Socio-Economic Determinants of Poverty in Selected States in Nigeria: Evidence from Data

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Abstract

This study adopted ex post facto research design and panel data econometrics techniques to analyze the socio-economic determinants of poverty as evidenced in 23 selected states in Nigeria. Employing Secondary data from 2013 to 2022, the study specifically examined the effects of Health and Education (Social Variables), Per Capita Income and Food Security (Economic variables), Bank Credit to Beneficiaries (BCBS) and Unemployment (Financial Inclusion Variables), on Poverty using Panel EGLS. The empirical evidence revealed a vicious cycle of poverty among households in the selected states. The coefficient (0.1859) for one year lagged of the dependent variable (POV-1) added as an independent variable in the model was positive and significant, implying that the vicious circle of poverty perpetuates social and economic pitfalls that affect households, communities and governments. Health, education, food security, per capita income, access to improved drinking water/sanitation (AIDWAS), Use of Computer/Internet (UCIFI12M) and, BCBS were negative and significance on poverty while Unemployment was positive and significant. The study recommended among others that states government should collaborate to provide AIDWAS, ensure Universal Health Coverage by providing essential healthcare services without financial hardship and strive to substantially increase the total government expenditure on Education as a percentage of GDP.

Keywords: *Poverty Reduction, Unemployment, Health, Education, Food Security, Access*

Introduction

Poverty in Nigeria is wide spreading with food inflation being seriously affecting many households in the Nigerian States. Data from National Bureau of Statistics (NBS, 2019), suggests that 40.1% of Nigeria's population was poor. By implication, more than 82.9 million persons in Nigeria were estimated to be in poverty by national standard in 2018/2019, indicating that every 4 out of 10 persons in the country lived below a real per capita expenditure of**#**137,430 ($376) per annum in the same period. And, a Multidimensional Poverty Index (MPI) of 0.257 reported by NBS (2022) highlighted that 133 million people, that is, 63% of the country's population suffered more than 25% of the total hardship.

According toAkpan and Akpan (2024), poverty in Nigeria was exacerbated by poor reforms and inadequate government expenditure on education and health. Health and education are two critical aspects of human capital that enhance workers capability and increase output of goods and services. With positive health and education outcomes, individuals and families can participate actively in economic activities and attend some levels of economic security that makes poor households completely free from poverty. As opined, adequate financing of education and health in the country will lead to higher productivity and more income, delay in retirement of workers as a result of overall good health, more investment in education and training by the citizens and, higher capacity to save and invest with the expectation to live much longer.

Also, several households in Nigeria suffered lack of adequate food for consumption as food inflation; low wages and unemployment trend side by side upward in recent years. NBS (2024) estimates that 100 million people in Nigeria were food-insecure in the first quarter of 2024 as 18.6 million people suffered acute hunger. Food inflation rose from 33.9% in the last quarter of 2023 to 35.41% in the first quarter of 2024.Ayinde; Otekunrin and Akinbode (2020) opined that about 90% of agricultural output in Nigeria was provided by small-scale farmers; yet, most of those farmers suffered lack and were unable to provide sufficient amount of food for themselves and their household due to low productivity. Insecurity in the Northern part of Nigeria, fragmented land holdings, over reliance on rain-fed agriculture, climate change, low access to input, poor economic base and low level of education and training on Agriculture were the major causes of the low productivity and food insecurity, (Effiong, Udoyen and Udoh, 2021).

Among the several ways through which food insecurity can be measured are: coping strategy index, food consumption score, minimum dietary intake, minimum acceptable diet, food insecurity access scale, per capita income expenditure and per capita food consumption. However, Akukwe (2020) emphasized that even with the wealth of researches in food security indicators; there is no general agreement on what should form the fundamental matrices required to accurately measure household food security condition both at the micro and macro levels.

As highlighted by Akpan (2024), access to improved drinking water and sanitation services (AIDWAS) is a crucial variable in poverty reduction. Because, with uninterrupted access toclean water and sanitation services, positive health and education outcomes is achieved, wasteful times reduced, socio-cultural and economic development promoted and poverty reduced. This notwithstanding, Olukanni, Ebuetse and Anake (2014a) asserts that many households in rural communities in Nigeria and other sub-Saharan African Countries lack AIDWAS and suffered some challenges in their water needs. Consequences of the inadequate provision of infrastructure in Nigeria are feasible in low life expectancy at birth, poor access to quality education and higher number of out of school children, as well as, poor financial returns and greater incidence of poverty in the country.

Many researches have also emphasized on the characteristics of household's head as a major determinants of poverty in the world. In many social and cultural settings, women access to work and education is limited as women cannot participate freely in the labour market as their male counterparts. Akpan (2024) explains how ideologies entrenched in patriarchy restricted women's access to family inheritance and assets. Indicating that customs and cultural practices in some parts of the world are gender-bias against women and women are mostly regarded as subordinate to men. Therefore, such social and economic bias against women exposes female-headed households to a greater risk of poverty than the male-headed households.

