

FEDERALLY COLLECTED TAX REVENUE AND GOVERNMENT EXPENDITURE: IMPLICATIONS ON QUALITY HEALTHCARE IN NIGERIA

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ABSTRACT

This study examined the impact of federal tax revenue on healthcare facilities in Nigeria over a 30-year period from 1994 to 2023. It employed an ex-post facto research design, focusing on government expenditure on healthcare. The study used a purposive sampling technique to select the study period and extracted data from the Central Bank of Nigeria Statistics Bulletin, Office of Budget and Fiscal Policy, Nigerian Exchange Group, and the Federal Inland Revenue Services. Descriptive and inferential statistics (specifically multiple regression), revealed a significant relationship between federal tax revenue and expenditure on healthcare facilities in Nigeria. This finding suggests that higher federal tax revenue positively influences government spending on healthcare. The study recommended that the Nigerian government prioritize honesty, transparency, and accountability in utilizing tax revenue.

Keywords: *Company income tax, Custom and excise duties, Expenditure on healthcare, Federal tax revenue, Value-added tax, Petroleum profit tax,*

1. INTRODUCTION

Infrastructural development is conventionally viewed as a vital factor that fosters economic advancement since productive activities will remain impossible without telecommunication, energy, and transportation (Aggarwal, 2018). Fay *et al.* (2019) posited that at the projects level, the emphasis tends to consider the cost-benefit of infrastructural projects and the implicit social and internal rate of economic returns. From the perspective of the macroeconomic level, the influence of the macro infrastructural level using the aggregate production function of other internal and externality inputs in the production that government expenditure brings to the economy (Huang *et al.*, 2020). It is accepted generally that government spending on modern and robust infrastructure lays the foundation for economic growth and development (Appah, 2022; Adegbie *et al.*, 2023). According to Okoro *et al.*, (2019), Nigeria is trailing behind in optimization of government expenditure despite revenue from different sources. Furthermore, the World Economic Forum (WEF) in her 2016-2017 report on global competitiveness index ranking on infrastructure, ranked Nigeria very low as 132 out of 138 countries, depicting that their fundamental problem with government expenditure as a concept in Nigeria.

The problem of government expenditure in Nigeria has been a perennial concern as successive government over the years have never gotten it right. For instance, in a recent World Bank report stated that for Nigeria to fill its infrastructural gaps, an annual government expenditure of about US\$14.2 billion targeted at government expenditure would be required annually for the next 10 years, a clear implication of wrong government spending and very little to show for it. Furthermore, this is an indication of decades neglect in government spending on frivolous investments not been able to better the lives of the citizens, thereby jeopardizing the nation's economic prospects and government expenditure (Okoro *et al.*, 2019). Generally, reckless government expenditure arises due to inadequate planning and execution of impactful projects, a shortage of capital and deficit budget, and increasing public debt (Musa & Ajibade, 2016). In addition, studies have evidenced sluggish government efforts,

and the absence of a strong political will in attempts to address uncontrolled government expenditure in Nigeria (Ndaka, 2017; Odoemelam, 2018; Olaoye & Aguguom, 2018).

Inadequate infrastructure promotes poor living standard, economic deficit, productivity decline, and free trade barriers that have negative impact on a country's economic development (Adum, 2018).

Clearly, developing economies like Nigeria require expanded revenue baskets through taxation and much more federal tax revenue to deal with the problems of inadequate funding from government expenditure (Ofoegbu *et al.*, 2016). Also, studies have evidenced that efforts to an effective strategy to maximize federal tax revenue are capable of increasing the revenue base of the government to enhance the execution of government expenditure in Nigeria (Omodero, 2020). As the case in developed economies, investment and proper execution of more technological and advanced infrastructural investments and facilities can be quite expensive for developing nations with meagre resources as these investments can drain away capital stocks and cause constraints in other investment opportunities amid heavy indebtedness (Olabisi *et al.*, 2020). Some of the causes of government expenditure problems in Nigeria have been identified to include; insufficient funding (Obara and Nangih, 2017), the inability of successive governments to make adequate infrastructure investments (Ikeokwu and Micah, 2019), inability to harness and optimize federal tax revenue (Appah, 2022), the inability of the government to harvest informal tax possibilities (Omodero and Dandago, 2019), high level of sharp practices in tax revenue collection (Nguyen *et al.*, 2021), embezzlement of tax revenues and poor tax database in Nigeria (Adegbola *et al.*, 2018).

The challenge of inadequate infrastructure is huge in Nigeria. Hence, Nnabuife *et al.* (2020 noted that though, in recent time, Nigeria has experienced increased infrastructural development in terms of building of more schools, roads and telecommunication facilities, the country is nowhere near what is required. Thus, this study will contribute to filling the existing knowledge gap by investigating the impact of federal tax revenue on government expenditure in Nigeria. Nigeria's economy in recent times has been adversely affected by a sharp decline in revenue due to its significant over-dependence on crude oil sales for foreign exchange revenue. From available data from the Nigeria Bureau of Statistics, close to 80% of Nigeria's annual revenue for the three tiers of government i.e. Federal, State, and Local government from 1970 to date has been from petroleum resources (crude oil sales)

This study provides the significance of federally collected tax revenue in solving the problem of government expenditure on quality healthcare provision in Nigeria. While a good number of studies have considered the government expenditure from various perspectives, only few of these studies have documented sufficient empirical evidence of the effect of federally collected tax revenue on government expenditure on quality healthcare in Nigeria. Evidently, there is a dearth of studies that are researching the role of federally collected tax revenue, creating empirical gap landscape in the literature. Lateef *et al.* (2022), assessed the effect of tax revenue collections on healthcare government expenditure in Nigeria. The study adopted the multiple linear regression method for data analysis. Data for the study covering 2013 to 2022 were sourced from the Central Bank of Nigeria statistical bulletin and the Federal Inland Revenue. The findings of this study indicated that petroleum profit tax and Company Income Tax significantly influence the development of healthcare infrastructure in Nigeria while Value Added Tax and Education Tax do not significantly influence health care government expenditure in Nigeria.

