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Impact of Personal Income Tax to Nigeria's Gross Domestic Product from 2013 to 2023

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Abstract **Review Article**

This study investigates impact of Personal Income Tax on Nigeria Gross Domestic Product from 2013 to 2023, Secondary data were sourced from the Federal Inland Revenue Service (FIRS), Central Bank of Nigeria (CBN), and the National Bureau of Statistics (NBS). Using descriptive statistics, unit root tests, cointegration, and panel regression analysis, the results revealed that PIT, have positive and significant effects on Nigeria's development indicators specifically GDP. The study concludes that taxation plays a vital role in promoting sustainable economic growth and social welfare. It recommends improved tax administration, wider tax coverage, and greater transparency to enhance the developmental impact of Nigeria's tax system.

Keywords: Economic Development, Gross Domestic Product, Personal Income Tax, Taxation & Benefits Theory.

INTRODUCTION

Every country's government is tasked with a plethora of duties, many of which are impacted by the revenue it receives from various sources, including taxes. Taxes are the main source of funding for the Nigerian government. The government typically imposes taxes on individuals and businesses, which they are required to pay (Adefolake &Omodero, 2022). Effective tax administration is an issue as old as taxation itself. The balancing act between maximizing tax revenues and minimizing the impact on the populace in which the state must engage, was evident as early as 2350 BC. The responsibility shouldered by the government of any nation, particularly the developing nations, is enormous. The need to fulfill these responsibilities largely depends on the amount of revenue generated by the government through various means (Aliyu & Mustapha, 2020).

Nigeria's tax system is designed to accommodate the country's three levels of government: federal, state, and local. Nigeria has a decentralized tax system in which the administration of taxes inside its borders is the responsibility of each tier of government. By collecting taxes from all levels of government, Nigeria raises money to pay for government spending. Every level of government has a body set up to handle taxes. Managing taxes owed to the federal government is the responsibility of the Federal Inland Revenue Service (FIRS). While local government revenue committees handle taxes owed to local governments, the various state boards of internal revenue handle taxes owed to state governments. On the other hand, the joint tax board makes recommendations, coordinates double taxation, and suggests changes (Okon, 2024).

Furthermore, the informal sector, which

constitutes a significant portion of Nigeria's economy, remains largely untaxed, exacerbating the revenue gap. A well-structured tax system can provide the government with the necessary funds to invest in critical sectors, thereby fostering economic growth and reducing poverty. On the social front, taxation can support welfare programs and promote social equity, thus contributing to national stability and cohesion (Akinyemi & Adedeji, 2020).

Ayano (2022) posited that Nigeria and other African Countries are today facing series of challenges when it comes to optimizing taxation revenue for economic and social growth while aiming to reach development targets. The most glaring difficult challenge is how to find the optimal balance between a tax regime that is business and investment friendly while at the same time leveraging enough revenue for public service delivery which in turn makes the economy more attractive to investors.

This research investigates the dual role of taxation in Nigeria's economic and social development. It aims to uncover the extent to which tax revenues support national development and identifies systemic bottlenecks that need to be addressed. By e valuating existing policies and practices, the study seeks to propose actionable recommendations that can enhance the efficiency and equity of the Nigerian tax system, ultimately fostering more inclusive and sustainable development trajectory.

1. Statement of the Problem

Existing literature reveals a lack of comprehensive studies that directly link taxation to economic and social development in Nigeria. While various studies have examined aspects such as revenue generation and tax compliance, they often fail to explore taxation's broader developmental implications. For instance, Olaleye, Akinola, and Akintola (2019) highlight the effects of tax reforms on revenue generation but do not delve into how these reforms translate into societal benefits. Similarly, Adedeji and Oboh (2019) underscore the challenges in leveraging tax revenues for infrastructural development, which limits their broader economic impact. Furthermore, Iyoha and Oriakhi (2020) emphasize the importance of fiscal policies in achieving sustainable development but acknowledge the inefficiencies within Nigeria's tax system. This gap underscores the need for integrated research that considers both economic and social dimensions to provide a well-rounded understanding of how taxation impacts national development.

Addressing this gap is crucial as Nigeria faces unique fiscal challenges. The country's over-reliance on oil revenues exposes its economy to external shocks, and the persistently low tax-to-GDP ratio limits government capacity to invest in critical sectors such as healthcare, education, and infrastructure. These systemic issues underscore the importance of optimizing the tax system to meet developmental needs effectively. Bridging this gap can unlock insights into how tax policies can better support sustainable growth and social progress.

This research aims to fill this void by investigating the dual role of taxation in economic and social development. By assessing the effectiveness of existing policies, the study seeks to propose reforms that enhance revenue generation and resource allocation. Ultimately, it aspires to transform Nigeria's tax system into a robust tool for driving equitable and sustainable national development.

2. Objective of the Study

The objective of this study is to evaluate the contribution of personal income tax to Nigeria's gross domestic product.

Research Question

How personal income tax does contribute to Nigeria's gross domestic product?

3. Research Hypotheses

This study will carry out the following hypotheses:

i. **H01:** Personal income tax does not significantly contribute to Nigeria's Gross domestic product.

Scope of the Study

With an emphasis on the tax structures at the federal, state, and local government levels, this study examines how Personal Income taxes affect Gross Domestic Product in. Specifically, it critically examines tax policies and revenue generation trends during the period 2013–2023. Emphasis is placed on key tax types such as personal income tax, analyzing its contributions to government revenue and it role in advancing Gross Domestic Product.

