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IMPACT OF PUBLIC EXPENDITURE ON ECONOMIC SERVICES ON NIGERIA'S GROSS DOMESTIC PRODUCT GROWTH

Mohammed Ahmed
Department of Public Administration, Nuhu Bamalli Polytechnic, Zaria

Shittu Isah
Department of Accounting, ABU Business School, Ahmadu Bello University, Zaria

Dogara Micah
Department of Economics, Kaduna State University, Kaduna

Corresponding Email: ahmedmohammed8@gmail.com

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Abstract

This study investigated the impact of public expenditure on economic services on the economic growth of Nigeria from 1981 to 2022. Economic services expenditure comprises government spending on agriculture, transportation, communication, and related productive sectors. Annual time-series data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin were analysed using descriptive statistics, the Augmented Dickey-Fuller (ADF) unit root test, Johansen cointegration, and the Fully Modified Ordinary Least Squares (FMOLS) technique. The findings revealed that the variables were integrated of order one, I(1), and exhibited a long-run relationship. The FMOLS results showed that public expenditure on economic services has a positive and statistically significant effect on economic growth, indicating that increased government investment in productive sectors enhances real gross domestic product (RGDP). The model explained approximately 79 per cent of the variations in economic growth, demonstrating strong explanatory power. The study concludes that expenditure on economic services is a significant driver of economic growth in Nigeria and recommends increased and efficient allocation of public resources to critical sectors such as agriculture, transportation, and communication infrastructure to stimulate sustainable economic growth.

Keywords: Public Expenditure, Economic Services Expenditure, Economic Growth, Real Gross Domestic Product, FMOLS

Introduction

Background to the Study

Public expenditure on economic services constitutes a critical instrument through which governments stimulate economic growth, promote infrastructural development, facilitate productive activities, and improve national competitiveness. In developing economies such as Nigeria, government spending on economic services has remained indispensable because of structural deficiencies in infrastructure, weak private sector capacity, and persistent developmental challenges. Economic services expenditure generally comprises government spending on agriculture, road construction, rail and pipeline transport, water transport, air transport, transport services, post and courier services, telecommunications and information, publishing, motion pictures, sound recording, and broadcasting. These sectors collectively provide the enabling environment necessary for production, distribution, communication, trade, and investment, thereby serving as catalysts for sustainable economic growth.

Since independence in 1960, successive Nigerian governments have consistently allocated substantial public resources toward the development of transportation, communication, and agricultural infrastructure in recognition of their strategic importance to national development. The

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transportation sector, particularly road transport, remains the backbone of economic activities in Nigeria. The country possesses a road network of over 193,000 kilometres, consisting of federal, state, and local government roads (Bello-schünemann, Julia; Porter, 2017; Federal Government of Nigeria, 2010). Although federal roads constitute only a small proportion of the total road network, they carry more than 80 percent of vehicular traffic in the country. Road transport also accounts for approximately 90 percent of freight and passenger movement, making it the dominant mode of transportation in Nigeria (Nworji & Oluwalaiye, 2012; Sanni, 2007). Consequently, government expenditure on road construction, rehabilitation, and expansion has become central to economic planning and development strategies.

Despite its significance, Nigeria's transport infrastructure has remained grossly inadequate and poorly maintained over the years. The collapse of the railway transport system in the 1980s placed excessive pressure on the road network, resulting in rapid deterioration of roads, increased traffic congestion, rising accident rates, and high transportation costs (Ekperiware et al., 2017; Fasoranti, 2012; Ugboaja, 2013). The railway system, which was initially developed during the colonial period to facilitate trade and the movement of agricultural produce, experienced severe neglect due to inadequate funding and a poor maintenance culture. Although recent administrations have embarked on railway modernisation projects, including the rehabilitation of narrow-gauge lines and the construction of standard-gauge railways, the sector still operates below its potential in supporting industrialisation and economic integration.

Similarly, Nigeria possesses abundant inland waterways and an extensive coastline that could substantially enhance trade and transportation efficiency. However, inadequate investment and poor infrastructure have limited the effective utilisation of the water transport system (Mbaka, 2025). Air transportation, despite the existence of international and domestic airports across the country, also continues to face operational inefficiencies, inadequate maintenance, and heavy dependence on government subsidies (Nwaogbe et al., 2023; Nwaogbe O.R. et al., 2013). Pipeline transport infrastructure, particularly for natural gas distribution, remains underdeveloped relative to the country's enormous energy potential. In the communication sector, investments in telecommunication and information services have expanded significantly over the years, especially following deregulation and liberalisation policies, thereby contributing to improvements in information dissemination, commercial transactions, and digital connectivity (Abdur-Raheem et al., 2025) .

The agricultural sector equally occupies a strategic position in Nigeria's economic development process. Prior to the discovery of crude oil, agriculture constituted the mainstay of the Nigerian economy, contributing significantly to gross domestic product, export earnings, employment generation, and food security (Odetola & Etumnu, 2013; World Bank., 2019). Nigeria was once among the world's leading exporters of cocoa, palm oil, cotton, groundnut, rubber, and other agricultural commodities. Although the discovery of oil shifted policy attention away from agriculture, the sector still employs a substantial proportion of the population, particularly in rural areas. Consequently, government expenditure on agriculture has remained important for improving productivity, ensuring food security, reducing poverty, and promoting economic diversification.

Public expenditure on economic services promotes economic growth through infrastructure provision, productivity improvement, and market expansion. The Keynesian economic theory argues that increased government expenditure stimulates aggregate demand, raises output, and generates employment opportunities, especially in developing economies characterised by inadequate private investment. Wagner's theory of increasing state activities also posits that public expenditure naturally expands as economies develop due to rising demand for infrastructural and economic services. Thus, strategic government investment in transportation, communication, and agriculture is expected to improve productive efficiency, lower transaction costs, encourage private sector participation, and accelerate long-run economic growth.