While Lateef *et al.* (2022) made an impressive attempt in considering the effect of tax revenue on healthcare government expenditure in Nigeria; some gaps were identified from the study. First, the study's inability to conduct reliability and validity of the instruments used was considered a methodological gap, while the underpinning theory was not provided in the study. Besides, the study did not consider the method adopted in selecting the sample size for the study, and methods of

analyses, and the specific effect of the federal tax revenue on infrastructural support was missing from the implication of findings. The study did not include the implications and some of the identified measures of federally collected tax revenue explored in this study. In contributing to knowledge and addressing this problem, this study provides a novelty research and bridges the gaps in the literature, this study put forward the following hypothesis.

Research Hypothesis (H01): Federally collected tax revenue does not significantly affect government expenditure on quality and affordable healthcare facilities in Nigeria.

The rest of the study was structured in this manner: In section 2, the study provided the literature review and theoretical framework. In section 3, the study presented methodology and in section 4, data analysis, results and discussions were presented. In section 5, the study provided the conclusion, implications of finding, recommendations and suggestion for further studies.

2. Literature Review and Theoretical Framework

Government Expenditure: Government expenditure is defined as the ability to construct some basic and essential structures that will aid and stimulate economic activities and improve the quality of life of the citizens (Chen & Chen, 2020). The government expenditure challenges and their attending complexities are predominately more pronounced in the developing economies, due to mismanagement of the insufficient funds within the coffers of the developing economies (Etim & Daramola, 2020). Most of the advanced economies have passed through these developmental stages of infrastructural problems before getting to where they are. Inadequate to prioritize investments and optimally utilize the available resources of the developing countries have kept the government expenditure at abeyance and stagnated over the past years (Craig *et al.*, 2018). Government expenditure is significant for human existence and improvement of social life and standards of living, hence the quality of government expenditure in a community will largely dictate the quality and life expectancy within the community (Fay *et al.*, 2019).

According to Garcia (2018), government expenditure includes the extent and amount of investment of the government in providing quality and affordable transportation system, energy and electricity to the citizens, water, green infrastructures, communication quality of governmental services, protection and respect of human rights, protection contracts obligations, freedom of speech and that of the media, good road networks and provision of enabling environment for the citizens (Gilson & Rioja, 2019; Han *et al.*, 2020). Provision of a conducive environment, human capital formation, skills and quality education, good healthcare facilities and standards of living, life expectancy and infant mortality rate are all components in measuring the extent of government expenditure in any developing economy. Xuehui *et al.* (2020) posited that federal tax revenue had a positive effect on government expenditure, arguing that when there is an adequate response from the informal tax revenue from the federal tax revenue, it enhances the government's capability to have enough funds to invest in government expenditure.

Federally Collected Tax Revenue: Revenue that can be generated from the taxes collectable by the federal government of Nigeria. Government expenditure all over the world largely depends on State funding, revenue generation from taxation, and non-taxation sources. Whereas taxation is a key ingredient to expand the revenue basket needed to fund government expenditure, federal tax revenue are seen to be such a persistent phenomenon in Nigeria as in other low-income countries (Yahaya & Bakare, 2018; Nnabuife *et al.*, 2020). The large number of prospective taxpayers in the federal tax revenue bracket in Nigeria and the probable challenges of monitoring unknown entrepreneurs, small and medium enterprises that should be subjected to the federal tax revenue could pose a big challenge and the cost implication uncertain in Nigeria. Hence, the need for empirical research. According to Omodero (2020), every nation in the world imposes tax on its eligible taxpayers among its citizens.

Taxes are imposed by the government on individuals or companies primarily to generate funds for the running of the government and to finance government expenditures. In Nigeria, while some taxes are collected by the federal government others are collected by either the States or local government area councils. Taxes are collected for several reasons, and the rates and structure of tax collection and administration are different from one country to another according to each country's tax law and policies (Olatunji & Ayeni, 2018; Ndaka, 2017; Yahaya & Bakare, 2018)

The federal tax revenue are taxes paid to the Federal Government of Nigeria. The following are some of the federal tax revenue in Nigeria; (i) companies' income tax, (ii) value added taxes, (iii) stamp duties paid by corporate bodies (iv) petroleum profit taxes (v) capital gains tax paid by corporate bodies, (vi) tertiary education trust fund (vii) personal income tax paid by members of the armed forces, the Nigeria policy force, staff of the ministry of foreign affairs and nonresident individuals earning incomes in Nigeria (Olaoye & Aguguom, 2018).

In this study, federal tax revenue will be measured by (i) Company income tax (ii) Petroleum profit tax (iii) Custom and Excise duties (iv) Value added tax (v) Tertiary Education Trust Fund.