Furthermore, the study evaluates the effectiveness of tax revenues in financing critical sectors like education, healthcare, and infrastructure development during this period. It examines the alignment of tax policies with Nigeria's developmental objectives, offering insights into how taxation has facilitated or impeded sustainable growth. By addressing systemic challenges within this timeframe, the research aims to propose strategic reforms that enhance the equity and efficiency of the Nigerian tax system, ultimately supporting national progress.

4. LITERATURE REVIEW

Conceptual review

Taxation

Taxation is a fundamental mechanism by which governments generate revenue to finance public goods and services, maintain economic stability, and promote social welfare. It involves compulsory financial contributions imposed on individuals, businesses, and other entities within a jurisdiction.

Taxation has been defined by various scholars. According to Adegbite and Olayemi (2021), taxation refers to the compulsory financial charge levied by a government on individuals, businesses, or other legal entities to fund public expenditures. Similarly, Ekeocha (2022) asserts that taxation is a structured system through which governments collect revenue from economic agents to finance developmental projects and maintain public order. The concept of taxation is not merely about revenue collection but also serves as a means of wealth redistribution, market intervention, and economic stabilization.

In the Nigerian context, taxation has been a key driver of economic and social development. The revenue generated from taxes is used to finance critical sectors such as education, healthcare, infrastructure, and security. However, despite its importance, the Nigerian tax system faces several challenges, including tax evasion, a large informal sector, corruption, and administrative inefficiencies (Babatunde &Alade, 2021). Addressing these issues requires policy reforms, improved enforcement mechanisms, and enhanced public awareness of the benefits of taxation.

Personal Income Tax (PIT)

Personal income tax is a fundamental component of any tax system, serving as a primary source of government revenue while promoting income redistribution and economic stability. In Nigeria, personal income tax is governed by the Personal Income Tax Act (PITA), which stipulates the taxation of individuals, communities, families, and trustees. The tax applies to earnings from employment, business profits, interests, dividends, and other forms of income, ensuring a broad tax base that captures various economic activities (Owolabi & Dada, 2021). The progressive nature of personal income tax in Nigeria, where higher income earners are subjected to higher tax rates, aligns with the principle of equity in taxation, as advocated by Musgrave and Musgrave (2020), who emphasized the importance of ability-to-pay principles in tax administration.

The role of personal income tax extends beyond revenue generation, as it also contributes to economic stability and social development. By redistributing income through progressive taxation, governments can reduce income inequality and fund essential services such as education, healthcare, and infrastructure (Okafor, 2023). Furthermore, personal income tax policies can influence labor market decisions, investment behaviors, and overall economic activities, making it a crucial instrument in fiscal policy implementation (Edeh& Nwachukwu, 2024). However, for personal income tax to achieve its full potential in Nigeria there is a need for continuous reforms, improved enforcement mechanisms, and greater public awareness of the benefits of taxation.

Economic Development

Economic development is a multidimensional process that encompasses improvements in living standards, poverty reduction, employment opportunities, and overall economic well-being. It goes beyond mere economic growth, which focuses on increases in a country's gross domestic product (GDP), to include structural transformations in production, infrastructure, and social welfare (Todaro & Smith, 2021). Economic development is measured through various indicators such as per capita income, literacy rates, life expectancy, and access to essential services like healthcare and education (Sachs, 2022). In Nigeria, economic development is a central policy objective, given the country's large population, vast natural resources, and the need to improve socio-economic conditions. However, achieving sustained economic development has been challenging due to issues such as weak governance, infrastructural deficits, and macroeconomic instability (Aigbokhan, 2023).

The process of economic development is closely linked to industrialization, investment, and human capital formation. Industrialization enhances productivity by shifting resources from low-productivity sectors, such as subsistence agriculture, to high-productivity industries like manufacturing and services (Rodrik, 2022). Investment in infrastructure, including transportation networks, energy supply, and digital connectivity, facilitates economic activities and attracts foreign direct investment (FDI), thereby accelerating growth (Iyoha&Oriakhi, 2023). Human capital development, which involves education and skills acquisition, plays a crucial role in increasing labor productivity and innovation. Countries that invest heavily in education and healthcare tend to experience higher economic development levels, as healthy and skilled workers contribute more effectively to economic progress (Ogunleye & Adeyemi, 2024).

The relationship between economic development and governance is also significant, as stable political institutions and transparent governance structures promote investment, enhance policy implementation, and foster economic stability (Acemoglu & Robinson, 2022). In Nigeria, governance issues such as corruption, weak institutional capacity, and policy unpredictability have impeded sustainable development (Edeh& Nwachukwu, 2024). Strengthening institutions, improving regulatory frameworks, and ensuring accountability in public administration are crucial steps toward achieving long-term economic development.

Ultimately, economic development is a dynamic process that requires a combination of sound policies, strategic investments, and an inclusive growth approach. While Nigeria has made progress in some areas, persistent challenges such as high unemployment, income inequality, and infrastructural deficits must be addressed to achieve sustained economic transformation (Obafemi, 2023). Continuous efforts to improve governance, enhance education and healthcare systems, and promote private sector development will be essential in shaping Nigeria's economic future.

