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Service Sector Output and Economic Growth In Nigeria: An Autoregressive Distributive Lag and ECM Approach

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Abstract

Purpose: Recent technological advancements in manufacturing have diminished employment opportunities for low-skilled workers, particularly in developing economies, resulting in slower job creation and productivity growth. In light of this challenge, many nations are seeking alternative pathways to stimulate economic expansion. This study examines the potential of Nigeria's service sector as a driver of growth, focusing on the impact of key sub-sectors, Education (EDU), Real Estate (RES), Health Services (HES), and Trade (TRD) alongside government regulation (proxied by inflation).

Method: The study uses Central Bank of Nigeria data (1981–2023) and applies econometric techniques, including the Augmented Dickey-Fuller (ADF) test, Johansen Cointegration test, and Error Correction Mechanism (ECM). These assess stationarity, long-run equilibrium, and short-term dynamics. The ADF test confirms stationarity after first differencing, while cointegration reveals five long-term equilibrium relationships.

Result: HES significantly boost short-term economic growth, while TRD has a positive but insignificant effect. RES negatively impacts growth, whereas EDU shows an insignificant negative link. To improve performance, the study recommends increased healthcare investment, sustained public administration expansion, and financial reforms to strengthen the service sector, mitigating adverse effects and promoting sustainable growth.

INTRODUCTION

Economic growth is a fundamental goal for government and societies worldwide. It is closely link to improving living standard, reducing poverty and fostering social welfare. Understanding the determinants of economic growth is crucial for policy makers as it allows for the identification of strategic intervention that can boost economic performance. An evaluation into the factors affecting economic growth has been one of the central issues amongst theoretical and empirical growth researchers. Within the framework of economic growth theory, there have been two important expositions that have led much of the existing discussion on economic growth. That is the neoclassical growth theory and endogenous growth theories (Chirwa, & Odhiambo, 2016). Their

main focus has been on the importance of state factors such as the accumulation of physical capital and human capital development (Solow 1956; Romer 1986; Lucas 1988). However, there have been other equally important contributions to economic growth literature that focus either on the impact of efficiency factors on economic growth (Easterly and Wetzel 1989; Barro 1990; World Bank 1990; Barro and Sala-i-Martin 1992) or on the importance of fundamental sources of economic growth, such as institutions and legal, demographic, geographic, socioeconomic and political factors (Barro 1999, 2003; Sachs and Warner 1997; Burnside and Dollar 2000; Radelet, Sachs, and Whang-Lee 2001).

The service sector plays a vital role in driving economic growth and development worldwide, with its importance in Nigeria being particularly significant. Although the sector holds great promise, it has often been wrongly perceived as unproductive, resulting in its marginalization in economic theories and policy frameworks (Bell, 1973; Fisher, 1935). Nigeria's economic landscape has been heavily influenced by the oil industry, which remains the main generator of income and foreign exchange. Yet, this heavy dependence on oil has made the economy susceptible to risks such as fluctuating prices, macroeconomic instability, and constraints on long-term development (Thorn, 2014; Timmer et al., 2015). In Nigeria, the service sector includes a wide range of industries, such as banking, telecommunications, retail and wholesale trade, tourism, real estate, information and communication technology (ICT), entertainment (especially Nollywood), and education (Business News, 2014; Mail & Guardian, 2014). By 2015, the sector was responsible for roughly 60% of the nation's Gross Domestic Product (GDP) and employed 33% of the workforce, exceeding the industrial sector's 7% contribution (NBS, 2015; UNCTAD, 2015). Despite these notable achievements, the sector has not reached its full capacity due to poor policy focus, lack of adequate funding, and governance-related issues (Adofu et al., 2015; Mazeli et al., 2024).

Thus the presence of a robust service sector enables countries to distinguish themselves by reducing the susceptibility to excessive dependence on imports and promoting the optimal utilization of existing resources. Adofuet al. (2015) observed that the Nigerian service industry encounters various obstacles such as a deficient technological foundation, insufficient funding towards research, development, and innovation, and excessive reliance on imported machinery, equipment, and spare parts. Notwithstanding these challenges, the significance of the manufacturing sector remains paramount for nations endeavoring towards progress. However, Mazeli, Ejinkonye, Uloghobui and Onehi (2024) examined the challenges and declining performance of the service sub-sector and suggested strategies for enhancing the service sector's productivity. This study did an updated nexus between the service sector output and economic growth in Nigeria while examining the impact of government policies on them. Thus, the research's objectives were to investigate the relationship between service sector output and economic growth in Nigeria and to examine the moderating impact of government policy on service, output and economic growth in Nigeria.

Economic Growth

Economic growth is the continued increment in the National Income (NI) or the overall goods and services produced in an economy. It is an expansion in the capacity of an economy to produce goods and services, compared from one timeframe with another. (Kuznets, 1957). A Nobel laureate in economics, defined economic growth of a country as "a long-term rise in capacity to supply increasingly diverse economic goods to its population, this growing capacity based on advancing technology and the institutional and attitudinal adjustments that it demands". This means developments in technology should be followed by structural and attitudinal changes to achieve growth for an economy. According to Todaro and Smith (2006), economic growth is the steady cycle by which the economy's productive potential is increased over time to generate increasing levels of national production and income. Therefore, economic growth happens if people take resources and rearrange them efficiently in ways that make overtime more competitive. Growth is

usually calculated in real terms, or inflation adjusted terms, in order to eliminate the potential distorting effect of inflation on the prices of goods and services produced. Therefore, economic growth is the increase in the inflation adjusted market value of all officially recognized finished goods and services produced by an economy over time. It is measured as the percentage rate of increase in real GDP. This is the continuous advancement in the level to satisfy the demand for goods and services, as a result of increased scale of production and improved productivity i.e. product and process innovations. In summary, we can say economic growth means new product, more output and wider choices for consumers.

