Scholars Journal of Arts, Humanities and Social Sciences OPEN ACCESS
Abbreviated Key Title: Sch J Arts Humanit Soc Sci
ISSN 2347-9493 (Print) | ISSN 2347-5374 (Online)
Journal homepage: https://saspublishers.com

Services Sector and Poverty in Nigeria: A Disaggregated Approach

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DOI: https://doi.org/10.36347/sjahss.2025.v13i12.006 | **Received:** 23.10.2025 | **Accepted:** 19.12.2025 | **Published:** 28.12.2025

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Abstract **Original Research Article**

Despite being the largest economy in Africa, Nigeria's poverty rate has maintained an upward trajectory. This is in part, due to the inability of the agricultural and manufacturing sectors to absorb sufficiently, the increasing number of unemployed persons in the country. To this end, attention has been channeled to the services sector as an alternative way out, given its growing contributions to gross domestic product, and potentials for employment generation. This study therefore, investigates the impact of services sector on poverty in Nigeria. Specifically, the study investigated the impacts of trade services (TRD); accommodation and food services (AFS); information and communication (IC); real estate (RE); education (EDU); and human health and social services (HHSS) on headcount ratio, which was used as proxy for poverty in Nigeria. Data which were sourced from the Central Bank of Nigeria Statistical Bulletin, and World Banks World Development Indicators for the period 1986 to 2023 were analysed using the Augmented Dickey-Fuller unit root test, and the Autoregressive Distributed Lag (ARDL) Bounds test. Findings revealed that whilst IC, RE and EDU contributed significantly in reducing poverty in Nigeria, TRD and AFS contributed significantly to the increase in Nigeria's poverty rate. However, HHSS's role in reducing poverty is insignificant. Based on the findings, the study suggests among others that, more investments should be encouraged in the information and communication services subsector, and that the Nigeria government should support the private sector in the development and expansion of real estates in the country.

Keywords: Services sector, poverty, trade services, real estate, headcount ratio, education.

1.0 INTRODUCTION

Poverty is a global issue, plaguing both developed and developing economies of the world. Though poverty is a general problem in developing countries, its challenging effect is more in sub-Saharan Africa (Addae-Korankye, 2014). As a matter of policy, the global program of the Sustainable Development Goals (SDGs) has as one of its objectives, the eradication of all forms of poverty especially in developing countries, by the year 2030 (Koehler, 2017).

Several debates have ensued in economic literature as to the actual definition of poverty. This is due to the fact that poverty as a concept is dynamic and multifaceted. It is a multidimensional phenomenon that can be defined in both economic and social terms (Mukherjee, 2015). In economic terms, poverty falls within the purview of monetary measurements, which considers it as the lack of financial resources necessary to acquire the basic needs of live such as food, shelter, and clothing. It also refers to the lack of material resources which hinders access to (Muizuki, 2024). In social terms, poverty is characterised by qualitative and non-monetary aspects such as deprivations from social services such as quality health care, minimal level of education, safe drinking water, security, and good sanitation; social exclusion; and discrimination based on factors such as ethnicity, race, gender, disability and others (Agidi, 2023). In other words, poverty is the absence of material well-being which manifests in hunger and undernourishment, illness, a continuous rise in the mortality and morbidity rate from disease, homelessness and inadequate housing amongst others (World Bank, 2022). Poverty can also manifest in various forms, including absolute poverty, where individuals lack the basic necessities for survival, and relative poverty, where individuals experience a lower standard of living compared to the rest of society (Muizuki, 2024).

Around the world, several factors have been identified as contributory factors to the issue of poverty. Haveman (2018) highlights that labour market issues, education, demographic characteristics: age and family

structure, race, poverty-related policies and cultural factors, are responsible for poverty around the world. In Nigeria, poverty is prevalent due to government's underinvestment in infrastructure, particularly in rural areas; ill-practice of capitalism that instigates exploitation and victimisation of human and natural resources in the economy; unemployment, especially among young graduates; corruption, especially among political office holders; non-diversification of the economy; income inequality; and poor education system among others (Dauda, 2021; Bakare, 2022; Ucha, 2010).

The devasting effects of poverty cannot be overemphasised. Poverty has negative effects on the economy, health, individual families and society at large. Persistent poverty can hinder economic growth and development by reducing productivity, limiting consumer spending, and undermining social cohesion. Additionally, high levels of poverty can also lead to social unrest and political instability, further exacerbating economic challenges (Muizuki, 2024). Poverty significantly affects physical health, often leading to higher rates of illness and chronic conditions like diabetes, cardiovascular diseases, arthritis and others. Mental health is also adversely impacted by poverty, as stress associated with financial insecurity, housing instability, and daily survival challenges can lead to mental health issues such as anxiety, depression, and emotional distress (Khatun, 2024). A remarkable observation by Mukherjee (2015) highlights that ill-health in less developed countries, is basically caused by absolute poverty, while in developed countries, ill-health is caused by relative poverty. In the home front and society at large, lack of access to financial resources contributes to increase in the number of schools drop outs, increase in tension, conflicts and breakdown of homes, and as well, reduces cohesion in communities (Khatun, 2024).