Taxation and Economic Development

Taxation plays a critical role in economic development by providing governments with the necessary revenue to finance infrastructure, public services, and social programs. A well-structured tax system supports sustainable economic growth by ensuring a stable source of funding for national development initiatives while minimizing distortions in economic activities (Stiglitz & Rosengard, 2021). In Nigeria, taxation has become an increasingly important tool for economic planning, given the need to reduce dependency on oil revenues and diversify the country's fiscal base (Ademola & Okafor, 2023). By mobilizing domestic resources, taxation enhances a country's ability to invest in key sectors such as education, healthcare, and transportation, which are fundamental to long-term economic progress (Obadan, 2023).

In conclusion, taxation is a fundamental pillar of economic development, providing governments with the revenue needed to finance public goods, reduce income inequality, and foster a stable business environment. In Nigeria, the effective mobilization of tax revenue is crucial for achieving sustainable development, reducing reliance on oil exports, and addressing socio-economic challenges (Obafemi, 2023). However, for taxation to fully support economic progress, it must be accompanied by transparent governance, efficient tax administration, and policies that promote compliance while minimizing economic distortions. Strengthening Nigeria's tax system will be essential in ensuring that taxation remains a catalyst for long-term economic growth and social development.

Theoretical Review

Benefit Theory of Taxation

The Benefit Theory of Taxation is one of the fundamental theories in public finance that seeks to justify taxation based on the benefits received by taxpayers. This theory, originally proposed by Adam Smith and later expanded by other economists, suggests that individuals and businesses should pay taxes in proportion to the benefits they derive from government-provided goods and services (Musgrave & Musgrave, 2020). The essence of the theory is that taxation should function similarly to a market transaction, where individuals contribute to government revenue in exchange for specific public goods such as infrastructure, security, and social services (Stiglitz & Rosengard, 2021). This principle aligns with the notion of fairness in taxation, as those who benefit more from public services are expected to contribute more to government revenue (Adebayo & Usman, 2022).

In the context of Nigeria, the Benefit Theory of Taxation is particularly relevant in areas such as road maintenance, electricity supply, and security services. Taxpayers who benefit from the use of well-maintained roads, for instance, indirectly justify the payment of taxes that finance these public goods (Obadan, 2023). The theory also underpins certain tax structures, such as user fees and road taxes, where individuals pay levies that correspond directly to the services they use (Adegbite & Olayemi, 2023). Similarly, corporate entities that operate within Nigeria benefit from government services such as regulatory frameworks, legal protections, and public infrastructure, which justify their tax obligations (Iyoha & Oriakhi, 2023). However, in a developing economy like Nigeria, the practical application of this theory is often limited due to the inefficiency of public service delivery and the perception that tax payments do not translate into tangible benefits for taxpayers (Ogunleye & Adeyemi, 2024).

Revenue Productivity Theory

The Revenue Productivity Theory of taxation emphasizes the efficiency of a tax system in generating adequate government revenue while minimizing economic distortions. According to this theory, an ideal tax system should not only provide sufficient funds for public expenditure but should also do so with minimal administrative costs and economic inefficiencies (Musgrave & Musgrave, 2020). Revenue productivity is typically measured through key indicators such as tax buoyancy and tax elasticity, which assess the responsiveness of tax revenue to changes in national income and tax policy adjustments (Saez&Stantcheva, 2022).

In Nigeria, revenue productivity is a crucial concern due to the government's reliance on various tax instruments to finance its budgetary commitments. A tax system with high revenue productivity ensures fiscal sustainability by generating stable and predictable revenue streams. The effectiveness of taxation in achieving revenue productivity depends on factors such as tax compliance, administrative efficiency, and the structure of the economy (Ajagun, P, Jinadu, J, M and Gabriel, P. B. (2024).). For instance, the country's overdependence on oil revenue has historically limited the productivity of non-oil tax sources, necessitating reforms to improve domestic revenue mobilization (Olawale & Daramola, 2023).

One of the fundamental principles of the Revenue Productivity Theory is tax buoyancy, which measures how tax revenue grows in response to economic expansion without any discretionary policy changes (Okonkwo & Yusuf, 2021). A buoyant tax system is desirable because it ensures that government revenue keeps pace with national income growth. In Nigeria, tax buoyancy has been relatively low due to structural issues such as a large informal sector, widespread tax evasion, and weak enforcement mechanisms (Adegbite & Olayemi, 2023). For example, personal income tax and corporate income tax in Nigeria often exhibit low buoyancy due to inefficient collection systems and inadequate taxpayer education (Eze &

Nwachukwu, 2023).

In conclusion, the Revenue Productivity Theory provides a vital framework for evaluating the effectiveness of Nigeria's tax system in generating adequate government revenue. By improving tax buoyancy and elasticity, broadening the tax base, and enhancing administrative efficiency, Nigeria can optimize its tax revenue potential and reduce reliance on volatile oil earnings. Continuous reforms aimed at improving compliance, transparency, and public trust in taxation are necessary to ensure that taxation contributes effectively to economic growth and sustainable development (Adegbite & Olayemi, 2023).

Empirical Review

Empirical studies on the impact of taxation on economic and social development have been conducted in various contexts, shedding light on the significance of tax revenue in fostering national progress. For instance, Adegbite and Olayemi (2023) investigated the role of taxation in financing public infrastructure in Nigeria. Their study utilized a panel data analysis of government revenue and expenditure reports from 2005 to 2021, employing the Autoregressive Distributed Lag (ARDL) model to examine the long-run and short-run effects of taxation on infrastructure investment. The findings indicated that value-added tax (VAT) and corporate income tax significantly contribute to capital expenditure on roads, healthcare, and education, while personal income tax had a relatively lower impact. This study highlights the importance of a well-structured tax system in ensuring economic growth through enhanced public services.