Notwithstanding the enormous public resources committed to economic services over the years, Nigeria continues to experience infrastructural deficits, low industrial productivity, high transportation costs, weak agricultural productivity, and sluggish economic growth. This contradiction raises concerns regarding the effectiveness, efficiency, and growth impact of public expenditure on economic

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services in Nigeria. It is against this backdrop that this study investigates the impact of public expenditure on economic services on the economic growth of Nigeria

Statement of the Problem

Despite substantial government expenditure on economic services since independence, Nigeria continues to face severe infrastructural deficiencies, low productive capacity, and unstable economic growth. Successive governments have devoted considerable resources toward the development of road infrastructure, railway transportation, agriculture, communication systems, air transportation, and other economic service sectors. However, the expected developmental outcomes from these expenditures have remained largely unsatisfactory.

The road transport system, which accounts for the overwhelming majority of freight and passenger movement in Nigeria, remains characterised by dilapidated roads, traffic congestion, poor drainage systems, potholes, and frequent road accidents. Although billions of naira have been allocated to road construction and rehabilitation projects over the decades, a significant proportion of the road network remains in poor condition. The railway sector has also suffered a persistent operational decline despite huge government investments in rehabilitation and modernisation projects. Freight and passenger traffic have fallen drastically over the years, limiting the capacity of the rail system to support industrial activities and abate the increasing pressure on roads.

Similarly, the agricultural sector has experienced a declining contribution to economic growth despite increasing public expenditure. Budgetary allocations to agriculture have remained below internationally recommended benchmarks of 25 and 10 per cent as recommended by the Food and Agriculture Organisation and the African Union, respectively (Ebi, B O; Uduma, M K; Amumu, 2018; Ogboru et al., 2018; Oyinbo et al., 2013; Uremadu et al., 2018). The agricultural productivity continues to be constrained by poor infrastructure, inadequate mechanisation, and low investment efficiency. Other components of economic services, including water transport, pipeline transport, and air transportation, equally suffer from underutilisation, inadequate infrastructure, and operational inefficiencies.

The persistent disconnect between rising public expenditure on economic services and the unimpressive performance of the Nigerian economy raises critical questions regarding the effectiveness of government spending in stimulating economic growth. Existing empirical studies have largely concentrated on aggregate public expenditure without adequately isolating the specific contributions of economic services expenditure. Consequently, there remains insufficient empirical evidence on how expenditure on economic services influences economic growth in Nigeria. It is this gap that necessitates the present study on the impact of public expenditure on economic services on the economic growth of Nigeria.

Objectives of the Study

The main objective of this study is to examine the impact of government spending on economic growth in Nigeria. The specific objective is:

i. To examine the impact of public expenditure on economic services on the economic growth of Nigeria.

Research Question

The study was guided by the following research question:

i. What is the impact of public expenditure on economic services on the economic growth of Nigeria?

Research Hypothesis

In line with the objective stated, the study seeks to test the following hypotheses:

H_{O1}

Public expenditure on economic services has no significant impact on the economic growth of Nigeria

Scope and Delimitation of the Study

This study is country-specific and focuses on examining the impact of economic services expenditure on Nigeria's economic growth over a period of forty-two (42) years, spanning from 1981 to 2022. The study adopts a bivariate time series framework to analyse the direct relationship between economic services expenditure and economic growth. Although economic growth is influenced by several macroeconomic variables such as inflation, exchange rate, investment, and labour force, these variables are excluded from the model due to data limitations and

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the study's specific objective of isolating the direct fiscal-growth relationship.

Literature Review

Conceptual Review

Public Expenditure

Public expenditure is a major fiscal policy instrument for achieving macroeconomic stability and accelerating economic growth. Most developing and even developed countries of today use public expenditure to improve income distribution, direct the allocation of resources in desired areas, and influence the composition of national income (Aluthge et al., 2021; Onuoha & Okoye, 2020).

The structure of public expenditure in Nigeria is officially classified into recurrent and capital expenditures (Agu et al., 2015; Akpan, 2005; Modebe et al., 2012; Olaoye, C. O.; Oladipo, 2019). The recurrent or consumption expenditures are mostly limited to the year in which the expenditure is incurred. They comprised expenses made by the government in the purchase of current general goods and services and for the day-to-day running of government (Abubakar, 2016; Haliru, 2023). This includes the purchase of everyday goods such as materials, rents, salaries and wages, consumables, and so forth. On the other hand, capital or investment expenditures are expenses incurred by the government for the purpose of increasing future consumption and production. They comprised investment spending on capital projects which have long-term benefits, such as the building of roads, bridges, schools, hospitals and all expenditures that can stimulate the growth process of an economy. The benefits flowing from capital expenditures extend beyond the year of payment. In the same vein, recurrent expenditure was always manifestly embedded into the capital expenditure.

Public expenditure can also be categorised into exhaustive expenditure and transfer expenditure. Exhaustive expenditure is incurred when the government actually consumes and makes purchases of factor inputs, while transfer expenditure does not involve purchases of factor inputs by the government (Egbetunde & Fasanya, 2014).

In addition, public expenditure can be classified into productive and non-productive expenditures. Productive expenditures help in improving the productive capacity of an economy, such as investments in roads, education, assets, infrastructure, human capital, etc. It increases an economy's capacity to produce income, while non-productive expenditures are consumed in the process of rendering service and involve expenditures on administration, defence, debt interest, pensions, salaries, etc. Generally, non-productive expenditures support social functioning but do not directly add to output or generate future income (Asaleye et al., 2021; Chu et al., 2020; Devarajan et al., 1996).

Classification of Public Expenditure in Nigeria

Total public expenditure in Nigeria, as reflected in recurrent or capital components, can further be decomposed or disaggregated into the following components(Usman et al., 2011):

I. Expenditure on building human capital-public expenditure on education and health
II. Expenditure on building infrastructure-public expenditure on transport, power and communication
III. Expenditure on administration, which is necessary for the functioning of the government

Further, public expenditures can be disaggregated into the following sectors (Etim et al., 2021; Musa & Ismail, 2023):

A. Administration (General Administration, Defence, Internal Security, National Assembly).
B. Economic Services (Agriculture, Construction, Transport & Communication, and others).
C. Social and Community Services (Education, Health, and others).
D. Transfers (public debt charges, pensions & gratuities, net depreciation on the revaluation of investments, transfer to contingency fund and others).