The Service Sector in The Nigerian Economy

The Nigerian service economy is currently among the fastest growing in Africa: the sector grew at double-digit rates between 2009-12 (UNCTAD 2015). The rebasing of Nigeria's national accounts in 2014 further revealed major growth in the service sector, as services now account for the greatest share of Nigeria's GDP output contributing about 55% in 2014 and close to 60% in 2015 (Mail & Guardian, 2014; Business News, 2014; & Timmer et. al., 2015). A significant shift in Nigeria's service sector since the 1990s involved the rapid increase in the number of mobile telephone subscribers, since the issuance of cellular telephone licenses in 2002 by the government. These developments have been accompanied by a resurgent growth in the banking sector since reforms by the Nigerian central bank increased capital requirements for banks, which resulted to extensive consolidation, and growth of people employed in the industry (Mail & Guardian, 2014; & Iwuagwu 2014). Traditionally, the dominant sector in terms of revenue and foreign exchange earnings in the country had been crude oil and natural gas production. However, the rebasing revealed major growth in the services sector, which now accounts for the greatest share of the country's GDP output. Two significant changes took place in the services sector since Nigeria's last round of GDP rebasing in 1990 (Thorn, 2014). The first was the growth of the cell phone industry. Nigeria issued cell phone licenses to service providers in 2002. Since then, the number of cell phone subscribers has been increasing. Second, the Nigerian banking sector, experienced significant growth after consolidation. The growth in its capital base, number of people employed and other factors contributed to the growth in the service sector. The rebasing revealed that the structure of Nigeria's economy has been on an upward trend. Specifically, the services sector's share of GDP rose from around 29% in 2013 under the old series to 51.89% in year.

Theoretical Review: Service Growth Theory

Formal examination on the development of services goes back to the twentieth century. The three-sector model, which was proposed by Clark (1940), Fisher (1935), and Fourastie (1949), was the primary group of works that endeavored to clarify the growth of services. The classification of an economy into three sectors was first proposed by Fisher (1935); primary, secondary and tertiary sectors. The primary sector is concerned with extraction of raw materials, mainly agriculture, fishing, hunting, pastoral production, forestry, and mining activities. The secondary sector included manufacturing and construction. While tertiary sector comprised of communications, personal services, trade, transportation, and government. (Haksever & Render, 2013). Fisher (1935), recognized the tertiary sector as the sector that produces "immaterial goods". He stressed the need that an economy should be characterized based on the workforce engaged in these sectors. Fisher also contented that demand moves to a high productivity (secondary and subsequently to tertiary sectors) from a low productivity (primary) as a result of increase in demand. Clark (1940), considered this transfer from a low productivity to a high productivity as a requirement for development.

In later development, theorist turned to the demand side in examining the growth of services. Most prominent was Bell (1973), who outlined the development of human societies in three stages:

pre-industrial society; characterized by extraction of natural resources, low or nonexistence of technology, low productivity. Industrial Society; characterized by products creation through manufacture, quick innovative advancements with the utilization of muscle power restored by machines and energy, thus increased productivity. Post-industrial society; described by service production, muscle or machine power or energy no longer significant, rather information and knowledge become key, economic life is determined by the possession of skills and knowledge increasingly demanded in the society (Bell 1973). This demand for increased and improved technical skills and knowledge in the workforce result to the need for higher education into post-industrial society, and thus having a good life (Haksever & Render, 2013). Standard of living is therefore determined by the level and quality of services such as education, recreation, and health in this society. As a result of the rise in consumption of such services, the post-industrial society would emerge, and be characterized by a steady replacement of blue-collar workers for white-collar workers (Bell, 1973).

Empirical Review

There is a vast body of empirical literature on the impact of service sector on economic growth. Several works have been done on the effect service sector has on economic growth and also on the structure of the Nigerian economy in which each having gaps of limited sectorial coverage, scope (the effects of reforms on the structure) or the data relied upon for their analyses were dated. Osamwonyi (2017) reviewed the service sector of Nigeria for the period of 2000- 2011 using Descriptive statistics. The study shows that services have made a major contribution to Nigeria's GDP, jobs and trade and capital imports and the problem facing the Nigerian economy is not due to lack of diversification but the need to enhance the performance of service sector, which will require the possession of adequate skill and knowledge.

Daniel (2014) reviewed the impact of health on economic growth in Nigeria for the period of 1995-2009, using cointegration and granger causality techniques. The research reveals that GDP is positively affected by health factors in the long run and health indicators affect the per capita GDP. It shows that health factors have a long run impact on economic growth. Thereby, the health impact is a long-term phenomenon. The main policy implications of the study are that a high level of economic development can be accomplished by increasing the health status of the population, particularly if you have the current status it's at low ebb. Peter, et al (2015) reviewed the impact of road transportation infrastructure on economic growth in Nigeria using both primary and secondary data. The result shows that the transport sector has a positive impact on Nigeria's economic growth. Citing the study, it stated that the government should develop suitable and enforceable road development and maintenance regulations to ensure good access and flow in Nigeria. Moreover, Nigeria's economic development relied on the degree of decent and affordable road transport and encourages commercial activities. Olusoji and Odeleye (2018) examined service sector as a potential in the transformation of Nigerian economy on some macroeconomic variables for the period 1981-2015. They observed that agricultural sector contributes more to the Nigerian economy than the service sector.