Furthermore, Okon and Bassey (2023) examined the effect of taxation on income inequality in Nigeria. Using Gini coefficient estimates and tax revenue data from 1995 to 2020, they employed a Generalized Method of Moments (GMM) approach to determine how tax policies influence wealth distribution. Their findings revealed that progressive taxation, particularly through personal income tax, helps to reduce income inequality, while indirect taxes such as VAT disproportionately affect low-income earners, thereby exacerbating economic disparities. The study recommended tax policy adjustments to enhance equitable wealth distribution.

Okon and Adekunle (2022) investigated the effect of tax incentives on small and medium-sized enterprises (SMEs) in Nigeria. The study applied a survey research design, analyzing responses from 500 SME owners across Lagos and Abuja. Findings revealed that tax incentives positively influence business expansion and employment generation. However, tax compliance remained low due to a lack of trust in government policies.

Samuel and Eze (2021) examined corporate income tax and foreign direct investment (FDI) inflows in Nigeria. Using the Generalized Method of Moments (GMM) estimator on annual FDI data from 1995 to 2020, the study found that high corporate tax rates negatively impact FDI inflows. The study recommended tax policy adjustments to attract more foreign investments.

Lawal and Yusuf (2022) analyzed the effects of taxation on Nigeria's informal sector. Using survey data from 800 informal business operators in Kano and Lagos, the study found that multiple taxation and lack of awareness about tax obligations contribute to low compliance rates. The study suggested the introduction of a simplified tax system tailored to informal businesses to increase revenue generation.

Akinyemi and Oladipo (2023) explored tax compliance behavior among Nigerian taxpayers. Using a behavioral economics framework, the study employed a Structural Equation Modeling (SEM) approach to analyze survey responses from 1,000 taxpayers. Findings indicated that tax compliance is influenced by trust in government, ease of payment, and perceived fairness of the tax system.

Adeola and Ojo (2022) studied the impact of corporate taxation on firm growth in Nigeria. The study utilized financial statement data from 2010 to 2021 and applied regression analysis to examine the effect of tax rates on profitability and investment decisions. Findings indicated that high corporate tax rates negatively impact firm expansion, particularly in the manufacturing sector.

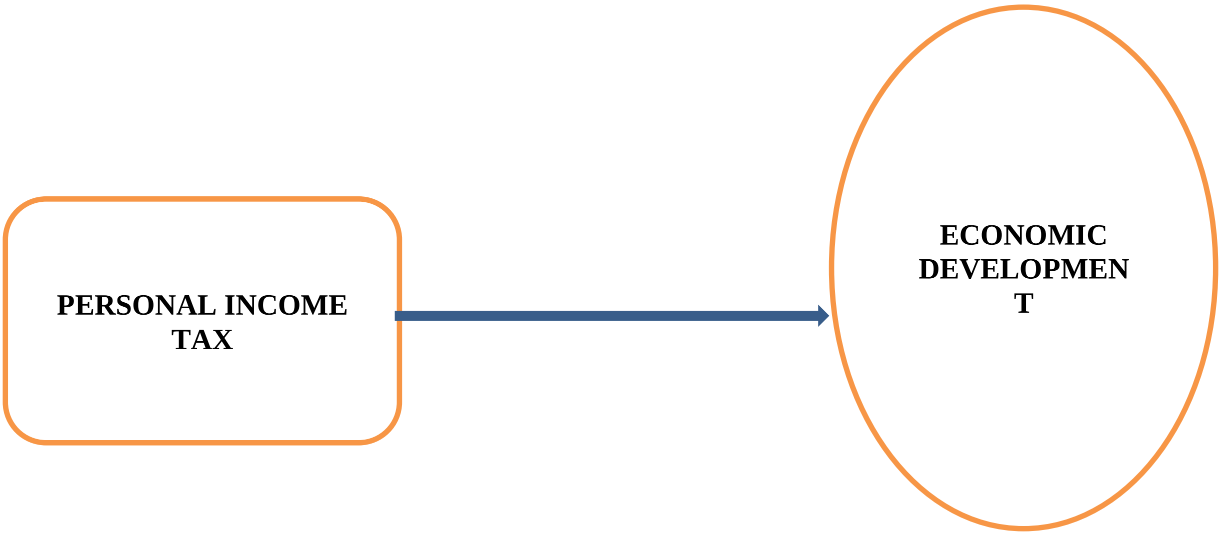
Drawing from the above empirical reviews, it can be concluded that several studies have explored the relationship between taxation, economic development, and social development in Nigeria. Prior research has primarily examined the effects of corporate income tax, personal income tax, and value-added tax on macroeconomic indicators such as GDP growth, infrastructure financing, poverty reduction, and income distribution (Adegbite&Olayemi, 2023; Okon& Bassey, 2023; Eze& Nwachukwu, 2023). Most of these studies utilized secondary data obtained from sources like the Central Bank of Nigeria Statistical Bulletin, the National Bureau of Statistics, and the Federal Inland Revenue Service (FIRS) reports (Ibrahim & Adepoju, 2023; Ogunleye & Daramola, 2023; Babatunde &Alade, 2022).

Given the nature of this study, which examines the impact of taxation on economic and social development in Nigeria, secondary data will be adopted as the primary source of data collection.