Economic Growth

Economic growth is the rate of increase in the nationwide output, usually calculated using the annual percentage rise (Ismaila & Imoughele, 2015; Ivic, 2015; Mokoena et al., 2020; Nyoni, T; Bonga, 2018). Economic growth also represents the increase of per capita gross domestic product (GDP) (Musa & Ismail, 2023). In concrete terms, it refers to the quantity of goods and services produced. Economic growth is also a process of increasing the size of national economies and the macroeconomic indicators, especially the GDP per capita in an ascending form. Todaro & Smith (2009) explained that economic growth is a steady process by which the productive capacity of the economy is increased over a given period with the

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view of expanding the rising level of national output and income.

Economic growth can be positive, zero or negative (Haller, 2012). Positive economic growth is recorded when the annual average output growth rate exceeds the average population growth rate. Zero economic growth takes precedence when the annual average rate of output is equal to the rate of population growth. In contrast, a negative growth rate appears when the average rate of population growth is higher than the average rate of output and other macroeconomic indicators, especially the GDP. Even though economic growth does not necessarily mean that each person within the economy is better off than before or benefits equally from the growth, the final purpose of economic growth is to stimulate economic development that will ultimately increase the welfare of human beings.

Economic growth can be distinguished from economic development. While economic growth is mainly concerned with how countries can advance their economies, economic development is the process of prolonged and sustained increases in the real national income of a country, accompanied by positive changes in the economic, technological, political and social structures of the society such that the real income per capita of the country increases over a long period of time (Nnamocha & Anyanwu, 2020). In summary, economic growth is considered to be an essential instrument for the sustainable development of any country. It promotes a good standard of living for the people through the development of infrastructure, education, health and agricultural productivity.

Real Gross Domestic Product (RGDP)

The Gross Domestic Product (GDP) is one of the tools used in the measurement of economic growth. It is the monetary value of goods and services produced in an economy during a specific period, irrespective of the nationality of the people who produced the goods and services (Tumala & Osifodunrin, 2022). It is calculated without making deductions for depreciation. The concept behind GDP compilation is to measure gross value added after deducting the cost of inputs used in production (intermediate consumption) from the gross output value. GDP at Current Basic Prices (i.e., Nominal GDP) equals GDP at Current Market Prices less indirect taxes net of subsidies. The GDP valued at the market prices is what purchasers pay for the goods and services they acquire or use. GDP at Constant Basic Prices, otherwise known as the real GDP, equals GDP at Market Prices less indirect taxes net of subsidies. GDP at Constant Market Prices equals GDP at Constant Basic Prices plus indirect taxes net of subsidies.

Theoretical Review

The classical growth theorists strongly advocated minimal government intervention in economic activities. Rooted in the doctrine of laissez-faire, they argued that unrestricted market forces ensure optimal resource allocation and economic efficiency. Government involvement, beyond core functions such as the administration of justice, defence, and maintenance of law and order, was viewed as potentially distortionary and detrimental to growth (Bingilar & Oyadonghan, 2020; Keita, 2016; Nworji & Oluwalaiye, 2012)

In a similar vein, neoclassical growth theories reinforced the classical scepticism toward government intervention. As noted by Nyasha and Odhiambo (2019), the neoclassical school posits that public expenditure may hinder economic growth through the crowding-out effect, whereby government spending displaces private investment. These models further assume that fiscal policy has a limited long-run influence on real output, as economies naturally adjust toward equilibrium. The convergence hypothesis, a key feature of this framework, suggests that countries with lower initial capital-labour ratios tend to grow faster than developed economies (Piętak, 2014)).

In contrast, the endogenous growth theory, also known as the New Growth Theory, emerged in the 1980s as a critique of the neoclassical framework. It emphasises that economic growth is driven by internal factors such as human capital development, innovation, and knowledge accumulation. Unlike exogenous models, this theory assigns a central role to government policy in shaping long-run growth trajectories. Fiscal interventions, particularly through targeted public expenditure, can enhance productivity and stimulate sustained economic growth (Alper & Demiral, 2016; Hrnjic & Brankovic, 2017; Sharipov, 2012).

Wagner's Law of Increasing State Activities provides a contrasting viewpoint by suggesting that causality runs from economic growth to government expenditure. Wagner argued that as economies industrialise and expand, public spending naturally increases to meet rising social and administrative demands. This "demand-following" hypothesis implies that government expenditure is endogenous to economic growth (Esener & İpek, 2018; Keho, 2017; Mishra & Mohanty, 2021; Odo et al., 2016;

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Olanrewaju & Funlayo, 2021; S. O. . Olayiwola et al., 2021).

Conversely, the Keynesian hypothesis posits that government expenditure is a key driver of economic growth. John Maynard Keynes argued that active fiscal policy is necessary to address unemployment and economic instability. Through increased public spending and taxation policies, governments can stimulate aggregate demand, enhance output, and promote employment. This "supply-leading" hypothesis assumes that causality runs from government expenditure to economic growth, positioning fiscal policy as an exogenous tool for economic management (Esener & İpek, 2018; Idris & Bakar, 2017; Iftikar-ul-husnain, 2011; Pula & Elshani, 2017; Srinivasan, 2013).

In summary, while classical and neoclassical theories caution against excessive government intervention, Keynesian and endogenous growth theories underscore the growth-enhancing potential of public expenditure. Accordingly, Barro's endogenous growth framework provides a balanced and theoretically relevant foundation for analysing how the composition and efficiency of government spending influence both short-run dynamics and long-run economic growth.