Poverty in Nigeria is massive, pervasive and chronic, engulfing a large proportion of the society (Njoku, Oladosun, & Ekere, 2025). Despite the fact that the Nigerian economy is paradoxically growing, the proportion of Nigerians living in poverty is increasing every year. This claim is verifiable as data from the National Bureau of Statistics reveals an upward trajectory in Nigeria's poverty rate. For instance, Nigeria's relative poverty headcount rose from 27.2% in 1980 to 69.0% in 2010 (NBS, 2012). By 2018, Nigeria became the poverty capital of the world as confirmed by Brookings Institute, with about 86.9 million people living in extreme poverty, representing approximately 50% of the entire population (Agidi, 2023). Nigeria's poverty statistic showed a little decline in 2019 as the number of persons living in absolute poverty reduced to 82.9 million people (NBS, 2019). This marginal reduction however, was short-lived. By 2022, Nigeria's poverty report showed that 63% of persons living within Nigeria (133 million people) out of its population of about 200 million people, are multidimensionally poor, with a multidimensional poverty index (MPI) of 0.257, indicating that poor people in Nigeria experience just over one-quarter of all possible deprivations (NBS, 2022).

The rising poverty rates in Nigeria is worrisome and calls for serious policy interventions. Previous governments over the years have implemented several policies geared at mitigating the unfavourable poverty trajectory in the country. Some notable policy interventions include: Farm Settlement Option, Operation Feed the Nation, Structural Adjustment Programme (SAP), the National Directorate of Employment (NDE) which was established to provide unemployed Nigerians with relevant skills through training that would lead to their employment; National Poverty Eradication Programme (NAPEP), establishment of the Bank of Industry and Bank of Agriculture to support farmers, entrepreneurship, and manufacturing activities by offering low interest credits to encourage production and employment; Nigerian Government Enterprise and Empowerment Programme (GEEP), the N-Power programme, You-Win programme, Subsidy Reinvestment programme (SURE-P), government temporary Cash Transfer Schemes (Aderounmu *et al*., 2021; Ofure *et al.*, 2024; Adu'a, Olushola, & AC-Ogbonna, 2025), and the current social protection programmes are among some of the short-term/long-term policy interventions initiated by the Nigerian government in a bid to alleviate poverty in the country. Despite these initiatives, the World Bank (2025) has warned that the interventions need to be complemented by adequate economic diversification that grows the non-oil sector and creates private sector jobs, together with investments into public services, especially in health, education, and infrastructure.

Prior to the large-scale exploration of oil in the 1960s, the Nigerian agricultural sector was the major employer of labour and contributor to the Gross Domestic Product. Agricultural sector accounted for 70% of GDP and employment generation as well as 90% of the foreign exchange (Bashir & Abubakar, 2018). However, the exploration of oil in the 1970s, and the subsequent bias development of the urban areas which engendered rural-urban migration, led to neglect of the agricultural sector, and subsequently a decline in its employment capacity and contribution to GDP. Despite several efforts to revamp the sector for self-sufficiency, its employment capacity and contribution to GDP remains lower than its record in the 1960s. As at 2020, the sector provided employment for over 36% of the population (Oyaniran, 2020). The oil sector which overtook the agricultural sector in employment and contribution to GDP faced several setbacks (due to series of fluctuations in the international oil price) which had adverse effects on the economy. Moreso, manufacturing sector's contribution to employment and GDP continued

to decline due to trade liberalisation occasioned by the Structural Adjustment Programme of 1986. Unfavourable exchange rate from the devaluation of the Naira caused local industries to shut down due to inability to import needed equipment and raw materials for local production. Moreover, high cost of production limited local industry's ability to compete with foreign industries. Also, manufacturing capacity utilisation began to decline below international standards, signalling low production, and the sectors inability to absorb the increasing number of unemployed persons in the country.

Given the failure of the agricultural and manufacturing sectors to provide sufficient employment for the growing Nigerian population, and subsequent reduction in poverty, it becomes imperative to explore other alternatives. The services sector in recent times has been identified as an alternative for poverty reduction. According to the World Bank (2023), services accounted for nearly 67% of global GDP and 50% of total employment. For developing countries, the structural shift toward services has become a foundation for inclusive and sustainable development. According to Philip and Semira (2020), the services sector is saddled with the production of service (something that is experienced at a particular time, and cannot be repeated) instead of end products, and serves as the major employer of labour in any economy. Dauletmuratov (2025) noted that the services sector contributes to poverty reduction through several interlinked mechanisms such as employment creation, human capital enhancement, income diversification, as well as social inclusion and empowerment.

According to the CBN (2023), the Nigeria services sector is classified into: trade; accommodation and food services; transportation and storage; information and communication; arts, entertainment and recreation; financial and insurance; real estate; professional, scientific and technical services; administrative and support services; public administration; education; human health and social services; and other services. The services sector serves as a veritable platform for the thriving of other sectors as well as provides supplementary outputs to them (Adiga *et al.*, 2025). In 2019, the Nigeria services industry (hospitality and tourism, entertainment, communications, financial services, etc.) was estimated to have generated a total of N49 trillion, representing 34% of the overall GDP and is believed to have accounted for more than half of the country's employment (Federal Republic of Nigeria, 2021). As at the second quarter of 2024, the Nigeria services sector grew by 3.79%, and its contribution to overall GDP was 58.76% (NBS, 2024). By the first quarter of 2025, the sector witnessed another growth of 4.33% and contributed about 57.50% to the aggregate GDP (NBS, 2025).

Given its contribution to GDP, and potentials for employment creation, some observers have argued that the services sector can contribute to poverty reduction. Against this backdrop, some scholars such as Bakare (2022), and Echeta (2024) have conducted studies to investigate the role of the Nigeria services sector in poverty reduction. However, there is dearth of empirical s

tudies for Nigeria. This study therefore, contributes to empirical literature by adopting a disaggregate approach in investigating the impact of services sector on poverty in Nigeria. Specifically, the study investigates the impact of six (6) sub-services sectors (trade services; accommodation and food services; information and communication; real estate; education; and human health and social services) on poverty in Nigeria.