In the study of Farhadi, et al (2012), on Information and communication technology use and economic growth using Generalized method of moments (GMM) estimator for the period 2000 – 2009 for 159 countries, the result showed that GDP per capita and ICT use index i.e. the amount of internet users, internet subscribers and mobile subscription have a positive relationship. The result further showed that the effect ICT use has on GD is more in high income economies than the low-income economies. This suggested that if the low income countries seek to advance their economy and attain long term economic growth; they need to apply certain policies that will facilitate the use of ICT.

Owoeye and Adenuga (2005) evaluated the association between the spending on education and health and economic growth. The analysis found a prudent error correction model and found that expenditure on education had a positive impact on economic growth. The study suggested that more money should be channeled to the level of schooling where the gains are greater for people and society at large. The research did not examine the path of the connection between expenditure on education and economic growth. Babatunde and Adefabi (2005), examined the long-term relationship between the two variables. Education and economic growth in Nigeria through Johansen's cointegration approach as a research method. Products of the incorporation of the co-technique indicates that there is a long-term association between enrolments. Main and tertiary stages of schooling and average years of study production per staff. The research concluded that educated labour force had a positive and substantial effect on economic growth by factor accumulation and the development of total factor productivity.

Omotor, (2004), "An Analysis of Federal Government Expenditure in the Education Sector of Nigeria: Implications for National Development" examined the explanatory variables of spending of the federal government using of ordinary least square (OLS) in the education sector in Nigeria processes. The result has shown the increase in spending on education in Nigeria is turbulent, reflecting the volatility of government earnings. Government revenues were the only significant determinant of education expenditure are indicated by the effects of the regression. Pegkas and Tsamadias (2014) examined the impact of higher education on economic development in Greece over the period 1960 to 2009 using higher enrolment rates as a proxy for human resources. The paper uses co-integration and error-correction model to evaluate the causal relationship between higher education, investment in physical capital and economic growth. The research indicates that there is a long-term relationship between higher education, investment in human resources and economic growth. Result also shows that there is long-term and short-term unidirectional Granger Causality from higher education and spending in physical resources.

RESEARCH METHODS

This study examined the relationship between selected sectors and the Nigerian economic growth. The longitudinal research design method will be adopted for this study. Data was retrieved from government repositories to gather relevant information in the service, and economic growth of the Nigerian economy. The study used secondary data as the main source of information. These sources of data include: the Nigerian bureau of statistics (NBS: https://www.nigerianstat.gov.ng/) and the Central Bank of Nigeria (CBN: https://www.cbn.gov.ng/documents/data.asp). The estimation of the relationships between dependent and independent variables will involve the use of inferential statistics. Therefore, Pearson correlation coefficients, factor analysis and multivariate regression analysis are used to estimate the relationships between the dependent and independent variables. The analyses was conducted using the E-Views software.

Model Specification

The functional relationship is expressed in the equation below:

$$GDP = F(EDU, TRD, RES, GP, HES) \quad \ldots\ldots 1$$

The model is econometrically expressed as

$$ECG = \beta 0 + \beta 1EDUt + \beta 2TRDt + \beta 3RESt + \beta 4GPt + \beta 5HESt + Ut \quad \ldots\ldots 2$$

Where:
GDP = Gross Domestic Product (proxy for economic growth)
EDU = Education (total government expenditure on tertiary, secondary and primary education)
TRD = Trade
RES = Real Estate
GP = Government Policy (measured by inflation)
HES = Human Capital Development (total enrolment in tertiary, secondary and primary education)
β0 = Intercept; β 1 - β 5 > 0; U = Error Term

Equation 2 can be transformed into a log-linear form as:
LnGDPt = β0+ β1LnEDUt + β2LnTRDt + β3LnRESt + β4LnGPt + β5LnHESt + Ut.....3

The bounds procedure according to Tang (2003) is based on ARDL model for test of cointegration relationship. Following this lead, the model as analyzed by this research is specified as:

DLnGDPt = β0+ β1DLnEDUt + β2DLnTRDt + β3DLnRESt + β4DLnGPt + β5DLnHESt + β6DLnEDUt-1 + β7DLnTRDt-1 + β8DLnRESt-1 + β9DLnGPt-1 + β10DLnHESt-1 + ΨECMt-1 + Ut …….. 4

Furthermore,

DLnGDPt = β0+ ∑β1DLnEDUt + ∑β2DLnTRDt + ∑β3DLnRESt + ∑β4DLnGPt + ∑β5DLnHESt + ∑β8DLnEDUt-1 + ∑β9DLnTRDt-1 + ∑β10DLnRESt-1 + ∑β11DLnGPt-1 + ∑β12DLnHESt-1 + ΨECMt-1 + Ut.....5

RESULTS & DISCUSSION

Table 1.
Data Presentation

	Education	GDP	Health_service	Inflation	Real_est	Trade
Mean	826.4777	4072.075	296.5668	0.341163	3027.007	7124.593
Median	273.2151	1266.668	130.0920	0.960000	712.7466	1494.237
Maximum	3114.911	13423.87	1254.630	43.22000	10503.07	27408.75
Minimum	3.398465	4.280034	1.619069	-43.57000	5.239968	12.49394
Std. Dev.	1081.274	4705.748	371.8139	14.38697	3669.336	9043.656
Skewness	1.072764	0.754916	1.173976	-0.481218	0.818468	0.988250
Kurtosis	2.529520	1.968738	3.120978	6.849245	2.052933	2.445026
Jarque-Bera	8.644145	5.989704	9.903455	28.20616	6.407881	7.551068
Probability	0.013272	0.050044	0.007071	0.000001	0.040602	0.022925
Sum	35538.54	175099.2	12752.37	14.67000	130161.3	306357.5
Sum Sq. Dev.	49104458	9.30E+08	5806315.	8693.366	5.65E+08	3.44E+09
Observations	43	43	43	43	43	43