Accordingly, this study adopts the endogenous growth model developed by Barro (1990) and Barro & Xavier (1992) as its theoretical framework. Barro's model distinguishes between productive and unproductive government expenditure, arguing that only the productive expenditure, such as spending on education, health, and infrastructure, contributes positively to long-run economic growth. Unproductive expenditure, by contrast, may hinder growth. The model further highlights that fiscal policy, including both government spending and taxation, can exert both temporary and permanent effects on economic growth. The choice of this theory reinforces the study and hypothesis formulated that administrative expenditure in Nigeria falls into the unproductive category.

Empirical Review

Empirical evidence on government expenditure in agriculture generally suggests that agricultural spending contributes positively to economic growth, although the magnitude and significance of its impact vary across countries. In Nigeria, several studies support the growth-enhancing role of agricultural expenditure. Ebere and Osundina (2014) found a significant positive relationship between government expenditure on agriculture and economic growth, indicating that increased public investment in the sector stimulates output and overall economic performance. Similarly, Sunday (2017) established that government expenditure on agriculture and agricultural output exerts a positive and significant influence on Nigeria's economic growth in both the short and long run. Supporting these findings, Ogunsanya et al. (2017) reported that agricultural output positively and significantly contributes to GDP growth, while Buari et al (2020) found that government expenditure on agriculture positively and significantly impacts economic growth. Further evidence from Nigeria shows that agricultural expenditure contributes not only to growth but also to sectoral development. Atayi et al. (2020) found that both recurrent and capital expenditure on agriculture positively influence agricultural output. Likewise, Zuobomudor and Ebisine, (2022) reported that government expenditure on agriculture and agricultural credit schemes positively and significantly affect economic growth. Chiekezie et al (2020) equally established that government expenditure on agriculture significantly influences economic growth through improved agricultural sector performance.

However, some Nigerian studies suggest that the effectiveness of agricultural expenditure depends on its composition. Alabi and Abu (2020) found that capital expenditure on agriculture positively affects agricultural productivity, whereas recurrent expenditure exerts little impact. Similarly, Edeh et al. (2020) reported that capital expenditure significantly enhances agricultural output while recurrent expenditure remains insignificant. These findings imply that productive investments in agricultural infrastructure and capital formation generate greater growth benefits than administrative and recurrent spending.

Evidence from other African countries presents mixed outcomes. Nabay et al. (2022) found that agricultural expenditure and investment significantly contribute to economic growth in Sierra Leone, while Ngobeni and Muchopa (2022) reported that government expenditure in agriculture positively affects agricultural production in South Africa through indirect transmission channels. Conversely, Megbowon et al. (2022) found that the prevailing pattern of agricultural expenditure in Lesotho failed to stimulate the desired level of economic growth. Similarly, Mulugeta (2022) observed that agricultural expenditure negatively affected economic growth in Ethiopia.

Beyond Africa, Sinha (2022) found that agricultural expenditure had an insignificant effect on economic growth in Bihar, India, despite the positive

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contribution of capital formation. Ahmed et al. (2020), however, reported that agricultural expenditure significantly promotes economic growth in Pakistan. Overall, while most studies support a positive relationship between agricultural expenditure and economic growth, the evidence suggests that the efficiency, composition, and allocation of expenditure largely determine its developmental impact.

Transport infrastructure constitutes a critical component of economic services expenditure due to its role in facilitating trade, mobility, and productive activities. Empirical evidence generally supports the view that investment in transport infrastructure promotes economic growth.

Internationally, Xiao et al (2020) found that government expenditure on transport infrastructure significantly contributes to regional economic growth in China. Similarly, Mose (2022) established that expenditure on road transportation infrastructure positively affects economic growth in Kenya in both the short and long run. Ahmed et al. (2020) also found that public expenditure on road infrastructure positively influences economic growth in Pakistan.

Across Africa, Chindengwike and Tyagi (2022) reported that public expenditure on infrastructure and communication positively influences sustainable economic growth in Uganda. These findings support the endogenous growth theory, which argues that public investment in productive infrastructure enhances long-run economic performance.

Evidence from Nigeria is relatively mixed Omokoro and Ikpere (2019) found that expenditure on construction, transportation, and communication positively contributes to economic growth, although only construction expenditure was statistically significant. Barilee and Benvolio (2021) similarly reported a positive and significant short-run relationship between transport expenditure and income growth. Ibrahim et al. (2023) found that expenditure on transport infrastructure positively contributes to economic growth in Nigeria.

In contrast, Enya and Ezeali (2021) observed that transport infrastructure exhibited a negative relationship with economic growth despite the positive effects of other forms of public investment. Olayiwola (2022) found evidence of a short-run relationship between transport infrastructure and economic growth but failed to establish a long-run association. Likewise, Akinbobola et al (2022) found that government expenditure on transportation and communication positively affected economic growth, although the effect was statistically insignificant. Ugochukwu and Oruta (2021) also reported that recurrent expenditure on road and construction exerted only a negligible positive impact in the short run.

The divergence in findings may reflect differences in infrastructure quality, project implementation, maintenance culture, corruption levels, and methodological approaches adopted across studies. Nevertheless, the majority of studies suggest that transport-related expenditure contributes positively to economic growth when efficiently allocated and managed.

Communication and telecommunication infrastructure have increasingly become important drivers of economic growth in modern economies. Empirical studies generally support the positive contribution of communication-related infrastructure to productivity and economic development.

At the international level, Mačiulytė-Šniukienė et al. (2022) found that information and communication technology (ICT) infrastructure positively influences economic growth and convergence among European Union countries, although some effects were statistically insignificant. Similarly, Chindengwike and Tyagi (2022) reported that communication infrastructure contributes positively to economic development in Uganda.

However, some studies report contrary evidence. Chen et al. (2020) found that transport and communication expenditure negatively affected long-run economic growth in Vanuatu. This suggests that communication expenditure may not automatically translate into growth benefits where inefficiencies, poor implementation, or weak institutional frameworks exist.