Company Income Tax: It is used by governments to protect companies in their infant stages. This is done by reducing specific tariffs which will invariably reduce the cost of production relative to imported products that may be substituted (iii) The tax can be used to discourage the consumption of dangerous/harmful products (iv) The tax aimed at controlling the importation, production and consumption of certain goods and services thereby preventing the country from becoming a dumping ground of other nations' production.

Petroleum Profit Tax: Petroleum profits tax is chargeable at the rate of 65.75% for the first five years of taxable operation and 85% thereafter. The Petroleum Profits tax rate was as low as 18.9% in 1970 after which it rose astronomically to 80.7% between 1971 and 1974. The rate was 82.3% from 1975 to 1989 and it peaked at 85% in 1990 till date (Yahaya & Bakare, 2018). Companies liable to petroleum profit tax are not liable to Companies Income Tax (CIT) on the same income.

Petroleum operations involves all petroleum activities that are in relation with exploration, development, production, transportation, sale or disposal of crude oil by the related company or its associates. According to Adegbola *et al.*, (2018). All activities of petroleum companies that operate and are taxed under the petroleum profit tax are generally referred to as operating under the upstream operations. Also, in the oil and gas industry, some items are referred to as nonproductive rent. According to Ajulor and Korede (2020), non-productive rent in the petroleum operations are deductibles from royalties payable under the oil prospecting licence (OPL) or rather called oil mining lease (OML) to the extent to which such rent could not be deducted as a result of the rent being more than the royalties.

Custom and Excise Duties: In the recent Companies and Allied Matters Act (CAMA) 2020, the Finance Act of 2020 reduced the import duties on some strategic items like Tractors from 35% to 5% while the import duties on trucks and other vehicles for the purpose of transportation of goods and persons was also reduced from 35% to 10% and 5 % respectively (Chinwendu *et al.*, 2021). However, the airline companies listed and operating in Nigeria, providing commercial air transport services in Nigeria were given some rebate and entitled to duty-free importation of their accessories, aircraft, engines, spare parts and other components purchased or leased for the purposes aforementioned. In addition, the excise duties tax are indirect taxes levied on specific products sold or bought in Nigeria. According to Enyi *et al.* (2019), excise duties are taxed on the sale or use of selected products like alcohol, tobacco related products and on energy. The tax revenue arising from these sources are called excise duties.

According to Fagbohun and Obiyemi (2018), taxes accruing from exercise duties include and applicable to beer, stout, wines, spirits, cigarette and all Tabaco of all brands manufactured in Nigeria or imported into Nigeria at a flat rate of 20%.

Tertiary Education Trust Fund: Obara and Nangih (2017) noted that the fund was established and saddled with the responsibility to collect and disburse the tax revenue accrued therein in the fund to the federal and state tertiary education in establishing the following: Provision of physical infrastructure for teaching and learning; Instructional materials and equipment for the benefit of tertiary education in Nigeria; Fund efforts geared towards research and publications; Academic staff training and development; Any other essential related needs considered relevant in the opinion of the Board of Trustee is considered important to the quality and maintenance of good learning standards in the Universities, Polytechnics and Colleges of education in Nigeria. Olatunji and Ayeni (2018) documented that there was a close correlation between the tertiary education trust fund and the quality of education in Nigeria. Omodero and Dandago (2019) investigated the effect of tax collected on service delivery in Nigeria, suggesting the influence of tax revenue on government expenditure in Nigeria.

2.2 Theoretical Framework

Infrastructural Theory of Development: Infrastructural theory of development was developed by an economist David Aschauer in 1895 and the theory is concerned with the significance of infrastructures in economic development (Ameyaw *et al.*, 2016). The theory assumes that development has been advanced in the literature by some studies, who posited that life cannot be separated from infrastructure (Adum, 2018; Ali Al-Ttaffi & Abdul-Jabbar, 2016; Ameyaw *et al.*, 2016). The theory assumes that infrastructure is one of the essentials of life and an unavoidable wheel that drives progress, civilization and economic growth and development of nations. The theory of infrastructure assumes that what distinguishes nations is the level of government expenditure in each of the nations, as nations are regarded as third world countries based on the extent and volume of infrastructural investments. The theory equally assumes that the amount of investment a nation made in government expenditure is aligned with the priority and premium the nation attached to the value of human lives (Ameyaw *et al.*, (2016)). A nation is classified as a developed economy, emerging economy or developed economy based on the quantum of infrastructure it has embarked upon and the extent the citizens have leveraged on these infrastructures to advance in business opportunities and information technologies. Some studies have been associated with the position of government expenditure by supporting the theory of government expenditure. For instance, the study of Dube (2014) opined that infrastructures are the bane of life and the product of civilization as the backwardness of the society has been concomitant with the inability to embrace and consider infrastructure as a priority and one of the necessities of life.

Supporting the infrastructural theory of development, Getachew (2017) submitted that among the nations of the world who have paid the price of government expenditure tend to grow their economy faster and ahead of those who pay less services and or have downplayed government expenditure in the past and successive governments. According to Getachew (2017), government expenditure is planned and premeditated on strategic visions of the government over the years.