By extending the meaning of poverty reduction to include financial inclusion, Okposin and Akpan (2025) observes that whenever an open access to financial facilities like transaction and saving accounts, payment facilities, credit and remittances are guaranteed, individuals and households welfare is promoted. As funds will be made available for businesses to strive and; entrepreneurship, women empowerment and education investment with lower risk are encouraged. Hence, financial inclusion helps to reduce poverty by making resources available for investment purposes, consumption, social protection and general economic growth. Therefore, Access to Financial Services in Nigeria Survey (A2F, 2023) reports a formal financial inclusion growth in Nigeria, from 56% in 2020 to 64% in 2023 and overall inclusion increased, from 64% in 2020 to 74% of adult population in 2023, indicating that Nigeria has worked tirelessly to make its citizens financially included in order to reduce poverty.

Moreover, various administrations in Nigeria at various times have always initiated one social investment programme or the other in an attempt to eradicate poverty in the country. Programmes, such as, Peoples Bank of Nigeria (PBN), Better Life Programme (BLP), Green Revolution (GRP), Directorate of Food, Roads and Rural Infrastructure (DFRRI), National Directorate of Employment (NDE), Operation Feed the Nation (OFN), Family Economic Advancement Programme (FEAP), National Economic Empowerment and Development Strategy (NEEDS), Subsidy Reinvestment and Empowerment Programme (SURE-P) and N-power programmes were initiated by various governments to empower Nigerians and reduce poverty in the country. However, Akpan, Essien and Essien (2023) alluded that these programmes were ineffective in combating poverty among households in Nigeria. Also, Okposin and Akpan (2025) confirmed that although N-power as empowerment program had offered the beneficiaries a token of income, the income was grossly inadequate. The low income and inability of the beneficiaries to acquired basic goods and services for survival with dignity signified that the youths were not financially empowered, hence, poverty persisted.

Also, a study by Akpan (2024) has revealed how access to computer and internet facilities can significantly reduce poverty and unemployment by enhancing economic and financial inclusion. However, while access to this essential commodity is increasing, many Nigerians, especially in the rural areas have been excluded by the infrastructural and literacy gaps. High cost of computer/internet facilities in relative to income, unreliable power supply, poor quality internet services, and lack of computer literacy has denied many households the opportunity to tap from the facilities in order to escape poverty. It is on this note that the researchers of this paper chose to investigate the specific effects of the socio-economic determinants of poverty on households among selected states in Nigeria. The essence is to establish by empirical inference how region-specific policy measures can be designed to deal with the perennial problem of poverty in Nigeria.

Objectives of the Study

This study examines the socioeconomic determinants of poverty in selected states in Nigeria. The specific Objectives were to:

i. investigate the relationship between Health and Education (social variables), and poverty in selected States in Nigeria.

ii. examine the effects of Food Security and Per Capita Income (economic variables), and poverty in selected States in Nigeria.

iii. analyze the influence of Bank Credit to Beneficiaries and Unemployment (financial inclusion variables), on poverty in selected States in Nigeria.

The paper is organized in five sections. This section 1 forms the introduction of the paper; section 2 is literature review; section 3 is methodology; section 4 is presentation and discussion of the empirical results; whereas, conclusion and recommendation is done in section 5.

Literature Review

This section is divided into four sub-sections. The concepts of poverty, theories of poverty, empirical literature and summary of the literature reviewed.

Concepts of Poverty

The concept of poverty can be classified or categorized into two major schools of thought that are closely related to each other. The first school of thought defines poverty as lack of essential services and material wellbeing, such as, health, food, shelter and clothing. Among the protagonists of this definition, Baratz and Grigsby (1971) defined poverty as a severe lack of physical and mental well-being, intertwined with insufficient economic resources and consumption. This definition is somewhat subjective as many people who are bedridden, may lack economic resources simply because of ill health and not due to any other form of social or economic deprivations. Worthy of note from the definition is that poverty has many dimensions including lack of income, health, education, housing and food. Hence, the definition by Baratz and Grigsby (1971) conceptualized "poverty as lack of something" and any unfulfilled needs may fall within these dimensions of poverty depending on circumstances and duration of the needs. Also, James, Thomas, and Patrice (2024) defined poverty as a state or condition in which individuals or groups do not have the money/financial resources and other necessities for a minimum standard of living. As such, they cannot meet their basic human needs. Individuals and families in poverty may go without proper housing, clean water, healthy food, and medical attention;

The second school of thought sees poverty as a deprivation of needs and not necessarily a lack of something. For instance, even if there is enough food for consumption within a household, a member of that household can still be poor if he/she does not have any source of income to his/her credit. Hence, Sen (1999) defines poverty as "capability deprivation". Sen opines that an individual experiences poverty when he/she lacks the means to function in terms of their desired actions. This school of thought challenges the conventional definition of poverty as lack of income and basic needs, emphasizing the multifaceted nature of poverty encompassing both economic and social dimensions.

