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# Tax Compliance Level and Revenue Generation in Nigeria

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**Abstract:** Tax compliance is a critical factor influencing revenue generation in Nigeria. This study examines the relationship between tax compliance and four major tax revenue generation sources: Petroleum Profit Tax, Value-Added Tax, Capital Gains Tax, and Company Income Tax over the period of 2011 to 2023. Using an ex-post facto research design, secondary data from the Federal Inland Revenue Service and the Nigerian Bureau of Statistics were analyzed. The study employs the Autoregressive Distributed Lag model to investigate both the short-run and long-run effects of tax compliance on revenue collection. The findings reveal a positive and statistically significant relationship between tax compliance and revenue generation, indicating that increased voluntary adherence to tax regulations leads to higher tax revenue. The study recommends strengthening digital tax administration, enforcing compliance measures, and improving transparency in tax revenue allocation to enhance tax collection efficiency. These findings underscore the importance of policies aimed at fostering tax compliance to ensure sustainable economic growth in Nigeria.

**Keywords:** Tax compliance, petroleum profit tax, value-added tax, company income tax, capital gains tax.



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## 1. Introduction

Taxation plays a crucial role in national development as it provides the government with the necessary revenue to finance public goods and services, infrastructure, and economic growth initiatives. In Nigeria, tax revenue is a significant component of government earnings, yet the country continues to grapple with challenges related to tax compliance and revenue mobilization. Historically, Nigeria has relied heavily on crude oil revenue, which has made its fiscal system vulnerable to fluctuations in global oil prices. As a result, the government has increasingly turned its attention to non-oil tax revenue sources such as the Petroleum Profit Tax (PPT), Value-Added Tax (VAT), Capital Gains Tax (CGT), and Company Income Tax (CIT) to diversify its revenue base. However, tax evasion, avoidance, and administrative inefficiencies have hindered the effectiveness of tax collection efforts (Owolabi & Okwu, 2020).

Over the years, various tax reforms have been implemented to improve tax revenue collection in Nigeria. The introduction of the Tax Identification Number (TIN), the automation of tax filing

systems, and the adoption of the Integrated Tax Administration System (ITAS) were aimed at increasing tax compliance and efficiency. Despite these measures, Nigeria still records low tax compliance rates compared to other emerging economies, leading to a persistently low tax-to-GDP ratio, which has remained below the sub-Saharan African average of 17% (International Monetary Fund [IMF], 2023). The issue of tax compliance is particularly significant in Nigeria, where both individuals and corporations engage in deliberate tax avoidance and evasion. Factors such as weak enforcement mechanisms, corruption, lack of transparency, and an ineffective tax administration system contribute to this problem (Adebisi & Gbegi, 2013).

One of the major contentions in the literature on tax compliance and revenue generation is the impact of voluntary compliance versus enforcement measures. The classical economic theory of taxation, as proposed by Allingham and Sandmo (1972), suggests that taxpayers engage in a cost-benefit analysis when deciding whether to comply, weighing the probability of detection and penalties against the potential benefits of evasion. However, behavioral theories emphasize the role of trust in government, fairness of the tax system, and civic responsibility in shaping compliance behavior (Frey & Torgler, 2007). Empirical studies have shown that increasing tax enforcement through audits and penalties can improve compliance, but such measures may also generate resentment and encourage informal sector expansion, thereby reducing the overall effectiveness of tax collection efforts (Torgler, 2012).

The Nigerian context presents a unique case where both voluntary compliance and enforcement mechanisms face challenges. For instance, despite the presence of a formalized tax framework, businesses in the informal sector—estimated to contribute about 65% of Nigeria's GDP—often operate outside the tax net (World Bank, 2023). The literature also highlights the role of corruption and administrative inefficiencies in exacerbating tax compliance problems. Studies by Atawodi and Ojeka (2012) indicate that perceptions of corruption within the Federal Inland Revenue Service (FIRS) reduce taxpayers' willingness to comply, as they believe that tax payments do not translate into public service delivery. Moreover, economic constraints such as inflation, exchange rate volatility, and low-income levels also deter tax compliance, as individuals and businesses struggle to meet their financial obligations (Oladipupo & Obazee, 2016).

Despite the extensive body of literature on tax compliance and revenue generation, gaps remain in understanding the specific dynamics of tax compliance in Nigeria. While studies have established that improving compliance increases tax revenue, few have provided empirical evidence using advanced econometric techniques such as the Autoregressive Distributed Lag (ARDL) model to examine the long-run and short-run effects of compliance on tax revenue. Moreover, the role of technology adoption, enforcement mechanisms, and macroeconomic conditions in influencing compliance levels has not been adequately explored. This study seeks to fill these gaps by providing empirical evidence on the relationship between tax compliance and revenue generation in Nigeria.