2.0 LITERATURE REVIEW

2.1 Conceptual Clarification

In this section of the study, clarification is made in regards to some concepts employed in the study. To this end, brief definitions of relevant concepts are provided based on how they are applied in the study.

Poverty: It is pronounced deprivation in well-being, and the inability of an individual or group of individuals to provide their basic physical needs (food, health care, education, shelter etc), and non-physical needs (participation, identity, etc) required in order to live a meaningful life (World Bank, 1996).
Measuring poverty is quite difficult given that it is multifaceted and has different dimensions. However, for the purpose of this study, we employ the head count ratio as a measure of poverty. The head count ratio is a metric used in measuring poverty by considering individuals who live below a minimum income threshold known as the poverty line.

Trade in Services: Trade in services records the value of services exchanged between residents and non-residents of an economy, including services provided through foreign affiliates established abroad (OECD, 2023). Trade in services include cross-border exchange through telecommunications channels, the temporary movement of service suppliers or consumers, and foreign direct investment (FDI) establishment in a host country by foreign affiliates that produce/sell services (Hoekman, 2018).

Accommodation and Food Services: This services sub-sector primarily engages in hosting services such as restaurants, hotels, bars, cruise lines and many other related businesses (NBS, 2015). With its large number of enterprises and high levels of employment it is of great importance to most economies. It is dominated by small and medium sized enterprises and is characterised by

seasonality and by part-time and casual employment (McMahon, 2011).

Information and Communication: The Information and communication industry is broadly categorized under the United Nations International Standard Industrial Classification (ISIC) Revision four (4) into 4 economic activities, which are: Telecommunications & Information Services, Publishing, Motion Picture, Sound and Musical Production, and Broadcasting (NBS, 2015).

Real Estate: This is defined as land and everything that is built on it (Yigit, 2023). It is a form of real property that comprises land and any lasting structures, like a home, or improvements attached to the land, be it natural or man-made (Gloria, 2023).

Education: Education comprises learning and training activities that took place at the kindergarten/nursery, primary, secondary and tertiary levels (NBS, 2015). Education services at these levels are delivered at public and private institutions, and through formal and non-formal streams (Federal Republic of Nigeria, 2021).

Human Health and Social Services: This constitutes a wide range of programmes, services, and initiatives designed to promote public health. Human health and social services include healthcare service providers/Medical facilities, manufacturers of healthcare products, and pharmaceutical/medical product distribution and logistics services (The University of Arizona Global Campus, 2025). It also encompasses a diverse array of agencies, including the National Agency for Food and Drug Administration and Control (NAFDAC), the Nigeria Centre for Disease Control and Prevention (NCDC), National Primary Health Care Development Agency (NPHDA), and National Health Insurance Authority (NHIA) among others (Federal Ministry of Health and Social Welfare, 2025).

2.2 Empirical Literature

Dauletmuratov (2025) explored the potentials of the service sector in reducing poverty in Uzbekistan and the Republic of Karakalpakstan. The study found that, the consolidation of critical service subsectors such as education, healthcare, tourism, digital services, as well as financial inclusion proved veritable in reducing dependence on the agricultural and extractive industries, as it availed new employment opportunities, particularly for women and youth. It was recommended among others that, in order to achieve the prospects of poverty reduction, concerted efforts should be geared towards the development of non-agricultural rural services, as well as the eco-tourism in the Aral Sea region.

In another study, Dauletmuratov (2025) adopted a theoretical approach to show how development and expansion of the service sector offer opportunities and strategies that are vital for poverty reduction in the Republic of Karakalpakstan. The study found that the service sub-sectors reduced poverty by promoting economic growth, encouraging entrepreneurship, and increasing employment. Further findings indicated that tourism, information technology, transport and logistics, and vocational education all played significant roles in alleviating poverty in the Republic of Karakalpakstan.

In another study Fozilov (2025) used a mixed method approach to explain the role services sector plays in curbing poverty. Findings from the study underscores how development in the service sector contributes to poverty reduction among youth, women and marginalised populations, through creation of employment, growth in income, inclusive development and access to vital services. Findings further revealed that innovation and digital transformation also played a crucial role in reducing poverty. Based on the findings, the study recommended among others that expanding microfinance and inclusive banking, investment in vocational training and upskilling, as well as policies to support service startups, as strategies that can help address the challenges inhibiting the expansion of the service sector.

Using survey method and descriptive analysis, Echeta (2024) investigated how the tourism industry, which is a services subsector helps in reducing poverty in the southern part of Nigeria. Specifically, the study investigated the contribution of restaurant establishments to employment creation. The outcome of the study indicated that restaurants establishments, and tourists' attractions have substantial positive impacts on poverty reduction in southern Nigeria, and that the tourism industry has enormous potential to curb poverty given that it has the capacity to trigger economic activities in various subservices sectors such as hospitality, transportation, arts and crafts, among others which serve as multiple avenues for job creation. Drawing from these findings, the study suggested that in order to harness the economic potential of tourism for the mitigation of poverty, collaboration is essential among governments, businesses and communities.