According to World Bank (2000), poverty is an intolerable deprivation of human well-being, which can include both social and physiological deprivations. Physiological deprivation refers to the non-fulfillment of basic material or biological needs, including inadequate nutrition, health, education, and shelter. A person can be considered poor if he or she is unable to secure the goods and services to meet his/her basic material needs. The concept of physiological deprivation is thus closely related to, but can extend beyond, low monetary income and consumption levels. Social deprivation widens the concept of deprivation to include risk, vulnerability, lack of autonomy, powerlessness, and lack of self-respect.

As postulated by United Nations (2005), poverty is a pronounced deprivation in well-being comprising many dimensions. The dimensions include low income and the inability to acquire the basic goods and services necessary for survival with dignity, low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice and insufficient capacity and opportunity to better one's life. Absolute poverty defined as having certain minimum levels of commodity bundles that do not change over time. People are considered poor if their income or spending falls below these minimal levels.

Conversely, relative poverty compares the well-being of individuals with the fewest resources to that of the rest of the society/country without necessarily stating a minimum criterion in terms of bundles of goods/services. People must decide what they consider to be a good or minimally adequate quality of life, especially those who are impoverished. Chronic poverty is long-term, persistent poverty with primarily structural causes whereas; transitory poverty is short-lived, ephemeral, and transient. Although all the definitions of poverty reviewed are very relevance to our study, the study has specifically adopted the World Bank (2000) and the United Nations (2005) definition of poverty as our

operational definitions to illustrate the various dimensions of poverty and the socioeconomic effects of each of these dimensions of poverty on households among states in Nigeria.

Theories of Poverty

The theories considered in this study are Structural Theory of Poverty, Geographical theory of Poverty, Grossman's Theory of Human Capital and, Human Capital Theory by Smith (1776) and Becker (1964) are considered for this study.

i. Structural Theory of Poverty

The proponents of this theory, Marx (1959), Galbraith(1958) and Calnitsky (2018) argued that poverty is an outcome of persistent flaws in the economic structure and not as a result of individual deficiencies as postulated by cultural theory of poverty. The theory emphasized that political, social and economic systems adopted by countries breed poverty by encouraging inequalities and exploitation of the working class. Our question is, if poverty is caused by economic structure, is it not possible to change such structure for a more accommodating and poverty free structure to be adopted? Is there no possibility to wipe away class struggles and embrace a society that is more egalitarian?

ii. **Geographical theory of Poverty**

Among the proponents of this theory, Kanbur and Venables (2005) assert that inadequate infrastructure and distance to public resources, especially in the rural areas create individual poverty. Based on geographical locations and causes, poverty can be classified as rural poverty, ghetto poverty, third-world poverty and urban disinvestment because such locations lack geographical capital including political, social, physical, natural and human capital. Therefore, people in such geographical locations lack the needed resources to generate sufficient income for a good standard of living (Bradshaw, 2006). Again, our question is, if poverty is caused by geographical location, what meaningful intervention can ensure better life for all and, whose responsibility it is to intervene?

iii. Grossman's Theory of Human Capital

According to Grossman (2000) health is both a durable capital good and consumption good and, good health increases productivity in every individual. To eradicate poverty and ensure healthy living, investment in health (time being allocated for rest and exercise, money spent for quality healthcare and diet and, a good balance of all these factors) should be regarded as paramount because health depreciates with age but can be improved if making conscious and deliberate investment. However, we observed that most households in the Nigerian States are allowed to bear their health expenditures even with their minimal and inadequate income; the concern here is that if the investment in health is left in the hands of individual as seen in most developing countries, then poverty will keep rising and the poor will remain helpless.

iv. Human Capital Theory by Smith (1776) and Becker (1964) are considered for this study.

The proponents of Human Capital Theory (HCT), Smith (1776) and Becker (1964) observed that education financing is very crucial and necessary to improve the productive ability of the citizens. HCT states that educated population is the economically active population. The proponents of HCT see education financing as an investment in human beings which is more beneficial than investment in physical capital. The basic concept of the HCT is that

investment in individual can be mathematically measured based on the value they are able to contribute to the society (Akpan, Okposin and Iwok, 2023).

Empirical Literature

To investigate the linkage between education and poverty in Nigeria, Dauda and Lawal (2014) examined the stationary of annual time series data in Nigeria from 1980 to 2011, employing a Group Unit Root Test; the data revealed that most of the variables were stationary after first differences. Also, long run equilibrium between poverty incidence and education variables was in existence as the effect of education on poverty was negative and significant. The paper demonstrated that education reduces the risk of poverty and, the effect of higher education on poverty was even more significant. The paper recommended that people in poverty should be given open access to western education and non-formal education should be promoted in the country by development planners and policy makers.