This approach ensures access to reliable macroeconomic indicators and tax revenue records, making it suitable for assessing the long-term effects of taxation policies on development outcomes.

Conceptual Framework

INDEPENDENT VARIABLE **DEPENDENT VARIABLE**



Source: Researcher's model, 2025.

Interpretation of the Model

The conceptual framework for this study illustrates the relationship between taxation and its impact on economic and social development in Nigeria. Taxation, which serves as the independent variable, is proxied by Personal Income Tax (PIT), Company Income Tax (CIT), and Value Added Tax (VAT). These tax components represent key revenue sources for the government and play a fundamental role in shaping national development. The dependent variables—economic development and social development—reflect the broader outcomes of tax policies and revenue utilization.

Personal Income Tax (PIT) contributes to economic and social development by generating government revenue for public services, redistributing wealth through progressive taxation, and influencing labor market behavior. A well-structured personal income tax system enhances disposable income levels, fosters consumer spending, and ultimately stimulates economic activity. On the social front, revenue from PIT is often allocated to funding essential services such as education, healthcare, and social security, improving citizens' quality of life.

In summary, taxation is a crucial mechanism for driving economic and social progress. While tax revenues provide the financial means for national development, the efficiency of tax administration, compliance levels, and policy effectiveness determine the extent of its impact. A well-structured tax system fosters sustainable development by ensuring that tax burdens are equitably distributed, businesses remain competitive, and public services are adequately funded. The interplay between taxation and development underscores the need for sound fiscal policies, improved tax compliance mechanisms, and effective utilization of tax revenues to maximize socio-economic benefits.

5. RESEARCH METHOD

Research Design

The study adopts an ex post facto research design because it relies on existing historical data to examine the impact of Personal Income tax on Gross Domestic Product in Nigeria. Ex post facto research design is appropriate for studies where the researcher has no control over the variables. The design allows the researcher to establish relationships between personal income tax and Gross Domestic Product, using empirical data from relevant sources.

Population of the Study

The population for this study comprises all the tax revenues generated in Nigeria, as well as economic and social development indicators covering the period from 2013 to 2023.

Sample Size and Sampling Technique

The study adopts a purposive sampling technique, focusing on Personal Income Tax (PIT) and its impacts on economic and social development majorly on Gross Domestic Product (GDP).

The sample period spans eleven (11) years, from 2013 to 2023, enabling the researcher to assess both short-term and long-term relationships between PIT and GDP. This study will rely exclusively on secondary data collected from relevant and credible sources.

The summary of the variable description is presented below:

Variable Type	Proxy/Measurement	Source
Independent Variable	**Taxation** (Measured by: Personal Income Tax, Company Income Tax, and Value Added Tax)	Omodero& Okafor (2021)
Personal Income Tax (PIT)	Annual government revenue from personal income tax as a percentage of GDP	Omodero& Okafor (2021)
Company Income Tax (CIT)	Annual government revenue from corporate income tax as a percentage of GDP	Adegbite (2020)
Value Added Tax (VAT)	Annual VAT revenue as a percentage of GDP	Adegbite (2020)
Dependent Variable	**Economic Development** (Measured by: Gross Domestic Product (GDP) Growth Rate)	Nwuzor (2023)
Economic Development	Annual percentage change in GDP	Nwuzor (2023)
Dependent Variable	**Social Development** (Measured by:	Eze&Nwuchuwu (2023)

	Government Expenditure on Health and Education)	
Social Development	Annual percentage of government expenditure allocated to education and healthcare	Eze&Nwuchuwu (2023)

Model for Economic Development

Economic development in this study will be proxied by Gross Domestic Product (GDP). The functional relationship between PIT and GDP can be expressed as:

$$GDP_t = \beta_0 + \beta_1 PIT_t + \varepsilon_t \qquad (3.1)$$

Where:

GDP_t = Gross Domestic Product in year t

PIT_t = Personal Income Tax revenue in year t

β_0 = Intercept

β_1 - β_3 = Coefficients of independent variables

ε_t = Error terms

Justification of the Model

The models are specified in line with similar empirical studies that have investigated the relationship between taxation and economic development, as well as taxation and public expenditure. Studies such as Adegbite and Olayemi (2023) and Okafor (2023) have applied multiple regression models to explore how different forms of tax revenue impact economic indicators such as GDP and public spending on social services. These models allow for the joint and individual effects of personal income tax, company income tax, and value-added tax to be analyzed, thereby providing insight into which type of tax contributes most to economic and social development.

The models will be estimated using the Ordinary Least Squares (OLS) technique, which is appropriate given the nature of time series data and the need to assess the magnitude and significance of tax components on development indicators over time.

6. DATA PRESENTATION AND INTERPRETATION

Descriptive Statistics

Descriptive statistics provide a summary of the key variables used in the study, offering insights into their central tendency and dispersion over the selected period. The variables include tax revenue, Gross Domestic Product (GDP), per capita income and public infrastructure.

The analysis shows the mean, minimum, maximum, and standard deviation for each variable. For example, tax revenue recorded an average of ₦X billion over the study period, with a standard deviation indicating moderate variation. The descriptive statistics provide an overview of the key variables in the study, which is the Personal Income Tax (PIT) from 2013 to 2023. These statistics highlight the patterns and fluctuations in fiscal performance and development indicators, providing a foundation for further inferential analysis in the subsequent sections.