Evidence from Nigeria largely supports the growth-enhancing role of communication infrastructure. Omokoro and Ikpere (2019) found that expenditure on transportation and communication positively influences economic growth. Chijioke and Amadi (2020) also reported that government spending on communication infrastructure significantly affects economic growth. Likewise, Olayiwola (2022) included telecommunication infrastructure among the critical determinants of economic growth in Nigeria and found evidence of short-run linkages between infrastructure development and growth.

Despite these positive findings, some studies indicate that communication-related expenditure may not always produce statistically significant outcomes. For instance, Akinbobola et al. (2022) found that transportation and communication expenditure

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exerted only a positive but insignificant effect on economic growth. Such findings suggest that the effectiveness of communication expenditure depends on complementary factors such as technological adoption, institutional quality, and maintenance of infrastructure.

Several studies have examined economic services expenditure as a broad category incorporating agriculture, transportation, communication, construction, and other productive sectors. These studies provide a comprehensive understanding of how economic service expenditures collectively influence growth.

In Nigeria, Ugochukwu and Oruta (2021) found that capital expenditure on economic services positively affects economic growth, although the short-run effect was statistically insignificant. In the long run, however, all expenditure components significantly influenced growth. Similarly, Chijioke and Amadi (2020) found that government expenditure on transport, communication, and infrastructure significantly affects economic growth.

Akinbobola et al. (2022) reported mixed outcomes, revealing that expenditure on agriculture positively and significantly promotes growth in the short run, whereas transportation and communication expenditure remained positive but insignificant. Likewise, Omokoro and Ikpere (2019) observed that construction expenditure significantly contributes to growth, while transportation and communication expenditure had positive but insignificant effects.

International evidence also presents mixed results. Rahman et al. (2023) found that government expenditure positively affects economic growth across SAARC countries and that a long-run relationship exists between expenditure and growth. Similarly, Xiao et al (2020) and Chindengwike (2022) found that infrastructure expenditure stimulates economic growth in China and some selected countries in East Africa, respectively. Conversely, Chen et al. (2020) reported that some categories of economic service expenditure, particularly transport and communication, negatively affect long-run economic growth in Vanuatu.

Methodologically, the studies employ diverse econometric approaches, including OLS, ARDL, ECM, VECM, Johansen cointegration, VAR, panel regression, and System-GMM techniques. While most studies establish the existence of either short-run or long-run relationships between economic services expenditure and growth, the magnitude and direction of effects vary considerably across countries and sectors.

Overall, the empirical literature demonstrates that economic services expenditure generally promotes economic growth when directed toward productive sectors such as agriculture, transport infrastructure, communication, and construction. Nevertheless, conflicting findings persist regarding the significance and sustainability of these effects. These inconsistencies may stem from differences in expenditure composition, institutional quality, economic structure, sample periods, and methodological approaches. Consequently, further empirical investigation is necessary to ascertain the extent to which economic services expenditure contributes to economic growth in Nigeria.

Methodology

Research Design

This study was premised on a longitudinal ex-post facto research design aimed at ascertaining the impact of administrative expenditure on Nigeria’s economic growth using real gross domestic product (RGDP) as a proxy.

Method of Data Collection

The study employed secondary data for its analysis.

Source of Data Collection

The time-series data used in this study was sourced from the published Statistical Bulletins of the Central Bank of Nigeria (CBN), covering the period from 1981 to 2022.

Method of Data Analysis

Time series tools of analysis were adopted using the EViews econometric package. This study used correlational analyses alongside unit root tests to analyse the nature of the relationships between the variables and ensure the data's suitability for further analysis. This combined approach provides a comprehensive understanding of both the interconnections and the statistical properties of the data. Testing for unit roots was the first step in time-series analysis. It was required to verify whether the variables under analysis were stationary or non-stationary (Nwanne, 2015; Nwude & Boloupremo, 2018). The properties of standard estimation and testing techniques in time series analysis depended on the assumption that the variables under consideration were stationary. Regression analysis conducted on non-stationary series can produce misleading results referred to as “spurious regression”. Consequently, if the variables are stationary, classical econometric methods are sufficient to study the equilibrium. However, if the variables were found to be non-stationary in their levels, then cointegration tests

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would be required (Asiagwu et al., 2023; Okpabi et al., 2021)

The econometric technique specifically employed to examine the impact of administrative expenditure on Nigeria's economic growth, represented by real GDP, is Fully Modified OLS (FM-OLS), which is used to estimate regression models when dealing with potential endogeneity issues. 'Endogeneity problem' refers to a situation in probabilistic statistics where the independent variables and the dependent variables may be influenced by each other or by an unmeasured factor. The Johansen Cointegration Test is used to determine whether a long-run relationship exists among the variables.

Model Specification

The model uses bivariate analysis that involves the examination of the relationship between two variables. It is a fundamental step in understanding the association between pairs of economic variables. The bivariate econometric model typically deals with two variables often denoted as Y (dependent variable) and X (independent variable). The regression equation for a bivariate model is represented as:

$Y = \beta_0 + \beta_1 X + \varepsilon$ ---------- (1)

Where:

Y is the dependent variable.

X is the independent variable.

B_0 is the intercept (the value of Y when X is zero).

β_1 is the slope coefficient (the change in X for a one-unit of Y).

ε is the error term, representing unobserved factors that affects Ƴ but are not included in the model.

The equation captures the linear relationship between the dependent and independent variables, acknowledging that there might be random errors (ε) in the observed data. The goal of regression analysis is to estimate the values of βo and β1 based on the data employed.

The model is transformed econometrically as follows

$RGDP_t = \beta_0 + \beta_1 ADX_t + \varepsilon_t$ …….. (2)

Accordingly, this could be converted in econometric model and in their respective natural log linear model as:

$logRGDP_t = \beta_0 + \beta_1 \log(ADX)_t + \varepsilon_t$ …….. (3)

Where:

Log= Logarithms

RGDP = Real Gross Domestic Product

AD = Administration Expenditure

t = Time

$\beta_0 =$ the intercept, the value of y when the independent variables assume the value of zero

β_1 = coefficient of the independent variables or parameters

$\mu =$ stochastic variable/error term

3.2.2 Test of Hypothesis and Decision Rule

The hypothesis would be tested at a 5 per cent level of significance. The null hypothesis should be rejected if the probability at which the p-value is significant is less than the chosen level of significance; otherwise, the alternative hypothesis should be accepted.

i. If the probability (Sig) > 0.05, we should accept the null hypothesis and reject the alternative hypothesis.
ii. If the probability (Sig) < 0.05, we should accept the alternative hypothesis and reject the null hypothesis.