Using data from 1990 to 2021, Azebi and Tamuno (2023) investigated service sector's impact on Nigeria's economic growth. The study employed the Augmented Dickey-Fuller unit root test, Johansen Cointegration test and Error Correction Mechanism in estimating the contributions of real estate (RE), professional, scientific and technological services (PST), public administration (PA), accommodation and food services (AFS), arts, entertainment and recreation (AER), and financial insurance (FI) on economic growth in Nigeria. The outcome of the study revealed that Nigeria's economic growth improved significantly as a result of economic activities in RE, PA and FI. Other service subsectors like AFS and AER contributed

positively to Nigeria's economic growth, however, the effect of their contributions was inconsequential. PST on the other hand had an insignificant adverse effect on Nigeria's economic growth. Based on the findings, the study suggested among others that, investment in real estate should be increased, as well as expansion of public administration by the Nigerian government.

Employing China's provincial panel data from 2010 to 2019, Yang, Zhou, & Zhang (2023) conducted a study to verify if the collaboration between the agricultural and service industries would effectively curb poverty in the rural areas of China. The synergy among the two industries was measured using the coupling models. Findings from the study revealed that the synergy between the two industries played significant role in reducing rural poverty, especially in Western China. The study concluded that the success was possible given that the synergy between the agricultural and service industries engendered growth in China's rural economy, which in-turn boosted the business income of rural households.

Using cross-sectional data, Mitra (2022) found that the services sector plays a crucial role in encouraging migration and reducing poverty as opposed to the conventional belief that rural-urban migration transfers rural poverty to the urban area. The study observed that the services sector is dominant in the urban area and acts as a pull factor for migration. Also, evidence from the three-equation-recursive model showed that services sector which encouraged migration impacted positively on urban earnings in the urban area, which in turn reduced urban poverty significantly.

Using time series data spanning the period 1999 - 2019, Bakare (2022) investigated how financial deepening contributes to poverty reduction in Nigeria. Estimates of the OLS regression revealed that financial deepening had a significant positive impact on poverty reduction and Nigeria's unemployment rate. Relying on the findings, the study reached the conclusion that poverty reduction can be enhanced if financial deepening is well pursued. The study therefore, advocated for more access to financial services given that it contributed to improvement in human welfare. To achieve this, the study recommended among others that government should embark on financial reforms that would impact meaningfully on the people's welfare.

Ivanic and Martin (2018) investigated how developments in agriculture, industry and services affect global poverty. It was discovered by the study that the agricultural sector played vital role in poverty reduction in less developed countries, compared to the industrial and services sectors. This impact however, was short-lived as changes in innovations caused agricultural productivity growth to become less effective in the fight against poverty.

3.0 METHODOLOGY

3.1 Research Design

The aim of this study is to analyze the cause-and-effect relationship between selected components of services sector (trade, accommodation and food services, information and communication, real estate, education, and human health and social services) and poverty in Nigeria. To achieve this, the study employs the ex post facto research design.

3.2 Model Specification

The model for this study is specified in both mathematical and econometric form. The mathematical form of the model is specified in equation 1, while the econometric form of the model is specified in equation 2 below:

$$POV = f(TRD, AFS, IC, RE, EDU, HHSS) \quad 1$$

$$POV_t = \alpha_0 + \alpha_1 TRD_t + \alpha_2 AFS_t + \alpha_3 IC_t + \alpha_4 RE_t + \alpha_5 EDU_t + \alpha_6 HHSS_t + \mu_t \quad 2$$

Where: POV_t = Poverty (Measured by Head Count Ratio) over a period

TRD_t = Trade Services in the period under review

AFS_t= Accommodation and Food Services in the period under review

IC_t = Information and Communication services in the period under review

RE_t = Real Estate services in the period under review

EDU_t = Educational Services in the period under review

$HHSS_t$ = Human Health and Social Services in the period under review

α_0 = The Intercept of the model

α_1- α_6 = Coefficients or Regression Estimates

μ = The Error or Stochastic Term

t = The time trend or period under review

3.3 Estimation Technique

The techniques employed in the analysis of the data include the multicollinearity test, unit root test, Autoregressive Distributed Lag (ARDL) Bounds test, serial correlation test and stability test.

3.4 Sources of Data

Data on the variables for the subservice sector were sourced from the Central Bank of Nigeria Statistical Bulletin, while data on poverty (Headcount Ratio) was sourced from World Development Indicators of the World Bank. For the period 1986-2023.

4.0 DATA PRESENTATION AND ANALYSIS

4.1 Descriptive statistics

Table 4.1 Descriptive Statistics

	POV	TRD	AFS	IC	RE	EDU	HHSS
Mean	49.24211	8060.046	401.8868	5241.955	3424.503	934.6458	335.3129
Std. Dev.	7.973762	9225.567	577.0955	7352.223	3726.652	1106.257	379.0346
Skewness	0.027611	0.811709	1.332074	1.511067	0.635657	0.896819	1.012189
Kurtosis	1.680406	2.124917	3.498737	4.766228	1.792127	2.172060	2.756176
Jarque-Bera	2.761932	5.385320	11.63184	19.40036	4.869059	6.179145	6.582793
Probability	0.251336	0.067701	0.002980	0.000061	0.087639	0.045521	0.037202
Obs	38	38	38	38	38	38	38

Source: Author's own computations using E-View 10

Poverty (POV), measured by the poverty headcount ratio, has a mean value of about 49.24 percent, indicating that on average nearly half of Nigeria's population lives below the societal poverty line. The standard deviation of about 7.97 confirms moderate volatility in poverty levels. The near-zero skewness (0.03) indicates an almost symmetric distribution, while the kurtosis value below 3 suggests a relatively flat distribution. The Jarque–Bera probability (0.25) implies that the poverty series is approximately normally distributed.