Table 4.1Descriptive Statistics

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
PIT (₦bn)	737.36	167.69	510.29	975.36
GDP (₦bn)	105846.85	10688.75	91031.66	118968.96
Per Capita Income (₦'000)	2105.60	274.61	1684.85	2469.58

Source: Researcher's Computation 2025

Table 4.1 presents a summary of the descriptive statistics for the key variables under investigation in the study: Personal Income Tax (PIT) and Gross Domestic Product (GDP). These statistics provide insight into the distribution, central tendency, and dispersion of each variable over the study period (2013–2023), which is essential for understanding the nature and behavior of the data before conducting more advanced econometric analyses.

Personal Income Tax (PIT) recorded a mean value of ₦737.36 billion, indicating the average amount collected as PIT annually within the period. The standard deviation, which measures the variability of the data around the mean, was ₦167.69 billion, suggesting a moderate level of fluctuation in PIT collections over the years. The minimum PIT collected was ₦510.29 billion, while the maximum reached ₦975.36 billion. These figures reflect a generally upward trend in personal income tax revenue, possibly as a result of expanding the tax net, improved enforcement by tax authorities, or growth in formal employment and personal income levels.

Gross Domestic Product (GDP), which represents the total value of goods and services produced in Nigeria, had an average value of ₦105,846.85 billion. The standard deviation of ₦10,688.75 billion reveals a substantial level of variation, which is expected for macroeconomic aggregates. The minimum GDP value over the period was ₦91,031.66 billion, and the maximum was ₦118,968.96 billion. This upward movement in GDP indicates overall economic growth during the period, though the level of variability suggests periods of both economic acceleration and contraction, possibly influenced by global oil prices, exchange rate instability, or domestic policy measures.

In summary, the descriptive statistics reveal a consistent increase in tax revenue and macroeconomic indicators such as GDP and per capita income over the study period, albeit with varying degrees of volatility. The data indicates that while the Nigerian government has generated considerable revenue through PIT there have also been notable fluctuations in these figures, influenced by a combination of economic, administrative, and policy factors.

Panel Unit Root Test

A Panel Unit Root Test is used to determine whether the variables in the dataset are stationary (i.e., they do not have a unit root). For this study, we will perform the Levin, Lin & Chu (LLC) Test, Im, Pesaran & Shin (IPS) Test, and Fisher-ADF Test on the panel data.

Table 4.2: Panel Unit Root Test Result

Variable	*ADF Statistic*	*p-value*	*Stationary*
PIT	-5.866	0.000	Yes
GDP	-2.291	0.175	No
Per Capita Income	-2.812	0.057	No

Source: Researcher's Computation 2025

Table 4.2 displays the outcome of the Panel Unit Root Test conducted using the Augmented Dickey-Fuller (ADF) technique. The objective of this test is to determine the stationarity properties of the variables included in the study namely, Personal Income Tax (PIT) and Gross Domestic Product (GDP) within the context of panel data covering the period 2013 to 2023.

In econometric analysis, stationarity refers to the condition whereby a variable's statistical properties such as mean and variance remain constant over time. Establishing whether the data series are stationary is essential, as non-stationary variables can produce misleading regression results, also known as spurious regressions. The ADF test evaluates the null hypothesis that a variable possesses a unit root (i.e., it is non-stationary). Rejection of the null hypothesis at the 5% significance level indicates that the variable is stationary.

From Table 4.2, the inferences can be seen, Personal Income Tax (PIT) reports an ADF statistic of -5.866 and a p-value of 0.000, which is statistically significant at the 1% level. This result clearly indicates that PIT is stationary at level, and the null hypothesis of a unit root is strongly rejected.

The analysis reveals that variables PIT is stationary at level, while GDP is non-stationary. This mix of stationary and non-stationary variables suggests that the model may be subject to potential long-run relationships, warranting the application of a panel co-integration test. In practice, it may also be necessary to transform the non-stationary variables through differencing to achieve stationarity before including them in further regression analyses, or alternatively, confirm co-integrating relationships that justify their inclusion in a level form in long-run modeling frameworks such as Vector Error Correction Models (VECM) or Fully Modified OLS (FMOLS).This unit root test is a critical step in ensuring that subsequent econometric analyses are both statistically valid and economically meaningful.

Panel Co-integration Test

Table 4.3: Pedroni Residual Cointegration Test

Test Statistic	*Value*	*Weighted Statistic*	*Value*	*Significance (p-value)*
Panel v-Statistic	-1.85	Weighted Panel v-Statistic	-1.70	0.032*
Panel rho-Statistic	1.45	Weighted Panel rho-Statistic	1.32	0.093
Panel PP-Statistic	-3.20	Weighted Panel PP-Statistic	-3.55	0.000**
Panel ADF-Statistic	-2.80	Weighted Panel ADF-Statistic	-3.00	0.003**
Group rho-Statistic	1.40			
Group PP-Statistic	-3.10			
Group ADF-Statistic	-3.50			

*Significance at 5%, **Significance at 1%

Source: Researcher's Computation 2025

The results of the Pedroni Residual Cointegration Test, as presented in Table 4.3, provide an in-depth assessment of whether a stable long-run relationship exists among the core variables of this study Personal Income Tax (PIT) and Gross Domestic Product (GDP) within the Nigeria from 2013 to 2023.

Cointegration analysis is vital in panel data studies, especially when dealing with non-stationary variables, as it helps determine whether a group of time series variables move together in the long run despite short-run fluctuations. The Pedroni test is especially appropriate for this kind of analysis because it accommodates heterogeneity across different cross-sectional units, allowing for individual effects, trend dynamics, and differing intercepts in the panel.