Benefit Received Theory: Hoffman proposed the benefit-received theory in 1961. According to Hoffman, this theory is predicated on the idea that there ought to be a positive exchange relationship between the government's provision of services and the benefits that taxpayers can derive. Some previous studies highlighted some assumptions of benefit received theory in the literature. For instance, some of the assumptions of the benefit received theory include Firstly that the taxes which are the agent (citizens) pay should reflect the benefit that is received from the mix of goods and services supplied by the state on the ground that those goods and services are provided. Secondly, there is an assumption that the taxpayer has the ability to pay the amount assigned to him by the state. Thirdly that no one agent benefits more than

another from the expenditure of tax revenue (Yun & Liu, 2019). In addition, there is the assumption that the government are passive to a show of high insensitivity to the plight and needs of the citizens, rather are much concerned with the tax revenue accruable from tax impositions and tax laws. The theory equally assumes that there is high tax non-compliance on the premise that there is evidence of high tax injustice, poor utilization of taxes, infrastructural deficits in the midst of high tax revenue. Some of the other assumptions include that there are zero benefits received from tax payment, as there are no dilapidated infrastructures, complexities in tax laws and lack of tax incentives to encourage the taxpayers. In support of the theory of benefit received theory, there are the studies of Aggarwal, 2018; Bakar & Matt, 2017; Garcia, 2017). For example, Aggarwal (2018) argued that taxes should be allocated on the basis of benefits received from government expenditure. Faculty theory: According to Anyanfo (1996), this theory states that one should be taxed according to the ability to pay and in line to the benefit being derived from the previous payments. Relevance of the theory hangs of the fact that some benefits are expected to be offered to taxpayers, in this case corporate taxpayers as well as the government

Ability to Pay Theory: The ability to pay theory was developed by Adams Smith in 1776 in his book the wealth of nations. The ability to pay theory was developed by Adams Smith in the year 1776. The ability to pay theory is based on the belief that the burden of taxation should be spread in such a manner that gives rise to the financial strength of the taxpayers. There are other proponents of the theory that exist. The ability to pay theory suggested that taxpayers will be at liberty to comply with tax laws if the laws provide equity and justice that will allow citizens to pay tax within the limit of the income, the amount that the taxpayers can afford to pay rather than arbitrary fixed of tax rates and making it compulsory as a punishable offence for failing to comply (Docquier *et al.*, 2017). The ability to pay theory posited that tax authorities should be fair in company income tax and fixing tax rates for private and corporate taxpayers, to enable them to pay what their ability can allow them to pay (Gangl *et al.*, 2014). Gangl *et al.*, (2014) contended that the ability to pay theory is consonant to tax fairness, fair taxing capable of businesses to have the opportunity to grow to pay more taxes in the future and command much more responses to high tax compliances. The ability to pay theory is consistent with the Adam Smith postulation that tax burden is repulsive when it is meant to punish the citizens and becomes a burden to comply with tax laws, this could deter people from paying tax and low tax compliance will be experienced (Fourie, 2018).

2.3 Empirical Review

This section of the study considered the implications of federally collected tax revenue and Government Expenditure on Quality and Affordable Healthcare facilities in Nigeria.

Lateef *et al.* (2022), assessed the effect of tax revenue collections on health care government expenditure in Nigeria. The study adopted the multiple linear regression method for data analysis. Data for the study covering 2013 to 202 were sourced from the Central Bank of Nigeria statistical bulletin and the Federal Inland Revenue Sources. The proxies for tax revenue used were company income Tax, petroleum Profit Tax, Education Tax and Value Added Tax. While government expenditure on health infrastructure in Nigeria was adopted as proxy for Health Care Government expenditure. The findings of this study indicated that petroleum profit tax and Company Income Tax significantly influence the development healthcare infrastructure in Nigeria while Value Added Tax and Education Tax do not significantly influence health care government expenditure in Nigeria. Recommendations of the study includes the need for a judicious and efficient utilization of tax revenue towards boasting health care development in Nigeria. There is a need for future studies to investigate why Value Added Tax and Education Tax did not contribute positively to development of health infrastructure in Nigeria.

Appah (2022) examined the connection between oil revenue and economic growth in Nigeria. Oil revenue for the study was measures using petroleum profit tax, royalties, crude oil export, licensing fees and domestic sale of crude oil. While economic growth was measured by the country's the real gross domestic product (rGDP) and real gross national product (rGNP). An ex post facto research design was adopted in the study. Data for the analysis were obtained from the CBN statistical bulletin, the Federal Inland Revenue Service Reports and the World Bank Development reports. The study concluded that oil revenue has a major influence on the economic growth of Nigeria during the period reviewed. Future studies need to expand the proxies for government revenue to include other tax sources. It will also be necessary to expand the measures of economic growth to include other growth indicators outside rGDP and rGNP. Mustapha et al. (2017) had a result that is similar to that of Appah (2022) the result showed that federal tax revenue had a positive effect on economic development in Ghana. On the other hand, Mustapha et al. (2017)'s result is not similar to the study of Akinyele and Ogunmakin whose study found that there were very low tax payments and tax compliance among the federal tax revenue in the local government.