Source: Central Bank of Nigeria's annual statistical bulletin, 2023; Researcher's compilation, 2024

Descriptive Statistics

The descriptive result in table 1 above show that, the minimum recorded GDP during the period of this investigation was 4.280, while the maximum was 13423.87 at the same period, education output recorded a minimum output of 3.398, and a maximum of 3114.911. The health services had a minimum output to be 1.619 and maximum of 1254.630. The inflation had minimum and maximum outputs of -43.57 and 43.22, the real estate output had minimum and maximum

outputs of 5.239 and 10503.07, the trade output had minimum and maximum outputs of 12.493 and 27408.75. This show that the trade recorded more output and contributed to the GDP more than other disaggregation of the service sector between 1981 and 2023 respectively.

Unit Root Test

The unit root test was employed to verify the integrating order of selected variables. The test was based on the Augmented Dickey – Fuller (ADF) test. The results of the unit root test are reported in Table 2. However, the results revealed that of the 7 variables, inflation was stationary at levels, given that the calculated ADF statistic in absolute terms (6.506) was greater than the critical value (3.523) at the five per cent level of significance at levels. However, other remaining variables were not stationary at the level because their calculated ADF statistics in absolute terms at the levels were greater than the critical values at the five per cent level of significance, but they were stationary after their first, and second differencing.

Table 2.
Augmented-Dickey Fuller (ADF) test for the service sector

Variable	Level	ADF Statistic Critical Value at 5%	1st Difference	Critical value at 5%	Remarks
GDP	-3.506230	-3.523623	-6.633287	-3.526609	I(1)
EDUCATION	3.240295	-3.552973	-3.536601	-3.873687	I(1)
HEALTH	2.731921	-3.533083	-4.059701	-3.533083	I(1)
REAL ESTATE	-1.524182	-3.523623	-3.841335	-3.523623	I(1)
TRADE	0.691835	-3.533083	-5.341747	-3.533083	I(1)
INFLATION	-6.040865	3.520787			I(0)

Bounds test for the service sector equation

The result of the bounds test for co-integration as depicted in table 3 showed that the computed F-statistic of 6.42 was greater than the upper bound critical values of 4.25 at the five percent level of significance. Given the fact that the computed F-statistic value is greater than the upper bound critical value, the study concluded that there is long run relationship among the variables in the service output equation.

Table 3.
Bounds test for cointegration

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.426602	10%	2.75	3.79
K	5	5%	3.12	4.25
		2.5%	3.49	4.67
		1%	3.93	5.23

Long run estimate of the service sector equation

The existence of a long run relationship as reflected in the bounds test necessitated the estimation of the long run results of the service sector output model. The result of the long run estimation is depicted in table 4.

Table 4.
Long run estimate of the service sector equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HEALTH	-0.779352	0.687419	-1.133737	0.2834
EDUCATION	-0.003251	0.001323	-2.457038	0.0338
REAL ESTATE	-0.004909	0.002227	-2.204535	0.0520
TRADE	0.001977	0.000901	2.194875	0.0529
INFLATION	0.063887	0.039969	1.598410	0.1410

The result showed that in the long run, health sector output will exert negative impact on economic growth in Nigeria. This finding does not align with economic theories, implying that in real terms, a one percent increase in health output would bring about a decrease in economic growth of Nigeria by approximately 0.77 percent, which is statistically insignificant.

The result of the coefficient of education was not in line with a priori expectations, which revealed a positive intercept. According to this study, it implies that a percentage increase in education will lead to a decrease in economic growth in Nigeria by approximately 0.003 per cent. The study further shows that education will possess a statistically relevant impact on economic growth in the long run. Also, the long-run results between real estate and economic growth in Nigeria indicates a negative relationship in the long run. This disagrees with economic theories, implying that a percentage increase in the value of real estate output will lead to a decrease in economic growth of Nigeria by approximately 0.004 per cent. However, the study further shows that real estate will possess a statistically irrelevant impact on economic growth in the long run. Furthermore, the results of the coefficient of trade show that in the long run, trade output will exert positive impact on economic growth in Nigeria. This finding aligns with economic theories, implying that in real terms, a one percent increase in trade output would bring about an increase in economic growth in Nigeria by approximately 0.001 percent, which is not statistically significant. Finally, the results of the coefficient of inflation show that in the long run, inflation will also exert positive impact on economic growth in Nigeria. This finding does not align with economic theories, implying that in real terms, a one percent increase in inflation rate would bring about an increase in economic growth in Nigeria by approximately 0.06 percent, which is not statistically significant.