Trade (TRD) records a relatively high mean of about 8,060 and a large standard deviation (9,225.57), indicating strong volatility in trade activities. The positive skewness (0.81) suggests a right-tailed distribution, while the kurtosis below 3 indicates a flatter distribution. The Jarque–Bera probability of 0.07 suggests that trade is close to normality at the 5 percent level, though with some deviation.

Accommodation and Food Services (AFS) has a relatively low mean of about 401.89 compared to trade and information and communication. The sector exhibits high dispersion, as shown by a standard deviation of 577.10 and a maximum of 1,989.66. The skewness (1.33) and kurtosis (3.50) indicate a positively skewed and slightly peaked distribution. The Jarque–Bera test is significant ($p \approx 0.003$), suggesting non-normality, likely driven by sharp expansions in certain periods.

Information and Communication (IC) displays a mean of about 5,241.96, and a high standard deviation of 7,352.22 indicate pronounced volatility in the sector. The strong positive skewness (1.51) and high kurtosis (4.77) suggest a distribution with long right tails and peakedness. The Jarque–Bera probability is close to zero, confirming that the IC series is not normally distributed.

Real Estate (RE) shows a mean of about 3,424.50 and a median of 1,831.74, indicating moderate dispersion and the influence of higher values. The standard deviation (3,726.65) is slightly larger than the mean, pointing to significant variability in real estate activities. The skewness is positive (0.64), while kurtosis is below 3, implying a relatively flat distribution. The Jarque–Bera probability of about 0.09 suggests approximate normality at the 5 percent level.

Education (EDU) has a mean of about 934.65 and a standard deviation of 1,106.26 indicate notable fluctuations. The positive skewness (0.90) implies right-tailed behaviour, while the kurtosis of about 2.17 suggests a flatter distribution. However, the Jarque–Bera probability (0.045) indicates deviation from normality at the 5 percent level.

Human Health and Social Services (HHSS) records the lowest mean among the service variables (335.31) with a standard deviation of 379.03 suggests considerable relative variability. The distribution is positively skewed (1.01) with kurtosis close to 3, indicating mild peakedness. The Jarque–Bera test is significant ($p \approx 0.037$), suggesting non-normality.

In summary, the descriptive results indicate that poverty in Nigeria remains persistently high with moderate variability, while service-sector variables exhibit substantial dispersion, positive skewness, and in many cases non-normal distributions. This reflects uneven growth and structural imbalances within Nigeria's service sector, suggesting that expansions in areas such as trade, information and communication, education, and health have not been uniform enough to translate automatically into consistent poverty reduction.

4.2 Variance Inflation Factor for Multicollinearity

The Variance Inflation Factor (VIF) test is used to examine the presence and severity of multicollinearity among the explanatory variables representing service-sector activities in Nigeria. Multicollinearity becomes problematic when the VIF value reaches or exceeds the benchmark of 10, as it inflates standard errors and weakens the reliability of coefficient estimates.

Table: Variance Inflation Factor (VIF) Test for Multicollinearity

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.119892	3.080323	NA
TRD	1.96E–06	7.977841	4.472089
AFS	0.000112	1.490862	9.951857
IC	4.05E–07	8.921100	5.861152
RE	4.28E–06	2.974670	1.593084
EDU	4.96E–05	2.816293	1.625002
HHSS	0.000383	2.655598	1.472259

Source: Author's own computations using E-View 10

From the results, the constant term (C) records an uncentered VIF of 3.08, which is not of econometric concern, as multicollinearity diagnostics are primarily relevant for the explanatory variables. The VIF results show that none of the service-sector variables exceeds the critical threshold of 10. This implies that multicollinearity is not a serious problem in the model analysing the relationship between the service sector and poverty in Nigeria. Consequently, the estimated coefficients can be considered stable and reliable for policy inference, although the near-threshold value observed for accommodation and food services suggests that careful interpretation is warranted.

4.3 Test of Stationarity using ADF unit root test

The Augmented Dickey–Fuller (ADF) unit root test was employed to examine the time-series properties of poverty and service-sector variables in Nigeria over the period 1986-2023. The test was conducted at levels and first differences, incorporating both a constant and a linear trend, with lag lengths selected automatically using the Schwarz Information Criterion.

Table 4.3: Summary of ADF Unit Root Test Results for Stationarity

Variable	@ Level: ADF t-stat	Prob.	Stationary @ Level	At First Diff: ADF t-stat	Prob.	Order of Int
POV	-1.8999	0.6345	No	-5.8574	0.0001	I (1)
TRD	-0.2708	0.9882	No	-5.3604	0.0006	I (1)
AFS	-1.9165	0.6194	No	-5.1384	0.0014	I (1)
IC	-0.5056	0.9786	No	-3.8050	0.0289	I (1)
RE	-1.9179	0.6246	No	-3.5749	0.0464	I (1)
EDU	-4.5130	0.0031	Yes	Not required	-	I (0)
HHSS	1.7659	1.0000	No	-4.5309	0.0052	I (1)

Source: Author's own computations using E-View 10

The stationarity results show a mixture of I (0) and I (1) variables, with poverty and most service-sector indicators being I (1), while education is I (0). This combination supports the suitability of econometric techniques such as the ARDL bounds testing approach for analysing the long-run and short-run relationship between service-sector development and poverty in Nigeria.