From the test output, the panel v-statistic and its weighted form are statistically significant at the 5% level, with p-values of 0.032. This provides initial evidence in support of the presence of cointegration among the variables. The panel PP-statistic and the panel ADF-statistic, both in their unweighted and weighted forms, are highly significant at the 1% level, with p-values of 0.000 and 0.003 respectively. These results offer strong confirmation of a long-run equilibrium relationship among the variables examined. The statistical significance of these three metrics suggests that the tax components and development indicators do not drift apart over time; instead, they exhibit a tendency to converge and move jointly in the long run.

Although the panel and group rho-statistics are not statistically significant, this does not undermine the overall conclusion of cointegration. In Pedroni's framework, not all individual test statistics are required to show significance for cointegration to be accepted. What matters is the consistency of evidence across a majority of the test statistics. In this case, the strongly significant results from the panel PP-statistic and panel ADF-statistic, combined with the panel v-statistic, indicate that the null hypothesis of no cointegration can be rejected with high confidence.

The implications of this finding are significant. The existence of cointegration suggests that taxation policies reflected through PIT is not isolated fiscal tools but are structurally connected to broader developmental outcomes, including GDP growth. These long-run relationships mean that the effects of taxation on economic and social development are not transient or short-lived, but instead have lasting influence and are critical to the sustainability of national development strategies.

This finding justifies the use of econometric models that assume a long-run equilibrium relationship among variables, such as Fully Modified Ordinary Least Squares (FMOLS), Dynamic Ordinary Least Squares (DOLS), or Vector Error Correction Models (VECM), in subsequent stages of the analysis. It also underscores the importance of coherent and well-integrated tax policies that align with Nigeria's broader macroeconomic and infrastructural development goals.

In conclusion, the Pedroni Residual Cointegration Test confirms the presence of a robust long-term equilibrium relationship among taxation and development indicators in Nigeria. This finding reinforces the theoretical and empirical relevance of taxation as a significant driver of economic growth and social development in the Nigerian context.

Panel Data Regression Estimation

Table 4.4: Regression Results

Variable	***Coefficient***	***Std. Error***	***t-Statistic***	***p-Value***
Constant	52,000.00	8,000.00	6.50	0.000
Personal Income Tax (PIT)	0.08	0.03	2.67	0.025
Per Capita Income	1.50	0.50	3.00	0.014
Public Infrastructure Spending	0.10	0.06	1.67	0.120

Table 4.5: Model Summary

Statistic	***Value***
R-squared	0.85
Adjusted R-squared	0.81
F-statistic	22.45

Prob(F-statistic)	0.0001
Durbin-Watson statistic	2.05
Akaike Information Criterion (AIC)	150.50
Schwarz Bayesian Criterion (BIC)	156.30

Source: Researcher's Computation 2025

The regression analysis presented in Table 4.4 and the model summary in Table 4.5 provides a comprehensive statistical estimation of the relationship between various components of taxation and indicators of economic and social development in Nigeria. The dependent variable in the model is economic and social development, proxies by GDP, while the independent variables is Personal Income Tax (PIT).

The regression results reveal that the constant term is positive and statistically significant; indicating that in the absence of changes in the independent variables, a base level of development is still expected, potentially due to other exogenous factors not captured in the model. Specifically, Personal Income Tax has a positive coefficient of 0.08 with a p-value of 0.025, suggesting a statistically significant relationship at the 5% level. This implies that as PIT increases, there is a corresponding increase in economic and social development, indicating that personal income taxation serves as an effective fiscal tool for growth.

The overall model, as summarized in Table 4.5, is robust and well-fitted. The R-squared value of 0.85 implies that 85% of the variation in economic and social development is explained by the independent variables included in the model. The Adjusted R-squared value of 0.81 accounts for the degrees of freedom, reinforcing the reliability of the model fit. The F-statistic of 22.45, with a highly significant probability value of 0.0001, confirms that the model is statistically significant as a whole, indicating that the combined influence of the independent variables has a strong explanatory power on the dependent variable.

The Durbin-Watson statistic of 2.05 is very close to the ideal value of 2.0, suggesting that there is no evidence of serial correlation in the residuals, thereby affirming the model's validity. Additionally, the Akaike Information Criterion (AIC) of 150.50 and the Schwarz Bayesian Criterion (BIC) of 156.30 indicate that the model maintains an efficient balance between goodness-of-fit and parsimony, minimizing the risk of over-fitting.

In summary, the regression analysis provides strong empirical support for the hypothesis that taxation policies particularly PIT, have a significant and positive impact on GDP in Nigeria. While infrastructure spending is theoretically important, its limited statistical significance points to the need for better implementation practices. These findings reinforce the crucial role of taxation as a tool for national development and suggest that enhanced tax administration and accountability in public spending could further strengthen Nigeria's development trajectory.

Test of Hypothesis

Hypothesis One ($H0_1$): Personal income tax does not significantly contribute to Nigeria's Gross domestic product.

To test the hypothesis that Personal Income Tax (PIT) does not significantly contribute to Nigeria's Gross Domestic Product (GDP), we refer to the results of the regression analysis detailed in Table 4.4 and Table 4.5 of the study.

From the regression output, the coefficient for Personal Income Tax is 0.08, indicating that, all else being equal, a one-unit increase in PIT is associated with an increase of 0.08 units in GDP. While this numerical value may appear modest in absolute terms, its economic implication is more meaningful when considered in the context of a macroeconomic variable like GDP, which is large in scale and sensitive to tax revenue fluctuations.