ARDL Error Correction Estimates for The Short Run Dynamics of Service Sector Equation

The result of the ARDL estimates for the short run dynamics of service output equation is presented in table 5. The results show that in the current period, health service output exerts a positive and statistically significant impact on economic growth in Nigeria. This aligns with the relevant a priori expectations, implying in real terms that, a one percent increase in health service sector output will lead to an increase in economic growth in Nigeria by approximately 0.997 per cent. The lag one period of health service output also revealed a positive and statistically insignificant relationship with growth in Nigeria, thus aligning with economic expectations. However, the lag two period of health service output also revealed an inverse and statistically insignificant relationship with growth in Nigeria, thus aligning with economic expectations

The coefficient of education output in the current period revealed a negative and statistically insignificant relationship with economic growth in Nigeria. This finding disagrees with a priori expectations, implying in real terms that, a percentage increase in education output will bring about in decrease in economic growth in Nigeria by approximately 0.129 per cent. On the other hand, the lag one period of education output revealed a positive and statistically insignificant relationship with growth in Nigeria, while, the lag two and three period of education output revealed a positive and statistically significant relationship with growth in Nigeria. This implies that, past education output have led to increase in economic growth in Nigeria by approximately 0.002, 0.003 and 0.002 per cent respectively. The results show that the real estate output in the current period has negative and

statistically non-significant relationship with economic growth in Nigeria. These findings deviate from the relevant economic theories, implying that a percentage increase in the value of the real estate output will bring about a decrease in economic growth in Nigeria by approximately 0.0002 per cent. Meanwhile, real estate output in the lag one, two and lag three periods have positive and statistically significant relationship with economic growth in Nigeria. These findings that are statistically significant are consistent with the relevant economic theories, implying that a percentage increase in the value of the service output brought about an increase in economic growth

Table 5.
ARDL Error Correction for service output equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.179284	0.145594	1.231391	0.2463
@TREND	0.455911	0.062608	7.282017	0.0000
DLOG(GDP(-1))	-0.358319	0.123058	-2.911785	0.0155
DLOG(GDP(-2))	-0.285993	0.107209	-2.667608	0.0236
DLOG(GDP(-3))	-0.300067	0.114742	-2.615152	0.0258
DLOG(HEALTH_SERV...	0.997336	0.270984	3.680419	0.0042
DLOG(HEALTH_SERV...	0.129475	0.291199	0.444626	0.6661
DLOG(HEALTH_SERV...	-0.600450	0.280770	-2.138579	0.0582
D(EDUCATION)	-0.001206	0.000727	-1.658411	0.1282
D(EDUCATION(-1))	0.002002	0.000909	2.202506	0.0522
D(EDUCATION(-2))	0.003190	0.000975	3.271835	0.0084
D(EDUCATION(-3))	0.002871	0.000712	4.031102	0.0024
D(REAL_EST)	-0.000248	0.000213	-1.162971	0.2718
D(REAL_EST(-1))	0.003061	0.000505	6.057214	0.0001
D(REAL_EST(-2))	0.002271	0.000404	5.614808	0.0002
D(REAL_EST(-3))	0.001452	0.000325	4.464366	0.0012
D(TRADE)	0.000251	0.000116	2.167236	0.0554
D(TRADE(-1))	-0.000969	0.000181	-5.354691	0.0003
D(TRADE(-2))	-0.000500	0.000161	-3.108682	0.0111
D(INFLATION)	4.35E-06	0.002714	0.001602	0.9988
D(INFLATION(-1))	-0.041124	0.006326	-6.501055	0.0001
D(INFLATION(-2))	-0.022702	0.004200	-5.404913	0.0003
D(INFLATION(-3))	-0.011097	0.002793	-3.973165	0.0026
CointEq(-1)*	-0.841340	0.110627	-7.605223	0.0000
R-squared	0.896167			
Adjusted R-squared	0.736956	Durbin-Watson stat		2.534542
S.E. of regression	0.199306			
Sum squared resid	0.595843			
Log likelihood	26.19753			
F-statistic	5.628804			
Prob(F-statistic)	0.000590			

in Nigeria by approximately 0.003, 0.002 and 0.001 per cent respectively in the past one, two and three years. Also, the result of the coefficient of trade output for the current is in line with relevant economic theories and revealed a positive, but statistically insignificant relationship with economic growth in Nigeria. This implies that, a percentage increase in trade output will lead to an increase in economic growth in Nigeria in the current period by approximately 0.002 percent, ceteris paribus. Meanwhile, the result of the coefficient of trade output for the lag one and lag two are not in line with relevant economic theories and revealed a negative, but statistically significant relationship with economic growth in Nigeria. This implies that, a percentage increase in trade output will lead to a decrease in economic growth in Nigeria in the current period by approximately 0.0009 and 0.0005

percent respectively. Finally, the results of the coefficient of inflation in the current periods revealed a positive and statistically insignificant relationship with economic growth in Nigeria. This result deviates from relevant economic theories, implying that a unit increase in inflation will lead to an increase in economic growth in Nigeria by approximately 0.000004 per cent. On the other hand, lag one, two and three periods of inflation revealed an inverse but statistically significant relationship with economic growth in Nigeria.

Furthermore, the short run result showed that the error correction term has the expected negative coefficient and was also statistically significant at the 5 percent significance level in line with theories. The magnitude of the coefficient of the error correction variable of 0.841340 implies that over 84.1 per cent of the disequilibrium in economic growth will be corrected back to equilibrium within one year. This indicated a moderate speed of adjustment from the short run disequilibrium to the long run equilibrium. The R-squared of 0.896167 and the Adjusted R-squared of 0.736956 showed about 73.6 percent of the changes in economic growth has been accounted for by the independent variables. Also implying that the Durbin-Watson statistic value of 2.53 showed that the residual terms are not correlated and hence, there is no problem of serial correlation in the model.