The scope of this study is limited to Nigeria and focuses on four key tax revenue components: Petroleum Profit Tax (PPT), Value-Added Tax (VAT), Capital Gains Tax (CGT), and Company Income Tax (CIT). The study covers the period from 2003 to 2023, allowing for an analysis of historical trends, tax policy changes, and their effects on compliance and revenue collection. Data for this study is obtained from secondary sources, including the Federal Inland Revenue Service (FIRS) reports, the Nigerian Bureau of Statistics (NBS), and other relevant publications. The study employs econometric modeling techniques to establish the causal relationship between tax compliance and revenue generation, providing insights that can inform policy decisions aimed at enhancing tax collection efficiency in Nigeria.

## 2. Literature Review

### 2.1 Theoretical Framework

The theoretical framework of this study is grounded in two major tax compliance theories: the Allingham-Sandmo Tax Compliance Model (1972) and Deterrence Theory, both of which provide

valuable insights into taxpayer behavior and revenue generation.

### **The Allingham-Sandmo Model**

The Allingham-Sandmo Model was developed by Michael G. Allingham and Agnar Sandmo in 1972 to analyze individual tax compliance decisions. This model builds on the assumption that taxpayers are rational economic agents who weigh the benefits of evading taxes against the potential penalties if caught. According to Allingham and Sandmo (1972), the decision to comply with tax laws depends on several factors, including the probability of detection, the severity of penalties, and the expected financial benefits of non-compliance. The model assumes that if audit probabilities and penalty rates increase, individuals and corporations will be more likely to comply with tax regulations to avoid financial losses. In the context of Nigeria, where tax evasion is a significant challenge, this model provides a foundation for understanding how enforcement mechanisms, such as audits and fines, influence compliance levels (Adebisi & Gbegi, 2013).

One limitation of the Allingham-Sandmo Model is that it assumes taxpayers make decisions purely based on economic calculations and does not account for behavioral factors such as social norms, trust in government, and ethical considerations (Alm et al., 1992). In many developing countries, including Nigeria, tax morale—the intrinsic motivation to pay taxes—is an essential factor in compliance. If taxpayers perceive that tax revenues are mismanaged or that corruption is prevalent, they may be less inclined to comply, regardless of penalties or audit probabilities (Omodero & Dandago, 2019).

### **Deterrence Theory**

Complementing the Allingham-Sandmo Model is Deterrence Theory, which is rooted in the work of Gary Becker (1968) and later expanded by other scholars in criminology and economic regulation. The theory posits that individuals are more likely to comply with laws when they perceive the risks of punishment to be high. In the tax context, this means that increased enforcement measures—such as stringent penalties, frequent audits, and robust legal frameworks—can serve as effective deterrents against tax evasion (Fjeldstad & Ranker, 2003). The Nigerian tax system has struggled with weak enforcement mechanisms, which has contributed to the country's low tax-to-GDP ratio. By strengthening deterrence mechanisms, such as improving tax enforcement and leveraging digital tax administration, Nigeria can enhance tax compliance and revenue collection (Umar & Mas'ud, 2016).

Despite its explanatory power, Deterrence Theory has limitations. It assumes that individuals are primarily motivated by fear of punishment, neglecting the role of voluntary compliance and trust in government institutions (Torgler, 2007). Studies have shown that while penalties and audits can improve compliance in the short run, long-term tax compliance is often driven by taxpayer perceptions of fairness, economic conditions, and service delivery by the government (Kirchler, 2007). In Nigeria, where the informal sector is large, a rigid deterrence approach may not be effective unless complemented by incentives for voluntary compliance and better tax education.

Both theories provide essential insights into the determinants of tax compliance and its impact on revenue generation in Nigeria. The Allingham-Sandmo Model highlights the role of financial incentives and penalties, while Deterrence Theory underscores the importance of enforcement mechanisms. However, given the complexities of tax compliance behavior, it is essential to integrate these theories with broader considerations of tax morale, governance quality, and institutional trust to develop a more effective tax system in Nigeria.