Nguyen et al. (2021) studied the effect of the informal economy on economic growth in Pakistan, the study employed an ex post facto research, using primary data sourced from a database in Pakistan and the use of auto-regressive distributed lag (ARDL) for the data analysis. The study found that the federal tax revenue positively and significantly contributed to gross domestic products (GDP) in the Pakistan economy. The study advised that the federal tax revenue be given priority by the policymakers to enhance tax revenue from the federal tax revenue. Nguyen et al. (2021)'s result is in tandem with the result gotten by Sebele-Mpofu (2020). The result showed that the quality of government infrastructural provisions had a positive effect on tax revenue from the federal tax revenue in Zimbabwe when tested. On the contrary, the result from Nguyen et al. (2021) is not in tandem with the study done by Akinleye and Ogunmakin (2016) who revealed that tax revenue had a negative influence on infrastructure.

Etim and Daramola (2020) examined the effect of the federal tax revenue on economic growth. The study employed secondary data of a systematic search of notable journals and Boolean string search protocols. The data collected of South Africa and Nigerian federal tax revenue related issues were analyzed. The result revealed that some extraneous factors of poor corruption control, inflation challenges and lack of social protection have negative effects on impressive responses from informal taxpayers' compliance. Etim and Daramola (2020)'s result from their study is consistent with the findings done by Nnabuife et al. (2020) who reported that COVID19 had a negative effect on the federal tax revenue and government expenditure support in Nigeria when tested. On the other hand, the report given by Huang et al. (2020) is not consistent with what Etim and Daramola (2020) derived from their result. The result revealed that federal tax revenue had contributed positively and significantly to the government expenditure in the study area.

Nnabuife et al. (2020) studied the effect of COVID-19 on federal tax revenue and the prospects of infrastructural support in Nigeria. The study employed survey research and used primary data from administered questionnaires to selected respondents; Consequent to data analysis, the study found that COVID-19 had a negative effect on the federal tax revenue and government expenditure support in Nigeria. The study recommended that the government should put in place a special tax incentive to improve tax revenue from the informal taxation drive in Nigeria. Nnabuife et al. (2020) had a result from the study done that is consistent with the study obtained by Ogbonnaya and Nelson (2018). The result of the analysis revealed that economic policies had a negative effect on the stabilization of the Nigerian economy. On the contrary, the result obtained by Nnabuife et al. (2020) is not consistent with the research work of Guillermo and Deyve (2018) who posited that the federal tax revenue had a positive effect on tax revenue and economy of the countries investigated in the study.

Akinleye and Ogunmakin (2016) examined the effect of tax avoidance on governments implementing budget from tax revenue for a period of 16 years covering 1999 to 2014. Secondary data of time-series was used in obtaining the data used for the study. Descriptive statistics and multiple regressions were adopted and the analysis revealed that there was low tax compliance and also that tax avoidance had negative significant effect on the total revenue collected in implementing government budgets among the selected Southwest government in Nigeria. The result from Akinleye and Ogunmakin (2016) is similar when compared with the result obtained by Nwaolisa and Kasie (2012) who revealed that poor tax implementation of tax policies had a negative effect on informal tax as well as government expenditure of Nigeria. On the contrary, the research work of Akinleye and Ogunmakin (2016) is not similar to the result obtained by Dube and Casele (2016). The result revealed that federal tax revenue enhancement had a positive significant effect on tax revenue for infrastructural development in Africa.

3. Methodology

Government expenditure propels economic development and growth in an economy. Evidence from literature showed that over the years has not sufficiently reflected in providing quality and affordable healthcare facilities in Nigeria. Studies have shown that many developed and developing countries have fully optimized tax revenue to fund provision essential infrastructures like provision of healthcare facilities, sufficient empirical evidence researching the extent federally collected tax revenue has impacted the quality healthcare facilities in Nigeria not clear. Dependent Variable: Federal tax revenue surrogated using Companies Income Tax, Petroleum Profit Tax, Customs and Excise Duties, Value Added Tax and Tertiary Education Tax). Independent Variable: Government expenditure on healthcare facilities in Nigeria. The study adopted an *expo facto* research design, evaluating the effect of federal tax revenue on government expenditure from the provision of quality and affordable healthcare facilities in Nigeria for 30 years spanning from 1994-2023 and concentrating on government expenditure on healthcare. A purposive sampling technique was adopted for the selection of the period. Data were extracted from the Central Bank of Nigeria Statistics Bulleting, Office of Budget and Fiscal Policy, Nigerian Exchange Group and the Federal Inland Revenue Services. Validity and reliability of data were premised on the statutory audit of the financial statement of the government agencies by the office of the Auditor General of the Federation. Descriptive and inferential (multiple regression) statistics were used to analyze the data at 0.05 level of significance.

Model Specifications

$$Y_t = \alpha_0 + \beta X_t + \mu_t$$

Functional Relationship

$$EXHC = f(CITAX + PPTAX + VAT + CEDT + TEDT)$$

Model of the Study

$$EXHC_t = \alpha_0 + \beta_1 CITAX_t + \beta_2 PPTAX_t + \beta_3 VAT_t + \beta_4 CEDT_t + \beta_5 TEDT_t + \mu_i$$

Where

EXHC = Expenditure on healthcare, CITAX = Company income tax, PPTAX = Petroleum Profit Tax,

VAT = Value added tax, CEDT: Custom and Exercise Duties, TEDT: Tertiary Education and Trust Fund, α = Intercept (Constant), β = Coefficient of the parameter or the slope, t = TimeSeries, μ = Error Terms or Disturbance Term