4.4 Bound test for Long Run Relationship

Table 4.4 Bound test for long run Relationship

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I (0)	I (1)
			Asymptotic: n=1000	
F-statistic	3.795323	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99
Actual Sample Size	35		Finite Sample: n=35	
		10%	2.254	3.388
		5%	2.685	3.96
		1%	3.713	5.326

Source: Author's own computations using E-View 10

The bounds test and ARDL results confirm the existence of a long-run relationship between service-sector development and poverty in Nigeria. The findings indicate that while some service subsectors, notably real estate and information-related services, contribute to poverty reduction, others such as trade may exacerbate poverty if not properly structured. This ensure the need for inclusive service-sector policies that strengthen poverty-reducing channels such as employment, skills development, and access to essential services.

4.5 ARDL Long Run Regression Result

The ARDL long-run estimates provide evidence on how developments in selected service-sector activities influence poverty in Nigeria over the long term. Poverty (POV), measured by the poverty headcount ratio at the societal poverty line, is modelled as a function of trade, accommodation and food services, information and communication, real estate, education, and human health and social services. The coefficients capture the long-run equilibrium effects of these service-sector variables on poverty.

Table4.5: ARDL Long-Run (Levels) Estimates for Service Sector and Poverty in Nigeria

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRD	0.029762	0.008652	3.439808	0.0088
AFS	0.076390	0.134518	3.047504	0.0033
IC	-0.036544	0.010236	-2.639341	0.0405
RE	-0.056848	0.013399	-4.242655	0.0028
EDU	-0.131667	0.050016	-2.633132	0.0443
HHSS	-0.040627	0.077495	-0.524253	0.6143
C	51.29693	1.136996	45.11619	0.0000
EC = POV - (0.0298*TRD + 0.0064*AFS -0.0065*IC -0.0568*RE -0.0317				
*EDU -0.0406*HHSS + 51.2969)				

Source: Author's own computations using E-View 10

Trade (TRD) has a positive and statistically significant coefficient (0.0298, p = 0.0088). This indicates that, in the long run, an increase in trade activity is associated with an increase in poverty levels in Nigeria. Specifically, a one-unit increase in trade is linked to approximately a 0.03 percentage point rise in the poverty headcount ratio. This result suggests that trade expansion in Nigeria may not be inclusive and may disproportionately benefit capital-intensive sectors or higher-income groups, while exposing vulnerable populations to import competition and price volatility. The statistical significance at the 1 percent level underscores the robustness of this relationship.

Accommodation and Food Services (AFS) also exhibits a positive and statistically significant coefficient (0.0764, p = 0.0033). This implies that growth in accommodation and food services is associated with higher poverty levels in the long run. Although this sector is often labour-intensive, the result suggests that jobs created may be low-paying, informal, or insecure, limiting their poverty-reducing capacity. The significance of the coefficient indicates that structural issues such as low wages, poor working conditions, and limited value addition may prevent the sector from contributing effectively to poverty alleviation.

Information and Communication (IC) has a negative and statistically significant coefficient (−0.0365, p = 0.0405). This indicates that improvements in ICT services contribute to poverty reduction in Nigeria in the long run. A one-unit increase in ICT activity reduces poverty by about 0.04 percentage points. This result highlights the role of ICT in enhancing access to information, financial inclusion, digital employment opportunities, and productivity, particularly for small businesses and informal sector participants. The significance at the 5 percent level suggests that ICT development is an important long-term driver of inclusive growth.

Real Estate (RE) shows a negative and highly significant coefficient (−0.0568, p = 0.0028). This implies that expansion in real estate activities significantly reduces poverty in Nigeria. A one-unit increase in real estate output reduces poverty by approximately 0.06 percentage points. The strong statistical significance indicates that real estate development may generate employment through construction and allied services, improve housing conditions, and stimulate asset accumulation, all of which contribute to long-run poverty reduction.

Education (EDU) also exerts a negative and statistically significant effect on poverty (−0.1317, p = 0.0443). This suggests that increased investment and activity in the education sector substantially reduce poverty in the long run. The magnitude of the coefficient indicates that education has one of the strongest poverty-reducing effects among the service-sector variables considered. This finding aligns with human capital theory, as education enhances skills, productivity, and employability, thereby improving income-earning opportunities and reducing poverty over time.

Human Health and Social Services (HHSS) carries a negative coefficient (−0.0406) but is statistically insignificant (p = 0.6143). Although the negative sign suggests a potential poverty-reducing effect, the lack of statistical significance implies that, over the long run, health and social service expenditures or activities have not had a strong or consistent impact on poverty reduction in Nigeria. This may reflect inefficiencies in service delivery, inadequate coverage, or unequal access to healthcare and social protection programs.

The ARDL long-run results reveal that not all service-sector activities contribute equally to poverty reduction in Nigeria. While information and communication, real estate, and education significantly reduce poverty in the long run, trade and accommodation and food services appear to exacerbate poverty, and human health and social services have not been effective in significantly lowering poverty levels. These findings suggest that policy efforts should prioritize strengthening the poverty-reducing channels of the service sector particularly ICT, education, and real estate while reforming trade structures and service-sector labour conditions to ensure more inclusive and pro-poor growth.

4.6 ECM-ARDL Short Run Regression result

The ECM–ARDL results provide insights into both the short-run dynamics and the speed at which poverty adjusts to its long-run equilibrium following short-run shocks arising from service sector activities in Nigeria. The dependent variable is the change in poverty (D(POV)), while the error correction term captures long-run adjustment.