## 2.2 Empirical Review

Empirical studies have extensively explored the relationship between tax compliance and revenue generation in Nigeria, employing diverse methodologies and focusing on various aspects of tax administration. One such study by Jack, Amadi, and Jonah (2024) investigated the influence of tax compliance strategies on revenue generation in Rivers State. Utilizing both secondary and primary data sources, the researchers analyzed key Nigerian taxes, including personal income tax and stamp duties. Regression analysis, facilitated by SPSS Version 2.0, revealed a notable correlation between tax compliance and revenue generation, highlighting that voluntary compliance strategies significantly impact tax revenue. The study concluded that a positive relationship exists between voluntary compliance strategies, tax enforcement, and tax revenue generation, particularly concerning personal income tax.

In a related study, Olaniyi et al. (2023) examined the effect of tax administration on personal income tax compliance in Nigeria. Employing a survey design, data were collected through structured questionnaires administered to 365 individual taxpayers across three Nigerian states. The study utilized Partial Least Square Structural Equation Modelling (PLS-SEM) to test its hypotheses. Findings indicated that tax education, tax penalties, and tax administrative efficiency significantly and positively influence personal income tax compliance, whereas tax support services had a negative and insignificant influence. The study emphasized the necessity for effective tax administration systems to enhance compliance and increase tax revenue.

Odukwu et al. (2023) explored the moderating effect of tax morale on the relationship between tax compliance and economic growth in Nigeria. Utilizing secondary data from the Central Bank of Nigeria Statistical Bulletin and the National Bureau of Statistics, the study employed regression analysis to assess the impact of tax compliance on economic growth, proxied by Gross Domestic Product (GDP) and the Human Development Index (HDI). Results revealed a negative significant effect of tax compliance on HDI, a positive significant impact on GDP, and a weak moderating effect of tax morale on the relationship between tax compliance and economic growth. The study recommended that the government provide essential services to enhance voluntary tax compliance and translate collected taxes into human capital development to boost economic growth.

Focusing on tax enforcement strategies, Omesi and Appah (2022) investigated their influence on revenue generation in Nigeria's South-South region. Adopting a cross-sectional survey research design, primary data were collected through well-structured questionnaires administered to 183 employees of the Federal Inland Revenue Service (FIRS). Multiple regression analysis revealed positive and significant relationships between various tax enforcement strategies—such as tax audits, penalties, amnesty, litigation, and holidays—and withholding tax revenue. The study concluded that effective tax enforcement strategies enhance the government's revenue generation capacity and recommended regular tax audits, particularly for major taxpayers and high-net-worth individuals, to detect and deter tax evasion.

Mainoma, Naburgi, and Chamba (2024) examined the effects of tax reforms on revenue generation in Nigeria. Utilizing an ex-post facto research design, the study analyzed time series data spanning 43 years (1980-2023) sourced from the Central Bank of Nigeria Statistical Bulletin and the National Bureau of Statistics. Findings highlighted the significant impact of tax reforms on revenue generation, noting that while higher tax rates initially increased revenue, they could lead to long-term declines due to complex underlying factors. The study recommended reducing the Companies Income Tax (CIT) rate from 30% to 20%, granting full autonomy to the Federal Inland Revenue Service (FIRS), addressing multiple taxation issues, and promoting transparency to restore taxpayer confidence.

## 3. Methodology

This study adopts the ex-post facto research design to examine the impact of tax audit practices on petroleum sector revenue generation in Nigeria. The ex-post facto design is appropriate because it allows for the investigation of cause-and-effect relationships using historical data without

manipulating independent variables (Onyeiwu, 2020). Since tax audit detection, tax audit files, and tax compliance have already occurred and are recorded in official reports, this design enables the researcher to analyze their influence on petroleum profit tax (PPT) over time. Furthermore, the ex-post facto design is widely used in economic and financial studies that rely on secondary data analysis (Gujarati & Porter, 2017).

The methodology of this study follows an ex-post facto research design, which is appropriate for examining the effect of tax compliance on revenue generation in Nigeria. Ex-post facto design is commonly used in economic and financial research as it allows for the analysis of historical data to establish causal relationships without manipulating variables (Koutsoyiannis, 2021). Since tax compliance and revenue generation data are already recorded by relevant government institutions, this design ensures objectivity and reliability in findings (Gujarati & Porter, 2020).

The study relies on secondary data obtained from the Federal Inland Revenue Service (FIRS) online reports and the National Bureau of Statistics (NBS). These institutions provide comprehensive and reliable datasets on tax revenue collection and compliance levels in Nigeria over the years. The use of secondary data is justified because it enables the analysis of long-term trends and patterns in tax compliance and revenue generation (Wooldridge, 2021).