Diagnostic Test for The Service Output Equation

The study employed many diagnostic tests to check the stability of the model ranging from the CUSUM test, CUSUMSQ test, the Breusch-Godfrey serial correlation Lagrange Multiplier (LM) test and the autoregressive conditional heteroscedasticity (ARCH) test were employed to check the existence of the normality or adequacy of the estimated model. The Breusch-Godfrey serial LM test statistic of 6.429199 with its high probability value of 0.0823 showed that there is no problem of autocorrelation in the model (see table 6). This indicates that the residuals terms are independent and hence there is no autocorrelation in the estimated equation. The Breusch-Pagan-Godfrey Heteroscedasticity test value of 3.475856 with its high probability of 0.0836 showed that there is a concern of heteroscedasticity and hence the disturbance terms are not normally distributed. The conclusion from the various diagnostic tests conducted averagely showed that the estimated equation is adequate and moderately-behaved. The plot of CUSUM test graph at the five percent critical lines as depicted in figure 1 and 2 showed that the recursive line wander clearly in between the critical lines, indicating the stability of the estimated service output equation, and further reveals the absence of structural breaks in the data.

Table 6.
Diagnostic test for the service output equation

Test statistic	Value(prob.)
Breusch-Godfrey Serial Correlation LM Test	6.429199
	(0.0823)
Breusch-Pagan-Godfrey Heteroscedasticity Test	3.475856
	(0.0836)

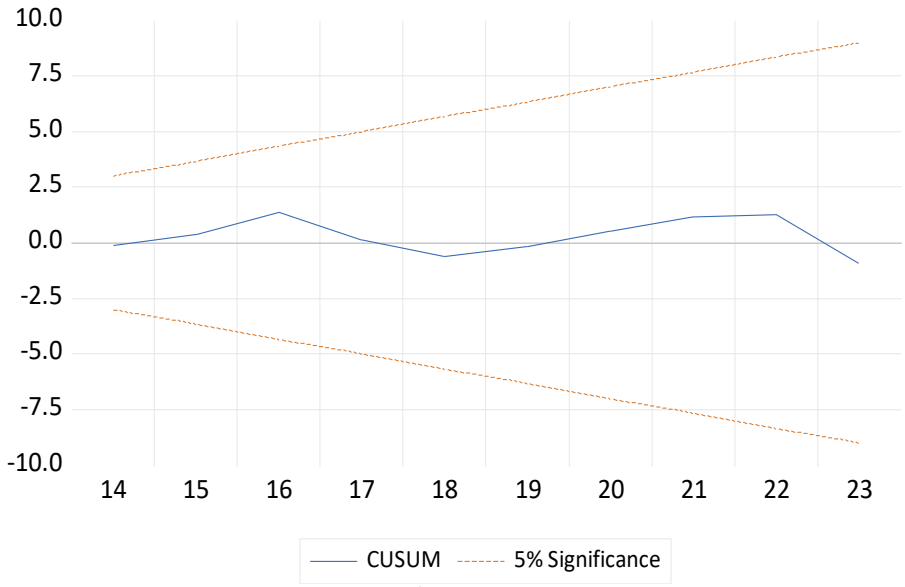

Figure 1.
Cumulative Sum of Residuals (CUSUM) test for the service output equation

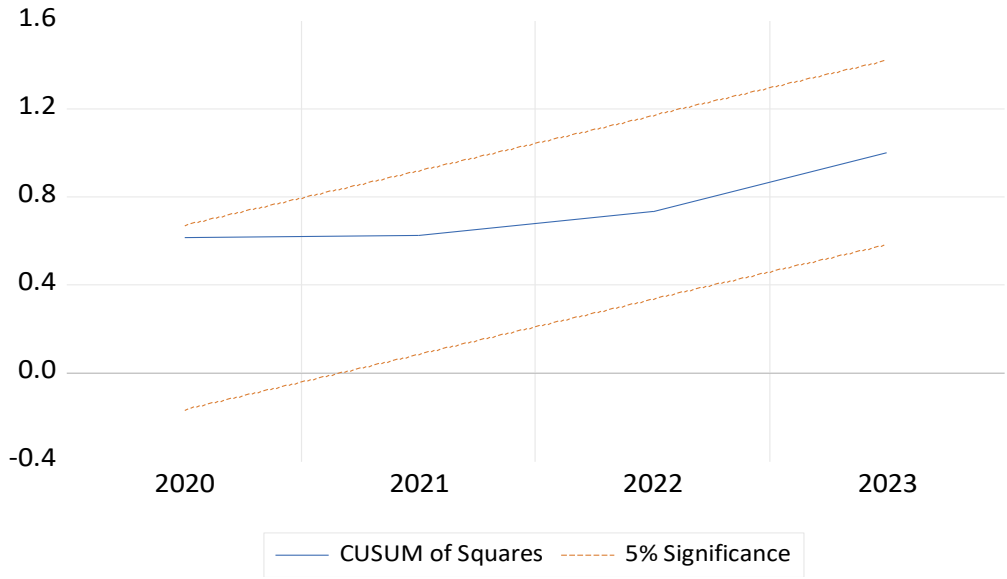

Figure 2.
Cumulative Sum of Residuals (CUSUM of Squares) test for the service output equation

The findings from the result in the preceding section revealed that the service sector has had varying impact on economic growth in Nigeria during the evaluation period. Specifically, the result showed that service sector output and other control variables revealed nearly a similar pattern of relationship with growth in Nigeria for instance, the findings show that the service sector output has positive impacts on growth in Nigeria both in the short-run and in the long run. Revealing statistical significance only in the short run. These findings agree with related studies by Daniel (2014); Owoeye and Adenuga (2005) that investigated the relationships between health and education sector output and economic growth and found that the variables used as service sector output are significant determinants of economic growth in Nigeria.

