inclusion or discourage saving in the formal financial institutions. Other factors that negate saving behaviour or financial inclusion are not-working, selected area of employment, unemployed, unpaid family workers and not earning income.

Conclusion

Financial Inclusion will remain a hot button issue, as it is a catalyst for economic growth and sustainable development, more so for nation like Nigeria. Financial inclusion has been identified as an efficient remedy for the reduction of poverty and knowing the factors that affect or influence it, is critical. Several factors have been identified as key factors that influence or shape financial inclusion. Out of the various factors identified, financial literacy tops the list. The financial literacy of the population, access or proximity to financial service point, gender, location, education, and employment status are key factors that influence how financially included members of a society turn out to be. It is fair to say financial inclusion and factors that influence it are necessary for the formulation of a strategy to increase the inclusion of more members of the society. In future, it is hope that the findings of this paper will go a long way in helping to shape policies that will deepen the inclusion of a larger share of the population. At the end of the day, the financially excluded members of the population have a detrimental effect on the growth of nations and as such, it is imperative that more work goes into understanding the dynamics at play that hinder or boost financial inclusion, as ultimately this will greatly improve the economy.

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