Table 1: Measurement of Variables

Variables	Abbr.	Measurement/Definitions	Sources
DEPENDENT VARIABLES <i>(Government Expenditure)</i>			
Expenditure on healthcare,	EXHC	Government expenditure on healthcare as a percent of government total spending over the years under consideration.	CBN Statistical Bulletin; National Bureau of Statistics
INDEPENDENT VARIABLES <i>(Federal tax revenue)</i>			
Company income tax	CITAX	Log of total federal tax revenue through CITAX for the period under Consideration	CBN, FIRS
Petroleum Profit Tax	PPTAX	Log of total federal tax revenue from PPTAX over the years under consideration	CBN, FIRS
Value added tax	VAT	Log of federal collected Tax through Total VAT and its Equivalent	CBN, FIRS
Custom and Excise Duties	CEDT	Log of federal tax revenue through CEDT over the years under the period under consideration	CBN, FIRS
Tertiary Education and Trust Fund	TEDT	Log of federal tax revenue through TEDT over the years under the period under consideration	CBN, FIRS

Source: Researcher's Compilation (2025)

4. Data Analysis, Results and Discussions

In this subsection, the outcomes of the ARDL regression model that investigates the influence of federal tax revenue on expenditure on healthcare in Nigeria are reported. The regression model has Federal tax revenue proxied by company income tax (CITAX), Petroleum Profit Tax (PPTAX), Value Added Tax (VAT), Custom and Excise Duties (CEDT) and Tertiary education trust fund (TEDT).

Bounds Co-integration Test: Federal tax revenue on Expenditure on Healthcare

In Table 2, the results from the employed ARDL bound co-integration test approach that check the existence of long-run relationships among the Federal tax revenue metrics and Health Infrastructure variables are reported.

Table 2 Bounds Co-integration Test: Federal tax revenue on Expenditure on Healthcare

Sig. Level	Lower Bound [I(0)]	Upper Bound [I(1)]
10%	2.08	3.00
5%	2.39	3.38
2.5%	2.70	3.73
1%	3.06	4.15
<i>Computed F-statistic = 23.224</i>		
<i>Source: Author's Computation (2025)</i>		

Following the result of ARDL bound co-integration test in Table 4.2.5, the null hypothesis of no co-integration is rejected at 1% significance level as evidently revealed by the computed F-statistic value = 23.224 which is more than the Upper Bound [I (1)] = 4.15. As a result, the study concludes that there is long-run relationship (co-integration) among the variables.

Short-run and Long-run Models: Federal tax revenue on Expenditure on Healthcare The outcome of the estimation of the short – run and the long-run models: Federal tax revenue on Expenditure on Healthcare based on the estimated ARDL (2, 1, 1, 1, 1, 0) as led by Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) are presented in Table 3.

Table 3: Short-run and Long-run Models: Federal tax revenue on Expenditure on Healthcare

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	P-value
DLOG(CITAX)	-0.106282	0.144458	-0.735732	0.4750
DLOG(PPTAX)	-0.087686	0.037949	-2.310614	0.0379
DLOG(VAT)	1.587764	0.213562	7.434667	0.0000
DLOG(CEDT)	0.446074	0.115635	3.857599	0.0020
CointEq (-1)*	-0.234211	0.015194	-15.41421	0.0000

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	P-value
	0.178967			
LOG(CITAX)	0.683901		3.821377	0.0021
LOG(PPTAX)	0.273346	0.031931	8.560500	0.0000
LOG(VAT)	0.311120	0.274852	1.131953	0.2781
LOG(CEDT)	-0.116139	0.145802	-0.796557	0.4400
LOG(TEDT)	-0.276535	0.044889	-6.160431	0.0000
C	-1.363705	0.251304	-5.426505	0.0001

EC = LOG(EXHC) - (0.6839*LOG(CITAX) + 0.2733*LOG(PPTAX) + 0.3111 *LOG(VAT)
0.1161*LOG(CEDT) -0.2765*LOG(TEDT) -1.3637)
F-Stat. (P-value) = 303.20 (0.000); R² = 0.940; Adj. R² = 0.924; D-Watson = 1.865
Diagnostic Tests

Serial Correlation (P-value) = 0.056 (0.946); Jarque-Bera (P-value) = 1.338 (0.512); Breusch-Pagan-Godfrey Heteroskedasticity (P-value) = 1.343 (0.303)
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Figure 1a: CUSUM Chart

Figure 1b: CUSUM Squares Chart

Source: Author's Computation (2025). Note: dependent variable is expenditure on healthcare (EXHC).

Independent variables are Expenditure on education (EXED), and expenditure on telecommunications (EXTC), company income tax (CITAX), petroleum profit tax (PPTAX), value added tax (VAT), custom and excise duties (CEDT), and tertiary education trust fund (TEDT).

Interpretation

The estimated short-run and long-run dynamic models in Table 3 comes with F-stat. (P-value) = 303.20 (0.000) and Adjusted R-squared = 0.924. Also, the coefficient of the error correction term (CointEq (-1)) is -0.234 (P – value = 0.000) suggesting that the coefficient is negatively signed (as expected), less than unity and statistically significant at 1% level and the speed of adjustment is relatively high (23.4%). This is a proof that a stable long run relationship between the Federal tax revenue metrics and Health Infrastructure variable exists. Focusing on the coefficients of the Federal tax revenue metrics and lag of EXHC, the relationship between expenditure on healthcare (EXHC) and its own lag is established to be positive and statistically significant at 1% level in the short run. This is evidently seen in the estimated positive and statistically significant coefficient of past expenditure on healthcare (EXHC (-1)) [$\beta = -0.562$; P – value = 0.000] suggesting that one percent increase in EXHC (-1) causes current EXHC to increase by 0.562 percent in the short run.