Table 4.6 ECM-ARDL short run form

ARDL Error Correction Regression				
Dependent Variable: D(POV)				
Selected Model: ARDL (2, 3, 3, 3, 3, 3, 3)				
Case 2: Restricted Constant and No Trend				
Date: 12/19/25 Time: 05:13				
Sample: 1986 2023				
Included observations: 35				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(POV(-1))	-0.018648	0.141843	-0.131468	0.8987
D(TRD)	0.006095	0.001920	3.173793	0.0131
D(TRD(-1))	-0.009504	0.001789	-5.310780	0.0007
D(TRD(-2))	-0.001040	0.001068	-0.973893	0.3586
D(AFS)	0.029450	0.012144	2.425124	0.0415
D(AFS(-1))	-0.007938	0.015007	-0.528974	0.6112
D(AFS(-2))	0.071133	0.017842	3.986888	0.0040
D(IC)	-0.004932	0.000548	-8.992360	0.0000
D(IC(-1))	0.002064	0.000739	2.792470	0.0235
D(IC(-2))	-0.000995	0.001053	-0.944999	0.3723
D(RE)	-0.006423	0.002241	-2.865363	0.0210
D(RE(-1))	0.028475	0.004218	6.750520	0.0001
D(RE(-2))	0.013437	0.002877	4.670540	0.0016
D(EDU)	-0.039196	0.009102	-4.306290	0.0026
D(EDU(-1))	0.013302	0.011122	1.196045	0.2659
D(EDU(-2))	-0.039500	0.016438	-2.402943	0.0430
D(HHSS)	0.160742	0.034045	4.721487	0.0015
D(HHSS(-1))	0.183997	0.035511	5.181409	0.0008
D(HHSS(-2))	0.314405	0.067492	4.658394	0.0016
CointEq(-1)*	-0.877241	0.116265	-7.545187	0.0001
R-squared	0.894614	Mean dependent var		-0.265714
Adjusted R-squared	0.761125	S.D. dependent var		2.776789
S.E. of regression	1.357150	Akaike info criterion		3.744211
Sum squared resid	27.62785	Schwarz criterion		4.632981
Log likelihood	-45.52369	Hannan-Quinn criter.		4.051014
Durbin-Watson stat	2.285748			

Source: Author's own computations using E-View 10

The error correction coefficient, CointEq(-1), is negative, large in magnitude, and statistically significant at the 1 percent level (−0.8772, p = 0.0001). This satisfies the a priori condition for convergence and confirms the existence of a stable long-run relationship between poverty and service sector variables. The magnitude implies that approximately 87.7 percent of any short-run disequilibrium in poverty is corrected within one year. This indicates a very fast speed of adjustment, meaning that deviations of poverty from its long-run path due to shocks in trade, ICT, real estate, education, and other service activities are rapidly corrected in the Nigerian economy.

The short-run coefficients show that changes in trade (TRD) have mixed effects on poverty. The contemporaneous change in trade is positive and significant (0.0061, p = 0.0131), indicating that in the short run, increases in trade tend to raise poverty, possibly due to adjustment costs, import competition, or price effects. However, the first lag of trade is negative and highly significant (−0.0095, p = 0.0007), suggesting that after initial adjustment, trade expansion begins to reduce poverty. This pattern reflects short-run disruptions followed by longer-run gains from trade-related activities.

Accommodation and food services (AFS) exert a positive and significant short-run effect on poverty contemporaneously (0.0295, p = 0.0415) and at the second lag (0.0711, p = 0.0040). This indicates that short-run expansions in this sector tend to increase poverty, reinforcing the argument that jobs created in this sector may be low-paying and informal, with limited immediate poverty-reducing capacity.

Information and communication (IC) show a strong poverty-reducing effect in the short run. The contemporaneous coefficient is negative and highly significant (−0.0049, p = 0.0000), indicating that improvements in ICT immediately reduce poverty. Although the first lag is positive and significant, the overall pattern suggests that ICT shocks largely contribute to poverty reduction through improved access to information, digital inclusion, and productivity gains.

Real estate (RE) also demonstrates significant short-run effects. The contemporaneous change reduces poverty (−0.0064, p = 0.0210), while the first and second lags are positive and highly significant. This implies that real estate activities initially reduce poverty, possibly through construction-related employment, but subsequent adjustments may involve rising housing costs that temporarily offset gains.

Education (EDU) exhibits a consistently poverty-reducing role in the short run. The contemporaneous effect is negative and significant (−0.0392, p = 0.0026), and the second lag is also negative and significant (−0.0395, p = 0.0430). This confirms that investments and improvements in education quickly translate into reduced poverty by enhancing human capital and income-earning capacity.

Human health and social services (HHSS), however, show positive and significant coefficients across all lags, implying that short-run increases in spending or activity in this sector are associated with rising poverty. This counterintuitive result may reflect inefficiencies, poor targeting of social spending, or the fact that health expenditures often rise in response to worsening poverty and vulnerability rather than alleviating it immediately.

The R-squared value of 0.8946 indicates that about 89.5 percent of the variations in changes in poverty are explained by the short-run dynamics of the service sector variables and the error correction term. This suggests a strong explanatory power of the model. Even after adjusting for the number of regressors, the adjusted R-squared of 0.7611 remains high, confirming the robustness of the model.

The Durbin–Watson statistic of 2.29 is close to the ideal value of 2, indicating the absence of serious autocorrelation in the residuals. This confirms that the model is well specified and that the estimated coefficients are reliable for inference.

4.7 Diagnostic Test

The diagnostic tests are conducted to validate the reliability, consistency, and adequacy of the ECM–ARDL model estimated for examining the relationship between the service sector and poverty in Nigeria. These tests focus on heteroscedasticity, serial correlation, and model stability.