A Priori Expectation

Based on the theoretical positions, it is expected that all the explanatory variables will be positively related to real gross domestic product. A priori expectations refer to the expected sign of the coefficients of the explanatory variables and indicate the expected impact of the explanatory variables on the dependent variable. Accordingly, the a priori expectations are represented mathematically below:

$\beta > 0$

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Table 1: Data Description

S/N	Variable	Description
1	RGDP (Real Gross Domestic Product)	Used as a proxy for economic growth
2	ESE (Economic Services Expenditure)	Expenditures on agriculture, road and construction, rail and pipeline transport, water transport, air transport and telecommunication

Source: Author's Computation

Results and Discussion

Results

Descriptive Statistics

Tables 2 and 3 present descriptive statistics of the variables of the study. The mean, median, standard deviation, variance, minimum, maximum, skewness and kurtosis have been used to describe the data.

Table 2: Descriptive Statistics on Real Gross Domestic Products

	RGDP	GES
Mean	38589.74	12339.33
Median	28701.91	7590.960
Maximum	74639.47	32516.92
Minimum	16048.31	2732.960
Std. Dev.	20854.23	9833.121
Skewness	0.527287	0.654340
Kurtosis	1.639848	1.913397
Jarque-Bera (Probability)	5.183742 (0.074880)	5.063360 (0.079525)
Observations	42	42

Source: Author's Computation using E-views 9.0
RGDP = Real Gross Domestic Product (proxy for economic growth)
GES = Government Economic Services Expenditure

The descriptive statistics presented in Table 2 provide insight into the distributional characteristics of Real Gross Domestic Product (RGDP) and Government Expenditure on Economic Services (GES) in Nigeria over the study period. The results show that RGDP recorded an average value of ₦38,589.74 billion, with a median value of ₦28,701.91 billion, indicating that economic growth increased considerably during the period under review. The maximum and minimum values of ₦74,639.47 billion and ₦16,048.31 billion respectively, reveal substantial variation in economic output over time. Similarly, GES had a mean value of ₦12,339.33 billion and a median value of ₦7,590.96 billion, suggesting that government expenditure on economic services increased significantly during the study period. The maximum expenditure stood at ₦32,516.92 billion, while the minimum was ₦2,732.96 billion, reflecting notable fluctuations in government spending. The standard deviation of ₦20,854.23 billion for RGDP and ₦9,833.12 billion for GES indicates a considerable degree of dispersion around their respective means, implying variability in both economic growth and expenditure on economic services over the years. The positive skewness coefficients of 0.527 for RGDP and 0.654 for GES suggest that both variables are moderately right-skewed, indicating the presence of relatively higher values in the distributions. Furthermore, the kurtosis values of 1.640 for RGDP and 1.913 for GES are less than the benchmark value of 3, implying that both series are platykurtic in nature, characterised by flatter distributions and lighter tails than the normal distribution. The Jarque–Bera statistics with probability values of 0.0749 for RGDP and 0.0795 for GES are greater than the 5 percent level of significance, indicating that the null hypothesis of normality cannot be rejected. Therefore, the distributions of RGDP and GES are approximately normal, suggesting the absence of serious departures from normality in the data.

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Table 3: Descriptive Statistics on Government Expenditures

	AE	RE	CE	ES
Mean	2767.979	2000.692	607.7064	431.8905
Median	1018.100	638.0500	336.3500	247.4500
Maximum	13988.71	10516.98	2900.870	1837.450
Minimum	9.600000	4.800000	4.100000	0.870000
Std. Dev.	3615.657	2727.595	719.8011	490.7820
Skewness	1.504860	1.578759	1.557679	1.168778
Kurtosis	4.540087	4.752523	4.991523	3.573166
Jarque-Bera (Probability)	20.00299 (0.000045)	22.82221 (0.000011)	23.92533 (0.000006)	10.13721 (0.006291)
Observations	42	42	42	42

Source: Author's Computation using EViews 9.0

The descriptive statistics presented in Table 2 provide insights into the behaviour of federal government expenditure in Nigeria between 1981 and 2022. The results indicate that Aggregate Expenditure (AE) recorded an average value of ₦2,767.98 billion, with a median value of ₦1,018.10 billion, suggesting a substantial increase in government spending over the study period. The maximum and minimum values of ₦13,988.71 billion and ₦9.60 billion respectively reveal a wide variation in aggregate expenditure. Recurrent Expenditure (RE) had a mean value of ₦2,000.69 billion and a median value of ₦638.05 billion, while Capital Expenditure (CE) recorded an average of ₦607.71 billion with a median value of ₦336.35 billion. Similarly, Economic Services Expenditure (ES) posted a mean value of ₦431.89 billion and a median value of ₦247.45 billion. The differences between the mean and median values across all expenditure categories indicate the presence of relatively large expenditure values in some years, particularly in the later years of the study period. The maximum values of ₦10,516.98 billion for RE, ₦2,900.87 billion for CE, and ₦1,837.45 billion for ES further confirm the substantial growth in government spending over time. The standard deviation values of ₦3,615.66 billion for AE, ₦2,727.60 billion for RE, ₦719.80 billion for CE, and ₦490.78 billion for ES indicate considerable dispersion around their respective means, suggesting significant fluctuations in government expenditure during the period under review.