CONCLUSION

The essence of this study was to analyze the existing relationship between the service sector outputs and economic growth in Nigeria between the periods, 1981 to 2023. Specifically, the study quantified the contribution of service output to economic growth in Nigeria; the effect of health services on economic growth in Nigeria; the effect of education on economic growth in Nigeria; the effect of real estate on economic growth in Nigeria; the effect of trade on economic growth in Nigeria and the effect of government policy in terms of inflation on economic growth in Nigeria. The findings demonstrate that health service sector positively impacts economic growth in Nigeria only in the short run and negatively impacts economic growth in Nigeria in the long run, with statistical significance evident only in the short run. The findings that investments in education, will lead to decreased economic growth with statistical significance evident mostly in the long run. The findings also reveal real estate has a negative and non-significant relationship with growth in the long run and a statistically insignificant impact in the short run. The finding that trade has a positive and statistically insignificant impact on economic growth in the short run, and in the long run. The findings also reveal that crude petroleum has a negative and non-significant relationship with growth in the long run but a statistically significant impact in the short run. Lastly, the finding reveals that government policy, in terms of inflation has a positive and non-statistically significant impact on economic growth both in the short and long term. Given the above findings, the following recommendations are proposed for consideration. The Nigerian government needs to support and invest in the health service sector. Hence, increased investments in the health service sector should be encouraged to drive sustained economic growth in the country.

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REFERENCES

Adeleye, O., & Shittu, M. (2018). Inflation, manufacturing output and economic growth: Nigeria experience. *The Social and Management Scientist, 10*(1), 43-47. https://doi.org/10.55493/5009.v10i2.4521

Adofu, I., Taiga, U. & Tijani, Y. (2015). Manufacturing sector and economic growth in Nigeria. *Donnish Journal of Economics and International Finance, 1*(1), 1-6.

Afolabi, A., & Laseinde, O. (2019). Manufacturing sector performance and economic growth in Nigeria. *Journal of Physics.* https://doi.org/10.1088/1742-6596/1378/3/032067

Awake, (2002). Globalization: course or cure. *Journal Awake, 22,* 1-14.

Babatunde, A., & Adefabi, A., (2005). Long-Run relationship between education and economic growth in Nigeria: evidence from johannes' cointegration approach. *Regional conference on education in West Africa: constraints and opportunities*..

Barro, R. J. (1990). Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy, 98* (5), 103-S125. https://doi.org/10.1086/261726

Barro, R., & Sala-i-Martin, X. (1992). Public finance in models of economic growth. *The Review of Economic Studies, 59* (4), 645-661. https://doi.org/10.2307/2297991

Barro, R. J. (1999). Determinants of Economic Growth: Implications of the Global Evidence for Chile. *Cuadernos de Economía, 36* (107), 443-478.

Barro, R. J. (2003). Determinants of economic growth in a panel of countries. *Annals of Economics and Finance, 4,* 231-274.

Bell, D. (1973). The coming of the post-industrial society: a venture in social forecasting. Middlesex: Penguin Books.

Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. *The American Economic Review, 90*(4), 847-868. https://doi.org/10.1257/aer.90.4.847

Business News (2014). Services sector drives 6.21% growth in GDP – NBS. 17th July, Available online: https://businessnews.com.ng/2014/07/17/services-sector-drives-6-21-growth-gdp-nbs/

Chandra, A. (2011). Nexus between Government Expenditure on Education and Economic Growth: Empirical Evidences from India.

Chirwa, T. &. Odhiambo, N. (2016). Macroeconomic determinants of economic growth: a review of international literature. *South East European Journal of Economics and Business 11*(2), 33-47. https://doi.org/10.1515/jeb-2016-0009

Chukwuedo, O. S., & Ifere, E. O. (2017). Manufacturing subsector and economic growth in Nigeria. *British Journal of Economics, Management and Trade, 17*(3), 1-9. https://doi.org/10.9734/BJEMT/2017/29352

Clark, C. (1940). The conditions of economic progress. McMillan & Co, London.

David, V. (2007). Barrier or benefits? Regulation transatlantic Trade. *Washington, D.C Brooking Institute Press.*

Dicken, P. (2003). Global shift: transforming the world economy. London: Paul Chapman

Dogara E. J. (2018). The Impact of Manufacturing on Economic Growth in Nigeria: an autoregressive distributed lag model approach. *International Journal of Economics and Management Studies, 5*(8), 14-20. https://doi.org/10.14445/23939125/IJEMS-V5I8P103

Dorian, S.K. (1997). Education and health in an effective-labour empirical growth model. *The Economic Record, 73*, 314-328. https://doi.org/10.1111/j.1475-4932.1997.tb01026.x

Easterly, W. & Levine, R., (1997). Africa's growth tragedy: Policies and ethnic divisions. *Quarterly Journal of Economics, 122*(4), 1203–1250. https://doi.org/10.1162/003355300555466

Farhadi, M., Ismail R., & Fooladi, M. (2012). Information and communication technology use and economic growth. *PLoS ONE, 7*(11). https://doi.org/10.1371/journal.pone.0048903

Fidelis, O. & Olukayode, E. (2012). Globalization and economic growth in Nigeria: a multidimensional analysis. *Pakistan Journal of Social Sciences, 9*(2), 89-95. https://doi.org/10.3923/pjssci.2012.89.95

Fisher, A. (1935). Clash of progress and security. Macmillan and Co. Limited, London.

Fourasti´e, J. and Siegfried, A. (1949). The great hope of the 20th century: technical progress, economic progress, social progress. Presses Universitaires de France, Paris.

Garry, B. (2013). Globalization confronting fear about open trade. *Washington, D.C Brooking Institute Press.*

Grossman, G. & Helpman, E. (1991). Innovation and growth in the global economy. MIT Press.