Employing a trend analysis technique, Panel Least Squares and Panel Fully Modified Ordinary Least Squares (PFMOLS) Methods, with Akpan and Akpan (2024) investigated the trends and relationship between education sector reforms and socioeconomic indicators of states in Nigeria. Results from the PFMOLS highlighted a statistically significant effect of education sector reforms on socioeconomic development of states in Nigeria. Specifically, Education Expenditure (STGEE%GDP), Health Expenditure (SHE%GDP) and, Used of Computer/Internet facilities (UCIFI12M) were positive on Human Development (HDI) in the first model and income (DLOG(PCI)) in the third model respectively. However, poverty (POVTY) and unemployment (UNEMP) were negative and significant on DLOG (PCI) in model 3. In the second model, Access to Education (EDI) and Health (HI) were negative and significant on poverty, and unemployment was positive but insignificant in the same model. They recommended that for optimal benefits to be derived by states in Nigeria from the significant effects of education sector reforms, state governments should increase the STGEE%GDP and, to enhance better socioeconomic development indicators in the states the increase in STGEE%GDP must be sustained.

A study by Arif (2004) employed morbidity and malnutrition rates with weight-for-age and height-for-age as proxies; demand for medical services, poverty rate and, Gross Domestic Product (GDP) as some of the important variables to examine the effect of poverty on child's health and demand for medical services in Pakistan. Secondary data were sourced from the 2000-01 Pakistan Social-Economic Survey (PSES). The study reveals that exclusive breastfeeding during the first 4-5 months of child's birth and immunizations were effective in reducing the rate of illness among the children (0-5 months). Also, the study emphasized on the role of mother's education in the production of child health (nutritional status). The positive and significant effect of mother's education on child's health was more pronounced in poor families than in the non-poor families.

The study opines that increase in poverty rate in the mid-1990s decreases nutritional status of children. The major recommendation on how to reduce poverty and malnutrition was that the benefits of the high GDP growth rate recorded in the country be transferred to people in poverty through employment generation and, real income of the poor be protected against rapid inflation. The major observation was that health and nutrition sector received just 0.07 percent of the country's GDP as Healthcare facilities in the country were curative in nature, positioned to favour the diagnostic and treatment aspect against preventive healthcare. Hence, government was encouraged to make available resources for preventive healthcare, enhance child's immunization coverage, and safe drinking water for all should be priorities.

To investigate the socioeconomic determinants of poverty among Urban Households in South-West Nigeria, Dare, *et al* (2012) adopted a multistage sampling approach in selecting 80 households as sample

size for the study. The instrument for data collection was a structured questionnaire and Data collected for the study were analyzed using Poverty index and Tobit regression model. The study findings revealed that 41.0 percent of the households were poor and need at least 45.0 percent of 1 US Dollar (N130) per day (for each household member) to escape poverty. The incidence and depth of poverty were higher among female headed households and households with large number of dependents, with values, 0.26 and 0.43 respectively for female headed households and 0.74 to 1.00 for incidence of poverty and from 0.70 to 0.77 for depth of poverty for households with large number of dependents. The study identified among others that dependency ratio; household assets and educational status of household head were the major socio-economic factors affecting households' poverty. Major recommendations from the study include implementation of new minimum wage for workers, encouragement of the universal basic education and adult education programmes, employment generations, family planning measures and gender based interventions for poverty reduction.

The major advantage of the study by Dare, et al (2012) was the ability to empirically presents how socioeconomic factors, such as, education status of the households, household assets and dependent ratio have affected poverty within the scope of their study. However, to recommend that poverty can be eradicated with implementation of a new minimum wage increase is far from reality because with new minimum wage increase some poor households might be priced out of formal jobs even as prices of goods and services increased. Hence, our study filled the gap by discovering better ways through which poverty among households can be eradicated.

Udo, Odey and Augustine (2022) investigated the effects of selected macroeconomic variables on stock market performance in Nigeria. The study employed time-series data obtained from the Central Bank of Nigeria's statistical Distributive Lag (ARDL) estimation technique was used to establish the long run relationship among the variables, and it was revealed that a long run relationship existed among the variables in the estimated bulletin and World Development Indicators. Stock market performance was measured using the all-shares index while the identified macroeconomic variables included GDP growth, broad money supply, exchange rate, savings interest rate, and inflation rate. An Autoregressive Distributive Lag (ARDL) estimation technique was used to establish the long run relationship among the variables, and it was revealed that a long run relationship existed among the variables in the estimated model. The result shows that macroeconomic variables such as gross domestic product, broad money supply, exchange rate, and savings interest rate have a positive effect on stock market performance in Nigeria.

On the other hand, the results showed that the inflation rate has a negative effect on stock market performance in Nigeria. Predicated on the result, the study recommended that policies to increase gross domestic product, exchange rate, interest rate, and money supply should be implemented because they can lead to an improvement in the performance of the stock market, while the inflation rate should be maintained at a single digit to prevent its negative effect on the performance of the stock market in Nigeria.