The skewness coefficients of 1.505 for AE, 1.579 for RE, 1.558 for CE, and 1.169 for ES are all positive and greater than zero, indicating that the distributions are positively skewed with a longer right tail. This implies that expenditure levels were relatively low during the early years but increased substantially in later years. Furthermore, the kurtosis values of 4.540, 4.753, 4.992, and 3.573 for AE, RE, CE, and ES respectively exceed the benchmark value of 3, indicating that the series are leptokurtic in nature. This suggests that the distributions are more peaked and possess heavier tails than a normal distribution, reflecting the occurrence of extreme expenditure values during the study period. The Jarque–Bera statistics with probability values of 0.000045 for AE, 0.000011 for RE, 0.000006 for CE, and 0.006291 for ES are all less than the 5 percent level of significance. Consequently, the null hypothesis of normality is rejected for all the expenditure variables, implying that their distributions deviate from normality. Overall, the descriptive statistics reveal that federal government expenditure in Nigeria experienced substantial growth and volatility between 1981 and 2022, with evidence of positive skewness, leptokurtic distributions, and non-normality across all expenditure categories.

The Augmented Dickey-Fuller (ADF) unit root test

This study used the Augmented Dickey–Fuller test (ADF), which explicitly accounts for serial correlation in the error terms by including lagged difference terms in the regression model. Also, the ADF test is more suitable for small sample sizes, and it is more compatible with the Johansen cointegration techniques.

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Table 4 Unit Root Test of Stationarity

Variables	ADF with trend				
	Test Statistic		1st difference		
	At level	Critical Value		Critical Value	
RGDP	-2.254449	-3.536601	-3.583322	-3.526609	I(1)
ESE	-1.224576	-3.523623	-6.843428	-3.540328	I(1)

ADF represents the Augmented Dickey Fuller test for stationarity with trend at level and first difference.
Source: Author's computation using EViews 9.0

The result of the ADF unit root test presented in Table 4 indicates that all variables are non-stationary at level; hence, the hypothesis of a unit root could not be rejected. However, at first difference, the variables became stationary and were consequently integrated of order one, I(1). This suggests the possibility of a long-run relationship among the variables and justifies the use of the Johansen cointegration test. The unit root hypothesis was therefore rejected for Real Gross Domestic Product (RGDP) and Economic Services Expenditure (ESE) at first difference.

Johansen Cointegration

Table 5: Series: Real Gross Domestic Product and Aggregate Expenditure

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.233234	14.87465	18.39771	0.1453
At most 1 *	0.100838	4.251693	3.841466	0.0392
trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.233234	10.62296	17.14769	0.3423
At most 1 *	0.100838	4.251693	3.841466	0.0392

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level.

Source: Author's computation using EViews 9.0

The result of the Johansen cointegration test indicates the presence of one cointegrating equation at the 0.05 level of significance, as confirmed by both the Trace and Max-Eigen statistics. This suggests that Real Gross Domestic Product (RGDP) and Aggregate Expenditure (AE) maintain an equilibrium relationship in both the short run and the long run. The long-run cointegrating vectors and coefficients were obtained by normalising the cointegrating vector on RGDP, as presented in Table 5.

Table 6: Johansen Normalised

Variable	Coefficient	Standard Error	Z	P>/Z/
	Normalized cointegrating coefficients			
RGDP	1			
AE	7.882576	1.79697		
	Adjustment coefficients			
D(RGDP)	-0.027366	0.03074	0.89004	0.03453
D(AE)	-0.026984	0.00884	3.05248	0.00289

Source: Author's computation using Eviews 9.0

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The normalisation of the cointegrating vector produced the long-run elasticities by normalising with respect to Real Gross Domestic Product (RGDP). The result shows that aggregate expenditure (AE) has a negative and statistically significant long-run impact on RGDP, with a long-run elasticity of 7.882576. This implies that a decline in aggregate government expenditure reduces economic growth in Nigeria.

Result on the Impact of Public Expenditure on Economic Services on the Economic Growth of Nigeria

Test of Hypothesis

H_{o1}: Public expenditure on economic services has no significant impact on the economic growth of Nigeria
To test this hypothesis, the fully modified ordinary least squares (FMOLS) approach was applied. The FMOLS was used to estimate the effect of government spending on economic services on the economic growth of Nigeria.

Table 7 Regression Summary

Variables	Coefficients	Std Error	T - Statistics	Prob. Values
C	20850.52	3309.632	6.299952	0.0000
ES	42.24344	5.035763	8.388688	0.0000
R-squared : 0.791231		**Adjusted R-squared:** 0.785878		

Source: Author's computation using E-view 9.0

The FMOLS regression results presented in Table 7 indicate that government expenditure on economic services (ES) has a positive and statistically significant effect on real Gross Domestic Product (RGDP) in Nigeria. The coefficient of ES is 42.243, implying that a unit increase in expenditure on economic services leads to an approximate ₦42.24 billion increase in RGDP, ceteris paribus. This finding highlights the growth-enhancing role of public investment in critical sectors such as transportation, agriculture, and communication, which collectively improve productivity, reduce transaction costs, and stimulate economic activity.

The model exhibits strong explanatory power, with an R-squared value of 0.791 and an adjusted R-squared of 0.786. This suggests that approximately 79% of the variations in economic growth are explained by changes in government expenditure on economic services, indicating a strong goodness-of-fit and a high degree of model reliability.

The statistical significance of the coefficient ($p < 0.01$) confirms that the relationship is not only positive but also robust. The use of the FMOLS estimator enhances the reliability of the results by correcting for endogeneity and serial correlation, thereby ensuring consistent long-run parameter estimates in the presence of cointegration.

Discussion of Findings

The empirical findings of this study reveal a strong and statistically significant relationship between public expenditure on economic services and economic growth in Nigeria. The Fully Modified Ordinary Least Squares (FMOLS) results show that government expenditure on economic services (ES) exerts a positive and significant effect on real Gross Domestic Product (RGDP), implying that increases in public investment in agriculture, transport infrastructure, and communication systems translate into improved economic performance. This finding supports the Keynesian and endogenous growth perspectives, which argue that productive government expenditure enhances aggregate demand, improves productivity, and stimulates long-run economic growth.