Haksever, C., & Render, B. (2013). Service management: an integrated approach to supply chain management and operations. *Upper Saddle River,* NJ: FT Press.

Idowu, D. (2014). The impact of health on economic growth in Nigeria. *Journal of Economics and Sustainable Development, 5*(19).

Iwuagwu, O. (2014). Telecommunications Reform in China and Nigeria: same result, different strategies. *Journal of International Social Research, 7*(32), 652- 668.

Isikhuemen, A., Aigheyisi, O., & Iseghohi, J. (2019). Comparative analysis of the long run effects of economic, political and social-cultural globalization on Nigeria's economic growth. *Nigerian Journal of Management Sciences, 7*(1), 168-174.

Kuznets, S. (1966). Modern economic growth: rate, structure and spread, new haven, CT. Yale University Press.

Kuznets, S. (1957). Quantitative aspects of the economic growth of nations: II. Industrial distribution of national product and labor force. *Economic development and cultural change, 5*(4). https://doi.org/10.1086/449740

Lucas, R., (1988). On the mechanics of economic development. *Journal of Monetary Economics 22*(1), 3–42. 10.1016/0304-3932(88)90168-7

Mail and Guardian (2014). Oil, gas play second fiddle to Nigeria's services sector. 7th April. Available online: https://mg.co.za/article/2014-04-07-oil-gas-play-second-fiddle-to-nigerias-services-sector/

Mazeli, N., Ejinkonye, C., Uloghobui, M., & Onehi, H. (2024). Effect of manufacturing sector output on economic growth in Nigeria: 1981-2022. *African Banking and Finance Review Journal, 11*(11), 16-26.

Musila, J., & Belassi, W. (2004). The impact of education expenditures on economic growth in Uganda. https://doi.org/10.1016/j.econmod.2003.10.009.

Nwogwugwu, U. C., Metu, A. G., & Ihugba, O. A. (2021). Do disaggregated manufacturing sectors matter in Nigerias economic growth: VECM approach? *Journal of Economics and International Finance, 13*(2), 85-99. https://doi.org/10.5897/JEIF2021.1133

Obioma, K., Anyawu, N., & Kalu, A. (2015). The Effect of Industrial Development on Economic Growth Empirical Evidence in Nigeria. *European Journal of Business and Social Sciences, 4*(2), 127-140. http://doi.org/10.13140/RG.2.2.28272.97289

Ogundipe, M. (2022). The impact of manufacturing sector on economic growth in Nigeria. https://doi.org/10.21203/rs.3.r-2203096/v1.

Olusoji, M. & Odeleye, A. (2018). Service sector potentials in the transformation of the Nigerian economy. *BizEcons Quarterly, 2*, 24-35.

Omotor, D., Orubu, C., & Inoni, E. (2009). Policy Reforms and Agricultural Exports in Nigeria: An Empirical Analysis. *Singapore Economic Review, 54*(4), 589-603. https://doi.org/10.1142/S0217590809003501

Owan, P., Garbini, J. & Devasia, S. (2020) Faster confined space manufacturing teleoperation through dynamic autonomy with task dynamics imitation learning. *IEEE Robotics and Automation Letters, 5*(2), 2357-2364. http://doi.org/10.1109/LRA.2020.2970653

Owoeye, A. (2005). Human capital and economic development: an empirical analysis of a developing economy. Univerity of Ado-Ekiti, Nigeria. http://doi.org/10.2139/ssrn.726748

Paul, R. (2012). Information technology: Panacea or peril. *UNU Work in Progress, 15*(1).

Pegkas, P., & Tsamadias, C. (2014). Does Higher Education Affect Economic Growth? The Case of Greece. https://doi.org/10.1080/10168737.2014.894551

Peter, S. Rita, E. & Makwe, E. (2015). The Impact of road transportation infrastructure on economic growth in Nigeria. *International Journal of Management and Commerce Innovations, 3*(1), (673-680).

Pilat, D., & Anita, W. (2005). Measuring the Interactions between Manufacturing and Services. STI Working paper 2005/5. Paris: OECD. https://doi.org/10.2139/ssrn.1690954

Rodríguez M., & Melikhova Y. (2015) Services in Russia: past, present, and future. *Eurasian Geography and Economics,* 56 (6), 656-678. https://doi.org/10.1080/15387216.2015.1178336

Radelet, S., Sachs, J. & Whang-Lee, J. (2001). The Determinants and prospects of economic growth in Asia. *International Economic Journal, 15*(3), 1-29. https://doi.org/10.1080/10168730100000041

Romer, P. M., (1986). Increasing returns and long-run growth. *Journal of Political Economy 94*(5), 1002–1036. https://doi.org/10.1086/261420

Schuurman, F. (2011). Globalization and development studies: challenges for the 21st century, London, Sage.

Sachs, J. D., & Warner, A. M. (1997). Fundamental sources of long-run growth. *The American Economic Review, 87,* (2), 184-188.

Solow, R. M. (1957). A contribution to the theory of economic growth. *The Quarterly Journal of Economics,70*(1), 65-94. https://doi.org/10.2307/1884513

Solow, R., (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics, 65-94.* https://doi.org/10.2307/1884513

Thorn, W. (2014), Oil, gas play second fiddle to Nigeria's services sector, mail & guardian.

Timmer, P., de Vries, J., & de Vries, K. (2015). Patterns of Structural Change in Developing Countries. In J. Weiss, & M. Tribe (Eds.). *Routledge Handbook of Industry and Development*. 65-83. https://doi.org/10.4324/9780203387061-4

Todaro, M. & Smith, M. (2011). Economic Development, London: Addison-Wesley