Summary of the Literature Reviewed

From the literature reviewed, it was discovered that causal relationship exists between the socioeconomic variables and poverty level among households. However, the association between the socioeconomic variables selects and poverty level was multifaceted across households and countries. The divergence was due to poverty measurements and the socioeconomic variables adopted in each of the studies, study characteristics, model specification, types of data used, and the level of socio-economic development of the countries examined. While some of the studies reviewed focused on

either a single state in a country or central government, others were on a continental analysis. As such, they are averaged out and suppressed critical information about different households in different states as a unique entity different from those in the other states within the federation. The noticeable gap was consciously addressed in this study as the states or sub-national governments were analyzed along with the disaggregated impacts of poverty on socio-economic status of households. The society shall benefit from an increase focus on efforts to bridge the gap in the socioeconomic status among households in the Nigerian states analyzed in this study.

Methodology

The section discussed the Design adopted for this work, Model specification, A priori expectations, Data required and sources.

Research Design

The research design employed for this study is ex post facto research design. Ex post facto research is defined as that research which determines a cause-and-effect relationship between an independent variable and a dependent variable. The independent variable, however, cannot be manipulated or altered. This design is also called "after the fact research" because it is a method that looks into how an independent variables group with certain qualities that already existed prior to a study affects a dependent variable (Akpan, Akpan and Iwok, 2024). It shows that the independent variables used in our study have some characteristics or traits that cannot be manipulated.

Model Specification

As captured by Elijah and Uffort (2007), to model poverty successfully, the critical variables to be considered are: lack of money, food, and asset as well as, lack of access to education and health care, security, dignity of human person and independence**.** Also, Akpan and Akpan (2024)opines that socio-economic development in any country can be measured by the improvements in social and economic structures. The social and economic structures include: education, health, income, employment, quality of life attributes, opportunities and privileges accorded to people within the society**.** In light of the aforementioned, our model seeks to measure the socioeconomic determinants of poverty among households in Nigerian states. The variables are integrated into a system of equation where dependent variable is modeled as a function of a set of independent variables. For instance, the poverty level is modeled as a function of, education, health, per capita income, and other variables as shown in Equation 3.1:

$$\begin{aligned} POVERTY = {} & f(STGEE\%GDP, HI, UCIFI12M, AIDWAS, MIDI, DLOG(PCI), \\ & DLOG(BCBS), DLOG(SEMPOMP), UNEMP \end{aligned} \qquad \text{Equation 3.1}$$

From the equation 3.1, the aggregate effects of all the socioeconomic variables selects on poverty in all the states in Nigeria is captured as specify in the objectives. To successfully estimate the model, parameters were introduced and a disturbance (U) term which takes care ofother variables that affect poverty among households but not directly captured in the model. As such, the explicit form of the model in Equation 3.1 is presented in Equation 3.2:

$$\begin{aligned} POVTY_t = {} & b0 + b1STGEE\%GDP_t + b2Hit + b3UCIFI12M_t + b4AIDWAS_t \\ & + b5MIDI_t + b6DLOG(PCI_t) + b7DLOG(BCBS_t) + b8DLOG \\ & (SEMPOMP_t) + b9UNEMP + U_t \end{aligned} \qquad \text{Equation 3.2}$$

A priori Expectations

The signs in the parenthesis represent a priori expectations of each of the variables used in this study:

STGEE%GDP(-), HI(-), DLOG(PCI)(-), UCFI12M(-), AIDWAS(-), MIDI(-), BCBS(-), UNEMP(+), SEMPOMP (-/+)

Data Required and Sources

Panel Data Analysis is adopted in this study. The key variables of socioeconomic determinants of poverty among households in the Nigerian states included in the model are poverty rate (POVTY), Health Index (HI) and as proxy for Access to Health and health sector outcome by states, per capita income (PCI), Access to computer and internet facilities by individuals within the households in the last 12 months (UCIFI12M),Average Percentage of Children age 6 months to 4years who received minimum dietary intake and minimum acceptable diet (MIDI) as a proxy for food security, Access to Improved Safe Drinking Water and Sanitation (AIDWAS), Direct Support to Households as proxy for Empowerment Programmes (SEMPOMP), Government Expenditure on Education (STGEE%GDP), as well as, Unemployment rate (UNEMP) and Bank Credit to Beneficiaries by States (BCBS) as a proxy for financial inclusion among households in Nigeria. It employs secondary data on the 23 out of 36 states in Nigeria plus Federal Capital Territory (FCT) from 2013 to 2022 sourced from Global Data Lab, 2023; National Bureau of Statistics (NBS) social and economic statistics and MICS; State of states reports and CBN Statistical Bulletin various years.

Data Analysis and Discussion of Findings

Unit Root Test

The data were tested for unit root before conducting the regression analysis. This was done because regressing a non-stationary data can give spurious output. To avoid this, Levin, Lin and Chu (2002) Panel Unit Root Test was carried out and the result is summarized in Table 4.1.