Also, in the short run; a negative and insignificant relationship is observed between company income tax (CITAX) and current expenditure on healthcare (EXHC) [$\beta = -0.106$; P – value = 0.475] and conversely, the relationship appears to be positive and statistically significant [$\beta = 0.684$; P – value = 0.002] at 1% level in the long run. These thus suggest that the company income tax (CITAX) only has positive and significant influence on expenditure on healthcare (EXHC) in the long run and then imply that one percent increase in CITAX leads to about 0.684 percent increases in EXHC in the long run.

A negative and significant relationship is observed between petroleum profit tax (PPTAX) and current expenditure on healthcare (EXHC) [$\beta = -0.088$; P – value = 0.038] at 5% level in the short run and conversely, the relationship appears to be positive and statistically significant [$\beta = 0.273$; P – value = 0.000] at 1% level in the long run. These therefore indicate that the petroleum profit tax (PPTAX) has significant influences on expenditure on healthcare (EXHC) both in the long run and short and then denote that one percent increase in PPTAX lead to about 0.088 percent decrease and about 0.273 percent increases in EXHC in the short run and long run respectively. The result also shows that value added tax (VAT) exhibit positive and significant relationships with expenditure on healthcare (EXHC) [$\beta = 1.588$; P – value = 0.000] at 1% levels. On the other hand, the relationship becomes positive and statically insignificant [$\beta = 0.3111$; P – value = 0.278] in the long run. These indicate that; VAT only has significant influence on Value added tax (VAT) in the short run which further suggests that one percent increase in current VAT causes about 1.588 percent increase in EXHC in the short run.

Similarly, the result depicts that custom and excise duties (CEDT) exhibits positive and significant relationships with expenditure on healthcare (EXHC) [$\beta = 0.446$; P – value = 0.002] at 1% levels. On the other hand, the relationship becomes negative and statically insignificant [$\beta = -0.1161$; P – value = 0.440] in the long run suggesting that; CEDT only has significant influence on expenditure on healthcare (EXHC) in the short run which further means that one percent increase in current CEDT causes about 0.446 percent increase in EXHC in the short run. Additionally, it is imperative to state that in the short run; tertiary education trust fund (TEDT) is suppressed in the chosen model however, in the long run, the coefficients of TEDT is observed to be negative and statistically significant [$\beta = -0.277$; P – value = 0.000] at 1% level suggesting that the variable has significant effect on EXHC during the period under review and one percent increase in TEDT leads to about 0.277 percent fall in EXHC.

Diagnostic Tests

On the validity of the model, the results in Table 3 and Figures 1a&b are statistically insignificant (P-value > 0.05) meaning that the residual of the ARDL model is normally distributed, free from serial correlation problem and has constant variance.

Trend Analysis

In figure 1a and 1b showed the trend of expenditure for the years under consideration. The blue line showed the sum of squares in each case, while the orange line depicted the movement of 5 percent level of significance as revealed from eth software used. Also, the blue lines of CUSUM and CUSUM Square tests are all found within the upper and lower bounds (red lines) thus confirm that the model is well specified and stable.

Adjusted R² in Table 3, From the results of the ARDL regression estimation, the Adjusted R² = 0.924 indicated that the percentage of variances in health Infrastructure that is jointly accounted for by explanatory variables (Federal tax revenue metrics) is 92.4%, while the remaining 7.6 % were other factors not considered and not captured in the model in this study. At 5 % level of significant and degree of deference of (5, 20), Also, the computed F- Statistic is 303.20 at a Pvalue of 0.000 which is less than 0.05 level, this is highly statistically significant. Therefore, the null hypothesis three (H₀₃) which states that 'Federal tax revenue has no significant influence on healthcare in Nigeria' was rejected and the alternative accepted instead. Consequently, this study concluded that Federal tax revenue has significant influence on the expenditure on healthcare in Nigeria.

Discussion of Findings

The study in the model, in Table 3, the results revealed mixed result judging from the individual parameter of the model that investigated the effect of federal tax revenue on expenditure on healthcare in Nigeria. However, the joint statistics of the F-statistics of the combined explanatory variables showed that tax revenue had a positive effect on expenditure on healthcare in Nigeria. This result is in consonant with some previous studies that have found positive effects as carried out by (Lateef *et al.*, 2022; Adegbie & Fakile, 2011; Nguyen *et al.*, 2021; Sebele-Mpofun, 2020; Etim & Daramola, 2020; Ogbonnaya & Nelson, 2018; Akinleye & Ogunmakin, 2016; Nwaolisa & Ikasie, 2012; Ameyaw *et al.*, 2016). However, on the contrary, some other studies have found an inverse effects. This result found in this model were not in consonant with the other studies of (Umar *et al.*, 2019; Huang *et al.*, 2020; Guillermo & Deyve, 2018; Dube & Cabele, 2016; Ogbonnaya & Nelson, 2018; Nnabuife *et al.*, 2020;). For instance, for instance, Nnabuife *et al.* (2020) studied the effect of COVID-19 on federal tax revenue and the prospects of infrastructural support in Nigeria and study found that COVID-19 had a negative effect on the federal tax revenue and government expenditure support in Nigeria.