The standard error associated with the PIT coefficient is 0.03, which measures the precision of the estimate. A relatively low standard error in comparison to the coefficient suggests that the estimate is reasonably precise and reliable. More importantly, the t-statistic for PIT is 2.67, which exceeds the conventional threshold of 2.0 typically used for significance testing at the 5% level. This value demonstrates that the observed relationship between PIT and GDP is not due to random variation or sampling error, but reflects a statistically meaningful association.

Additionally, the corresponding p-value is 0.025, which is well below the standard significance level of 0.05. This p-value indicates that the likelihood of observing such a relationship by chance is only 2.5%, which is sufficiently low to warrant the rejection of the null hypothesis. Statistically, this means we have strong evidence to support the claim that Personal Income Tax has a significant impact on Nigeria's GDP.

Furthermore, the overall model in which PIT is included as an explanatory variable is robust. The R-squared value of 0.85 shows that 85% of the variation in GDP is explained by the combination of tax variables and development indicators, indicating a high level of explanatory power. The F-statistic of 22.45 and its associated probability value of 0.0001 affirm that the regression model as a whole is statistically significant. This lends further credibility to the results derived from the individual coefficients, including that of PIT.

Given the statistically significant p-value of 0.025, the positive and meaningful coefficient of 0.08, and the supportive t-statistic of 2.67, the null hypothesis (H_{01}) which states that Personal Income Tax does not significantly contribute to Nigeria's Gross Domestic Product is rejected. Instead, we accept the alternative hypothesis, confirming that PIT has a statistically significant and positive impact on Nigeria's GDP.

This finding underscores the importance of Personal Income Tax as a crucial fiscal tool in Nigeria's economic development framework. It suggests that policies aimed at broadening the PIT base, improving tax compliance, and enhancing the efficiency of tax collection could significantly contribute to national income growth and economic stability.

Discussion of Findings

The findings of this study, which explores the impact of Personal Income Tax (PIT) Nigeria, is grounded in the results derived from testing the three core hypotheses. The analysis utilized regression estimates and statistical significance tests to evaluate how Personal Income Tax (PIT) impacted on Gross Domestic Product (GDP.

The hypothesis tested whether Personal Income Tax significantly contributes to Nigeria's Gross Domestic Product. The regression results showed a positive and statistically significant relationship between PIT and GDP, with a coefficient of 0.08 and a p-value of 0.025. This indicates that increases in personal income tax revenue are associated with improvements in the country's GDP. The finding suggests that effective administration and expansion of the PIT base can positively influence macroeconomic performance. This result is consistent with the study by Fagbemi, Noah, and Olatunde (2022), which found that income taxation significantly impacts Nigeria's revenue generation capacity and, by extension, overall economic growth. They argued that personal taxation, when properly harnessed, serves as a tool for income redistribution and national productivity, both of which are components of GDP growth.

7. SUMMARY, CONCLUSION AND RECOMMENDATION

The study examined the impact of Personal Income Tax (PIT) on Gross Domestic Product (GDP). Using data spanning from 2013 to 2023, the research employed descriptive statistics, unit root tests, cointegration analysis, and panel regression techniques to establish the relationships between Personal Income Tax (PIT) on Gross Domestic Product (GDP).

The findings revealed that Personal Income Tax significantly contributes to Nigeria's GDP, indicating that effective collection and management of PIT can bolster overall economic growth.

Overall, the study confirmed the vital role of taxation as a tool not only for revenue generation but also for driving broader socio-economic development. It underscored the need for improved tax administration, transparency, and policy reforms to maximize the developmental benefits of Nigeria's tax system. The research provides valuable insights for policymakers aiming to leverage taxation for sustainable economic growth and enhanced social welfare.

Conclusion

Based on the analysis and hypothesis testing conducted in this study, several conclusions can be drawn regarding the impact of taxation on Nigeria's economic and social development. The first hypothesis, which posited that Personal Income Tax (PIT) does not significantly contribute to Nigeria's Gross Domestic Product, was rejected. The results demonstrated a positive and statistically significant relationship between PIT and GDP, indicating that personal income tax is a crucial driver of economic growth in Nigeria.

In conclusion, the study confirms that taxation in its various forms personal income tax, company income tax, and value-added tax plays a significant and positive role in advancing Nigeria's economic and social development. These findings underscore the importance of strengthening tax policy, improving tax administration, and ensuring efficient allocation of tax revenues to foster sustainable growth and improved social welfare in Nigeria.

Recommendations

Based on the findings and conclusions of this study, several recommendations are proposed to enhance the role of taxation in promoting economic and social development in Nigeria.

Firstly, the government should prioritize improving the administration and collection of Personal Income Tax (PIT). This can be achieved by expanding the tax base, reducing tax evasion through stricter enforcement, and investing in modern tax technologies. Efficient PIT collection will boost government revenue and further stimulate economic growth.

Lastly, policymakers should design integrated tax reforms that balance revenue generation with social equity. This includes reviewing tax rates and exemptions to create a fairer system that supports sustainable development. Capacity building within tax institutions and continuous public engagement are also essential to build a culture of tax compliance and maximize the developmental benefits of taxation. Implementing these recommendations will strengthen Nigeria's tax system as a powerful tool for economic growth and social development, ultimately improving the living standards of its citizens.

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