Table 5.1: Levin, LIN and CHU panel unit root test result

Variable	Statistic	Probability	Cross Section	OBS	Order of Integration
POVTY	-26.2373	0.0000	24	192	1(0)
STGEE_GDP	-6.33269	0.0000	24	189	1(0)
H1	-6.21964	0.0000	24	192	1(0)
AIDWAS	-2.30336	0.0106	24	192	1(0)
UNEMP	-6.86141	0.0000	24	192	1(0)
AHS	-5.60161	0.0000	23	138	1(2)
UCIFI12M	-58.7205	0.0000	24	144	1(2)
EDI	-4.485566	0.0000	24	192	1(0)
PCI	-3.12894	0.0009	24	192	1(0)
BCBS	-6.86829	0.0000	24	192	1(0)
MIDI	-69.9557	0.0000	24	192	1(0)
SEMPOMP	-5.02018	0.0000	24	191	1(0)

Source: Author's computation using Eviews 9.

The results of the Panel Unit root test for the Levin, Lin and Chu test in Table 4.1 shows that variables used for the study achieved mixed stationary of 1(0) and 1(2). Hence, the study is justified to employ Panel Engels, Generalized Method of Moment (GMM) and other robust econometric methods like FMOLS Methods to test for the relationship between the variables.

Presentation and Interpretation of Regression Results

This section presents the regression results for aggregate effects of all the socioeconomic variables selects on poverty in all the states and geopolitical zone in Nigeria as captured in the objectives. The results are presented in Table 4.2.

Dependent Variable: POVTY

Method: Panel EGLS (Period SUR)

Sample (adjusted): 2014 2022
Periods included: 9
Cross-sections included: 24
Total panel (balanced) observations: 216
Linear estimation after one-step weighting matrix
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	111.2068	17.60140	6.318063	0.0000
POVTY(-1)	0.185978	0.072227	2.574908	0.0108
STGEE_GDP	-0.431680	1.175501	-3.367231	0.0071
HI	-08.5907	6.13273	-4.155351	0.0000
UCIFI12M	-0.326018	0.109906	-2.966331	0.0034
AIDWAS	-0.159634	0.060953	-2.618952	0.0095
MIDI	-0.242277	0.070988	-3.412905	0.0008
DLOG(PCI)	-1.200306	1.745872	-2.687511	0.0496
DLOG(BCBS)	-4.543671	1.244799	-3.650124	0.0003
DLOG(SEMPOMP)	-0.794091	1.015701	-0.781816	0.4353
UNEMP	0.277191	0.131027	2.115533	0.0356
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.561652	Mean dependent var		1.898626
Adjusted R-squared	0.521600	S.D. dependent var		1.940204
S.E. of regression	1.027097	Sum squared resid		207.8210
F-statistic	14.02304	Durbin-Watson stat		1.985688
Prob(F-statistic)	0.000000			

Source: Author's computation using Eviews 9.

The empirical evidence in Table 4.2 revealed a negative and significant relationship between social, economic and financial inclusion variables, and poverty among households in the Nigerian States, except for SEMPOMP which was negative but insignificantly related to poverty. The result means that unit increases in education and health (social variables), will decrease poverty by 43.1% and 85.9% respectively. And, a 1% increase in per capita income and food security (economic variables) was associated with 1.2003 and 0.2422 percentage points decrease in poverty respectively. Whereas, a unit increases in Bank credit to beneficiaries (financial inclusion variable) will decrease poverty by 45.4% and, a unit increase in unemployment will increase poverty by 27.7%. Also, the positive lagged value of poverty (0.1859), that is, the dependent variable added as an independent variable in Table 4.2 shows a vicious cycle of poverty among households; which means that poverty this year was impacted by

poverty last year for about 18.59% and the result was significance. The probability of F-Statistics of 0.0000 in Table 4.2 shows that the model was correctly specified in line with the theories and the Durbin Watson Stat value of 1.98 means that the model is free from serial and autocorrelation. Hence, the specific objectives of our study were fulfilled and the economic implications of these results are discussed in section 4.4.

Presentation and Interpretation of Diagnostic Test for the Results in Table 4.2

As a panel data analysis model, it was necessary to ensure the model is free from heteroscedasticity and cross section dependence, as such, Breusch-Pagan LM (BP LM) Test, Pesaran Scaled LM (PSLM) Test and Pesaran CD (Cross-Sectional Dependence) Test were carried out to ascertained the robustness of the results in Table 4.2 and the result of the diagnostic tests is presented in Table 4.3.

Table 4.3: Residual cross-section dependence test

Null hypothesis: No cross-section dependence (correlation) in weighted Residuals
Equation: Untitled
Periods included: 9
Cross-sections included: 24
Total panel observations: 216
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	273.4890	276	0.5314
Pesaran scaled LM	-1.128385		0.2592
Pesaran CD	-1.744766		0.0810

Source: Author's computation using Eviews 9.