The magnitude of the estimated coefficient further indicates that economic services expenditure plays a meaningful role in shaping Nigeria's growth trajectory. This result is consistent with the study by Ebere and Osundina (2014), who found that government expenditure on agriculture significantly promotes economic growth in Nigeria. Similarly, Sunday (2017) and Ogunsanya et al. (2017) established that agricultural and infrastructural expenditures positively influence output growth, reinforcing the argument that productive public investment is a key driver of economic expansion. At the broader sectoral level, Ugochukwu and Oruta (2021) also reported that capital expenditure on economic services contributes positively to economic growth in Nigeria, although the magnitude of short-run effects may be limited.

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In the transport subsector, the findings align with those of Xiao et al. (2020) in China and Mose (2022) in Kenya, who both observed that public investment in transport infrastructure significantly enhances economic growth by improving mobility, reducing transaction costs, and facilitating market integration. Similarly, Ibrahim et al. (2023) and Barilee and Benvolio (2021) found positive relationships between transport expenditure and economic performance in Nigeria, further supporting the view that infrastructure investment is growth-enhancing when efficiently implemented. However, the result contrasts with Enya and Ezeali (2021), who reported a negative relationship between transport infrastructure and economic growth in Nigeria, suggesting that inefficiencies, poor project execution, and corruption may weaken the effectiveness of public spending in some contexts.

The positive effect of economic services expenditure also supports findings from communication and ICT-related studies. For instance, Chijioke and Amadi (2020) and Olayiwola (2022) found that communication infrastructure contributes significantly to economic growth in Nigeria, while Mačiulytė-Šniukienė et al. (2022) reported similar results in European economies. These studies collectively suggest that improvements in information and communication infrastructure enhance productivity, innovation, and economic integration, thereby reinforcing the growth impact of government expenditure.

From a theoretical perspective, the findings strongly validate the endogenous growth theory, particularly Barro's (1990) framework, which posits that productive government expenditure—such as investment in infrastructure, agriculture, and human capital—enhances long-run economic growth. The significant positive relationship observed in this study confirms that economic services expenditure in Nigeria operates as a productive fiscal instrument that stimulates output expansion. In contrast, the result contradicts the neoclassical growth view, which suggests that government spending may crowd out private investment and reduce efficiency. Instead, the Nigerian evidence supports the Keynesian argument that fiscal expansion in productive sectors drives economic activity, especially in developing economies with infrastructural gaps.

Furthermore, the high explanatory power of the model ($R^2 \approx 0.79$) indicates that economic services expenditure accounts for a substantial proportion of variations in economic growth. This finding underscores the structural importance of infrastructure-related spending in shaping macroeconomic performance in Nigeria. It also highlights that growth outcomes are strongly influenced by the composition of public expenditure rather than its total size alone.

The results of the unit root and cointegration tests further strengthen the validity of the FMOLS estimates by confirming that the variables are integrated of order one and exhibit a stable long-run relationship. This implies that economic services expenditure and economic growth move together over time, reinforcing the existence of a long-run equilibrium relationship between fiscal policy and output performance in Nigeria.

In summary, the findings of this study are broadly consistent with both theoretical expectations and a large body of empirical literature that supports the growth-enhancing role of productive public expenditure. Although some studies report mixed or insignificant effects, the dominant evidence suggests that when efficiently allocated, public expenditure on economic services significantly promotes economic growth. The Nigerian experience therefore underscores the importance of improving efficiency, transparency, and allocation effectiveness in government spending to maximise its developmental impact.

Summary of Major Findings, Conclusion and Recommendations

Major Findings

i. Public expenditure on economic services has a positive and statistically significant impact on economic growth in Nigeria.
ii. The FMOLS results show that a unit increase in economic services expenditure leads to an increase in real GDP, confirming the growth-enhancing role of government investment in productive sectors.
iii. The model explains about 79% of the variation in economic growth, indicating that economic services expenditure is a strong determinant of RGDP in Nigeria.
iv. The ADF and Johansen cointegration tests confirm that economic services expenditure and economic growth are both non-stationary at levels but are cointegrated in the long run.
v. Despite increased government expenditure over time, structural inefficiencies and sectoral underperformance suggest that the full potential of economic services spending is not fully realised in Nigeria.

Conclusion

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This study examined the impact of public expenditure on economic services on economic growth in Nigeria over the period 1981–2022. Economic services expenditure—covering agriculture, transport infrastructure (road, rail, water, air, pipelines), and communication services—was modelled against real gross domestic product (RGDP) using time series econometric techniques. The empirical evidence shows that the variables are integrated of order one and share a long-run equilibrium relationship, confirming cointegration between government expenditure and economic growth.

The FMOLS results further reveal that expenditure on economic services has a positive and statistically significant effect on economic growth in Nigeria. This implies that government spending on productive sectors such as agriculture, transportation, and communication contributes meaningfully to output expansion by improving infrastructure, reducing transaction costs, and enhancing productivity. However, despite this positive effect, the broader descriptive and structural evidence suggests that inefficiencies in implementation and persistent infrastructural deficits may still limit the full growth potential of public expenditure in Nigeria. Overall, the study concludes that economic services expenditure is a critical driver of long-run economic growth in Nigeria, though its effectiveness depends largely on efficient allocation and implementation.

Recommendations

i. Government should increase and sustain investment in economic services, particularly in transport infrastructure, agriculture, and ICT, as these sectors have been empirically shown to drive long-run economic growth.
ii. Public expenditure should be more efficiently allocated, with greater emphasis on capital (productive) spending rather than recurrent expenditure, to maximise growth outcomes.
iii. Strong monitoring and evaluation frameworks should be introduced to reduce project abandonment, cost overruns, and inefficiencies in public infrastructure projects.
iv. Government should prioritise rehabilitation and expansion of critical transport infrastructure (roads, rail, and waterways) to reduce logistics costs and enhance market efficiency.
v. Policy coordination between fiscal authorities and sectoral agencies should be strengthened to ensure that investments in economic services translate into measurable productivity gains and sustainable economic growth.

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