5. Conclusion, Recommendations and Suggestion for Further Studies

Conclusion: The relationship between expenditure on healthcare (EXHC) and its own lag (EXHC (-1)) is estimated to be positive and statistically significant at 1% level suggesting EXHC (-1) has significant influence on its current value (EXHC). Also, in the short run; a negative and insignificant relationship was observed between company income tax (CITAX) and current expenditure on healthcare (EXHC), while the relationship turns positive and statistically significant at 1% level in the long run. A negative and significant relationship was observed between petroleum profit tax (PPTAX) and current expenditure on healthcare (EXHC) at 5% level in the short run and positive and statistically significant at 1% level in the long run. The result also shows that value added tax (VAT) exhibits positive and significant

relationships with expenditure on healthcare (EXHC) at 1% levels in the short run. On the other hand, the relationship becomes positive and statically insignificant in the long run. Similarly, the result depicts that custom and excise duties (CEDT) exhibits positive and significant relationships with expenditure on healthcare (EXHC) at 1% levels in the short run. On the other hand, the relationship becomes negative and statically insignificant in the long run suggesting that; CEDT only has significant influence on expenditure on healthcare (EXHC) in the short run. Additionally, in the long run, the coefficients of TEDT is observed to be negative and statistically significant at 1% level suggesting that the variable has significant effect on EXHC during the period under review.

Implication of Findings

The results from the study regressions in each of the models have implications to various stakeholders: the government, policymakers, Ministry of Finance, foreign direct investments, international and domestic investors, finance professionals, accounting professionals, financial analysts, tax professionals, financial regulators and the general public. For the government the result in relation to the effect of federal tax revenue on expenditures on the various identified variable healthcare facilities revealed weak significant effects, which implied that government had not effectively implemented the budgets as it relates to tax revenues earmarked for the development of the selected infrastructures over the reviewed period. The ineffective implementation of the budget in this instance may mean that funds earmarked by government may not have been utilized entirely for government expenditure as planned or the allotted funds may have been utilized as planned for government expenditure but monitoring of the implementation may have been poor, such that the expected value add was not achieved. Therefore, the implication would be that in spite of the huge funding for government expenditure over the years reviewed through federal tax revenues, the infrastructural situation of Nigeria remained poor and has not improved. This means the effect of the federal tax revenues expended on the various projects depicted by the variables investigated was not felt by the people. This also has implication for foreign direct investments which are highly attracted to countries with developed infrastructure. Clearly, the huge reduction in foreign direct investment to Nigeria currently can be linked to the fact that government has not been able to reverse the huge infrastructural deficit prevalent in the country to date.

For tax administrators, the results have wide implications given that the approved expenditures on various government cost units represented by the variables of government expenditure under review have not made any significant expected positive impact on the citizens. This means the results reported in the models investigated appeared to be consistent with the realities in Nigeria in terms of the effect of government expenditure on roads, power, education, healthcare and telecommunication. The implications include weak policies in place for budget implementation, policies in place for budget monitoring were ineffective and the possibility of corrupt practices that may have made it possible for officials to ignore policies in place for budget implementation. Also, the failure in policies implies a failure on the part of tax administrators to design policies that should help improve on the government expenditure of Nigeria over the periods reviewed.

Recommendations: The policymakers should be sensitive to the legal and regulatory requirements of the expenditure policies of the federal government. Given the result in objective three, where the study found that federal tax revenue effect on healthcare was insignificant for company income tax in the short-run, and the fact that value-added tax and customs and excise duties exerted insignificant effects on expenditure on healthcare in Nigeria, the study recommended that adequate economic policies should be considered and where possible review the existing funding and implementation policies to ensure elements of adequacy of funds and monitoring are well covered on policies relating to the utilization of federal tax revenues to fund government expenditure. This will ensure the achievement of value added from allotted funding for capital expenditure such as expenditure on healthcare.

Limitations and Suggestion for Further Studies: The study had made good contribution for the benefit of the general public. The general public is hereby provided with information on the effect of federal tax revenue on government expenditure in Nigeria and this will enable the citizen to understand how their taxes were being utilized by their elected representatives. In addition, stakeholders (labour union, employees, creditors, government) would find the outcome of this study immensely useful in making informed decision about the performance of government as it relates to how tax revenues have been utilized on planned government expenditure over the reviewed period. While the study made significant contributions to knowledge, there are other federal tax revenue components and properties that could measure government expenditure in Nigeria not covered by the study. Federal tax revenues like income tax deductions from staff of Nigerian foreign missions, members of the armed forces and police, and persons outside Nigeria that earn incomes from Nigeria were not part of federal tax revenue sources covered in this study. Besides, findings of this research were applicable only to characteristics and features of the selected components of only three federal government expenditure in five sectors of roads, power, healthcare, education and telecommunications. Furthermore, there was the inability to synthesize elaborately using prior studies, as there was a dearth of literature that had specifically considered this topic using the same chosen variables in the manner used in this study. In addition, the study encountered some constraints in data collection as accessibility to some data was difficult due to lack of a robust database in these subheads as there could have been some human errors during documentation and computation and estimation of these expenditures. Future study can consider implications and effects of federally collected revenue on government expenditure in respect of education, standard of living and infant mortality.

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