From Table 4.3, the null hypotheses of p-value > 0.05 was accepted for Breusch-Pagan LM (BP LM) Test, Pesaran Scaled LM (PSLM) Test and Pesaran CD (Cross-Sectional Dependence) Test which means that the Residual variance in the results presented in Table 4.2 is constant across all observations as there was no evidence of heteroscedasticity and cross section dependence.

Discussion of Findings

The empirical evidence in Table 4.2 revealed a negative and significant relationship between health and education (social variables), and poverty among households in all the Nigerian States. The economic implication of these results is that poor education and health limit economic opportunities of most households in Nigerian states and perpetuates poverty. Poor health outcomes by states reduced productivity of the work force and their earning potentials. Health is a direct function of physical and mental well-being that affects work performance. Moreover, chronic illnesses or disabilities can lead to job losses and reduce income among households and health expenditures drain household resources and perpetuate poverty. The result also means that most households in Nigeria were in poverty because of poor health and high cost of medical bills can exacerbates financial hardship. This notwithstanding, most Nigerian States were not committed to workers health and people in poverty were systematically restricted from accessing healthcare even with poor health outcomes revealed by low ranking of Nigeria's HI as a component of Human Development Index.

The result of the findings is in line with Weiser *et al*. (2015) who argued that there is a connection between poverty and health practices that impact disease-management, prevention, and treatment. An instance is when poor income and lack of access to households' food forced people in poverty to make bad decision that raise their risk of sickness, such as, relying too heavily on cheap, poor-nutrient and calorically dense food or get involved in risky and unhealthy sexual conduct. In addition, food insecurity and other competing demands for survival are linked to poor access to healthcare and medical treatment among people in poverty especially when they are sick and in old age. However, it is only those who are in good health that can take advantage of life giving opportunities and move out of poverty. Hence, the popular saying "Health is Wealth".

Also, the effects of education on poverty was negative and significance in the model because, as a social variable, education helps an individual to develop skills, knowledge and critical thinking that make the individual more employable and versatile in health management. This result aligned with Arif (2004) whose findings identified the roles of mother's education in the production of child health (nutritional status). This role of mother's education was found to be more pronounced in the poor families than in the non-poor families. With proper education, households are expected to make rational choices that might positively enhance their Health, livelihood and increase longevity. However, Ojo and Yilma (2010) emphasized that in all the socio-economic groups, poor parents face major challenges when it comes to providing optimal care and education for their children and these challenges are more pronounced in families with poor education background or low education status. Most often, when the basic necessities of life are lacking, most parents placed top priorities in food, housing, clothing and healthcare while regarding education materials and books as optional. The implication of this result is that poverty cycle continues as education financing is neglected.

Also, AIDWAS was negative and significant on poverty because there is a mutually reinforcing link between access to clean water/sanitation, health, education and poverty reduction within the households. For instance, access to clean and safe drinking water/hygiene may guarantee good health and prevent water borne diseases which are capable of disrupting education by making children of school age to be out of school. Providing people with AIDWAS and education are some of the important steps to universal good health which may help to prevent the unnecessary death and disease in the country.

UCIFI12M is also negative and significant on poverty because of the numerous benefits of computer and internet facilities to education which in a long run reduces poverty. An instance is when computer/internet is utilized for researches, teaching and learning and, other forms of activities which enhance human development. However, poor households are constantly denied access to this essential commodity, hence, deprived of the opportunity to be better equipped and, to move out of poverty. Computer and Internet facilities are also very essential in poverty reduction by helping people in poverty to learn new ways to improve their Health and communicate with doctors online for remedial solutions where there are no facilities for the sick to take the next available trip to the hospital. Doctors can also store and retrieve information online for the benefits of their patience. This notwithstanding, many households in Nigeria lack access to computer/internet facilities and are computer illiterate.

The result of the empirical findings in Table 4.2 also revealed a negative and significant effects of per capita income (PCI)and food security (MIDI) (economic variables), on poverty among households in all the Nigerian States. The implication of these results is that the more people have access to nutritious and acceptable food intake, the lower their poverty level. People in poverty are those whose food intake

are often below the minimum level of energy requirements and, most households in Nigeria do not have access to enough supply of healthy and nutritious food to meet their dietary needs. Therefore, if adequate steps are not taken to address food insecurity, many Nigerians will be trapped in poverty as malnutrition and poor health persisted. Also, productivity will continue to reduce with food insecurity since many people will become susceptible to illness. Food insecurity reduces work capacity and, treating diet related illness further drains the limited resources of the poor and perpetuates poverty. This result is in line with Enakhe and Tamuno (2021) whose study suggested a long run relationship between food insecurity, poverty and unemployment in Nigeria.