Table 4.7: Diagnostic Test Results for the ECM–ARDL Model (Service Sector and Poverty in Nigeria)

Diagnostic Test	Test Statistic	Probability
Heteroscedasticity Test (Breusch–Pagan–Godfrey)		
F-statistic	0.256383	0.9961
Obs*R-squared	15.90816	0.9384
Scaled Explained SS	1.766287	1.0000
Serial Correlation Test (Breusch–Godfrey LM Test)		
F-statistic	2.256034	0.1859
Obs*R-squared	15.02296	0.1305

Source: Author's own computations using E-View 10

The Breusch–Pagan–Godfrey heteroscedasticity test examines whether the variance of the residuals is constant over time. The results show that the F-statistic has a probability value of 0.9961, while the Obs*R-squared statistic has a probability value of 0.9384. Both probability values are far above the conventional 5 percent significance level. This implies that the null hypothesis of homoscedasticity cannot be rejected. Therefore, the residuals of the ECM–ARDL model exhibit constant variance, indicating the absence of heteroscedasticity. This confirms that the estimated coefficients are efficient and that the standard errors are reliable for inference.

The Breusch–Godfrey LM test is used to examine the presence of serial correlation in the residuals. The reported F-statistic has a probability value of 0.1859, while the Obs*R-squared statistic has a probability value of 0.1305. Since both probabilities exceed the 5 percent significance level, the null hypothesis of no serial correlation is accepted. This indicates that the residuals are not serially correlated, implying that the dynamic structure of the ECM–ARDL model is correctly specified. The absence of serial correlation further validates the consistency of the estimated parameters.

CUSUM test for Stability

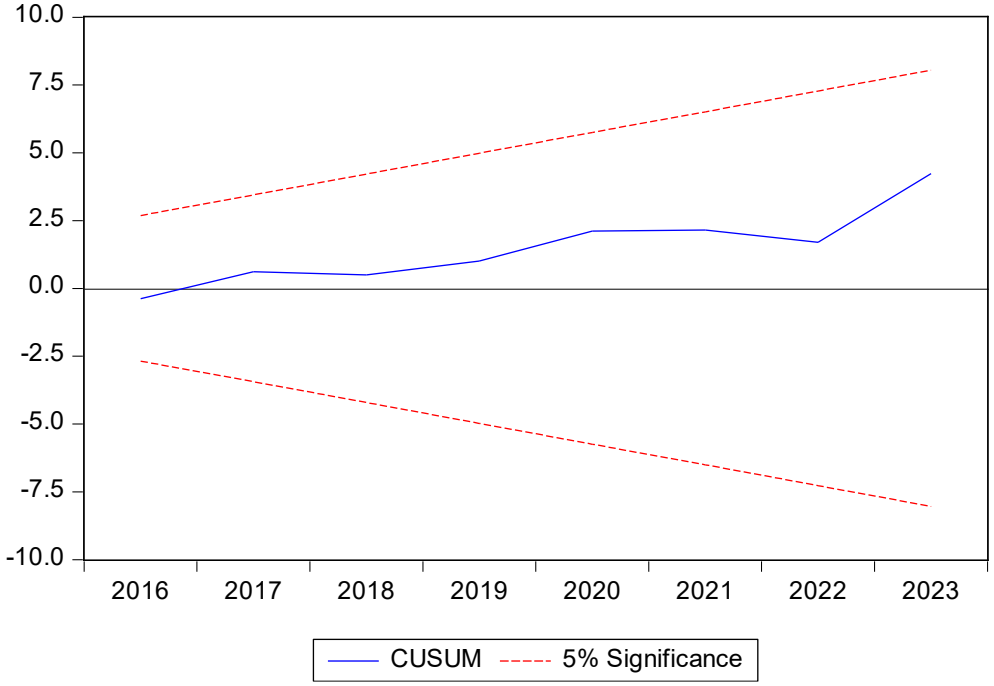

Figure 4.1 CUSUM test

The CUSUM test assesses the stability of the model parameters over the sample period. The reported CUSUM result indicates that the plot lies within the 5 percent critical bounds. This confirms that the coefficients of the ECM–ARDL model are stable over time, suggesting that the relationship between service sector activities and poverty in Nigeria does not suffer from structural instability during the study period.

5.0 CONCLUSION AND RECOMMENDATIONS

The study examined the impact of services sector on poverty in Nigeria. Specifically, the study analysed the role six (6) subservices sectors (trade services; accommodation and food services; information and communication; real estate; education; and human health and social services) played in curbing poverty in Nigeria. Findings revealed that whilst Information and Communication, Real Estate and Education contributed significantly in reducing poverty in Nigeria, Trade services and Accommodation and Food Services contributed significantly to the increase in Nigeria's poverty rate. However, Human Health and Social Services role in reducing poverty is insignificant. Relying on the findings, the study concludes that the Nigerian services sector played a crucial role in the fight against poverty in the period under review. It is based on this conclusion, that the study submits the following suggestions:

1. More investments should be encouraged in the information and communication services subsector.
2. The Nigeria government should support the private sector in the development and expansion of real estates in the country. This can be done through the provision of government credits or loans at low interest rates.
3. The Nigerian government as well as the private sector should increase investment in the education sector. This can be achieved through an increase in the budgetary allocation to the education sector.

4. For the human health and social services to play a significant role in reducing poverty in the country, the Nigeria government must invest more in the health sector. Also, the Nigeria government should encourage public-private partnership in the health sector, as this can help in providing a wide range of health services.

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