The empirical evidence in table 4.2 also shows a negative and significant effect of PCI on poverty. This result is in line with Taiga and Ibrahim (2021) whose study concludes that income inequality significantly contributes to poverty in Nigeria and growth in per capita income dampened the negative effect of poverty. This is because as income increases, people access to Nutritious food and education increase and, health is enhanced. If the increases in income are sustained, more people become financially included through employment and Bank credit. As noted by Sudharshan (2016), per capita income can only be increased if one goes through middle and high school, which people in poverty cannot afford. Moreover, PCI was negative and significant on poverty because with improve personal income, poor households can acquire the much needed education.

Table 4.2 also presents a negative and significant effect of Bank credit to beneficiaries as a proxy for financial inclusion. The result implies that open access to credit facilities deepens financial inclusion, enable entrepreneurship and income generation, and reduce vulnerability to poverty. Also, deepening financial inclusion through access to credit will expand access to education, health, employment and improve the overall well-being among states. Moreover, implementing government policies through increases in financial inclusion would lead to creation of middle class citizens, narrow income disparity and decrease poverty in among states.

The positive and significant effect of Unemployment on poverty in table 4.2 highlighted why unemployment is the major reason for financial exclusion and poverty in the country as many graduates were deprived of finances to create jobs for themselves. Most unemployed people live in abject poverty and lack adequate finances to take proper care of their health and wellbeing; they cannot sufficiently cater for their basic needs, making poverty to be a cyclical phenomenon as revealed by the positive lagged value of poverty as independent variable in the models.

Conclusion

This study adopted expost facto research design and panel data econometrics techniques in analyzing the socio-economic determinants of poverty as evidenced in 23 selected states in Nigeria. Specifically, the effects of Health and Education (Social Variables), Per Capita Income and Food Security (Economic variables) and, Bank Credit to Beneficiaries (BCBS) and Unemployment (Financial Inclusion Variables), on Poverty were examined using Panel EGLS. The empirical evidence revealed a vicious cycle of poverty among households in the selected states. The coefficient (0.1859), for one year lagged of the dependent variable (POV-1) added as an independent variable in the model was positive and significant, implying that the vicious circle of poverty perpetuates social and economic limitations that affect households, communities and governments. Health, education, food security, per capita income, access to improved drinking water/sanitation (AIDWAS), Use of Computer/Internet (UCIFI12M) and, BCBS was negative and significance on poverty while Unemployment was positive and significant. This study concludes that

poverty in Nigeria was self-reinforcing and leads to conditions that further perpetuate itself and make it difficult for one to escape.

Policy Recommendations

From the findings of this study, the following recommendations are put forward to help Nigerians overcome the perennial problem of poverty:

i. `State Governments should strive to substantially increase their total government expenditure on Education as a percentage of GDP and; provide full funded scholarships and other financial assistance to students of disadvantage homes; make polices and regulatory reforms that improve the efficiency in health, education and integration of domestic food markets, as well as, reduce barriers to food trade.

ii. The benefits of health outcome on poverty reduction recorded in this study can be maximized if:
   (a) Government Ensured Universal Health Coverage by providing essential healthcare services without financial hardship, subsidize health insurance for low income household and make available micro finances for health, make healthcare affordable for rural and informal sector community and, reduce out of pocket expenses for serious health issues.

   (b) Enhance Chronic Disease Management Programmes by early detection and management of chronic diseases to avoid financial ruin.

   (c) Constantly educate the households and empower them with information on how to protect themselves against diseases and, ensure collaborative health care models among states.

iii. AIDWAS was seen to be effective in poverty reduction. Hence, to maximize it benefit for positive health outcomes and poverty reduction among households in the Nigerian states we strong recommend that:

   (a) State governments should collaborate to create free Access to Improved Drinking Water and Sanitation, specifically, for the poor households in the rural communities and the entire country at large.

   (b) Invest in water and sanitation by providing enough water treatment plants, pipelines and distribution networks to the hinterlands.

   (c) Work on the sanitation infrastructures and encourage hand washing with soaps.

iv. To reduce food insecurity as the main source of poverty in Nigeria, we strongly recommend that:
   (a) States governments should go into partnership and collaborations that ensure large

   (b) scale production of foods and security to farmers and their farms.

(c) Improve supply chains to reduce post-harvest food losses, improve hygiene in food distribution channels, and better link production and consumption agents.

v. To reduce unemployment and ensure financial inclusions, we recommend that:

(i) Governments and other Stakeholders in Nigeria should provide sustainable access to paid employments for households and create environment conducive for individuals to create jobs for themselves. This can be done by encouraging graduate entrepreneurs with venture capital, grants and other incentives, such as, concessional interest rate for businesses to access funds and, encourage patronage to domestic industries and investment in Agriculture.

(ii) (ii) Governments should also improve financial inclusion by ensuring that all households in the country have access to useful and affordable financial products and services that meet their needs (transactions, payments, savings, credit and insurance) and persuade them to utilize those accesses to the benefits of all by creating employments and reducing poverty in the country.

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