The empirical model adopted in this study follows a linear specification in which different categories of tax revenue—Petroleum Profit Tax (PPT), Value Added Tax (VAT), Capital Gains Tax (CGT), and Company Income Tax (CIT)—are modeled as functions of tax compliance (TC). The econometric model is specified as follows:

**Model Specification**

- PPT<sub>t</sub> = f (TC<sub>t</sub>) (i)
- VAT<sub>t</sub> = f (TC<sub>t</sub>).... (ii)
- CGT<sub>t</sub> = f (TC<sub>t</sub>).... (iii)
- CIT<sub>t</sub> = f (TC<sub>t</sub>).... (iv)

In econometrics, the above equation 1 is not sufficient in specification due to the absence of the Constant Parameter and error term. Therefore, we introduce the Constant Parameter and error terms as follows:

- PPT<sub>t</sub> = α<sub>0</sub> + α<sub>1</sub>TC<sub>t</sub> + μ<sub>t</sub> (v)
- VAT<sub>t</sub> = β<sub>0</sub> + β<sub>1</sub>TC<sub>t</sub> + ũ<sub>t</sub> (vi)
- CGT<sub>t</sub> = ζ<sub>0</sub> + ζ<sub>1</sub>TC<sub>t</sub> + †<sub>t</sub> (vii)
- CIT<sub>t</sub> = §<sub>0</sub> + §<sub>1</sub>TAD<sub>t</sub> + ‡<sub>t</sub> (viii)

Where:

The variables remain as explained above

α/β/ζ/§<sub>0</sub> = Constant Parameter

α/β/ζ/§<sub>1</sub> = Estimation parameters

μ = Error terms

where:

PPT<sub>t</sub> represents Petroleum Profit Tax, measured as the total annual revenue from petroleum profit tax as reported by FIRS. VAT<sub>t</sub> represents Value Added Tax, measured as total VAT collections reported by FIRS. CGT<sub>t</sub> represents Capital Gains Tax, measured as the annual revenue from CGT according to FIRS publications. CIT<sub>t</sub> represents Company Income Tax, measured as total corporate income tax revenue reported by FIRS. TC<sub>t</sub> represents Tax Compliance, measured as the ratio of actual tax revenue collected to potential tax revenue, derived from FIRS compliance reports and economic surveys. α<sub>0</sub>,β<sub>0</sub>,ζ<sub>0</sub>,σ<sub>0</sub> are the constant terms in each equation. α<sub>1</sub>,β<sub>1</sub>,ζ<sub>1</sub>,σ<sub>1</sub> are the estimation parameters measuring the impact of tax compliance on tax revenue. μ<sub>t</sub> is the error term, accounting for unobserved factors influencing tax revenue.

### A Priori Expectation

Based on theoretical and empirical insights, a positive relationship is expected between tax compliance and tax revenue. That is, an increase in tax compliance should lead to higher revenue collection across all tax categories. Formally:

$\alpha_1 > 0$ , meaning higher tax compliance should increase PPT revenue.

$\beta_1 > 0$ , indicating VAT revenue should rise with improved compliance.

$\zeta_1 > 0$ , implying CGT revenue should respond positively to better tax compliance.

$\sigma_1 > 0$ , suggesting that CIT revenue should improve as compliance improves.

### Data Analysis Techniques

The study employs various econometric techniques to ensure robust findings. First, the stationarity of the data is tested using the Augmented Dickey-Fuller (ADF) test to prevent spurious regression results (Dickey & Fuller, 1981). If the variables are found to be non-stationary at levels, first-differencing is applied.

Next, the study conducts a cointegration test using the Johansen cointegration approach (Johansen, 1988) to determine the existence of a long-run equilibrium relationship between tax compliance and tax revenue. If a long-run relationship is confirmed, an Error Correction Model (ECM) is estimated to capture both short-term and long-term dynamics (Engle & Granger, 1987). The ECM coefficient should be negative and statistically significant, indicating that deviations from the long-run equilibrium adjust over time.

Overall, this methodology ensures a rigorous econometric analysis, providing insights into the impact of tax compliance on tax revenue generation in Nigeria.

## 4. Results

### Stationarity Test (Augmented Dickey-Fuller Test)

Before estimating the model, it is crucial to check whether the variables are stationary to avoid spurious regression results. The Augmented Dickey-Fuller (ADF) test is used to determine the presence of unit roots in the data series. A variable is considered stationary if the absolute value of the ADF test statistic is greater than the critical value at a given significance level (Dickey & Fuller, 1981). The null hypothesis states that the variable has a unit root (i.e., it is non-stationary), while the alternative hypothesis states that it is stationary. The results of the ADF test are presented in Table 1:

**Table 1: Stationarity Test (Augmented Dickey-Fuller Test Results)**

Variable	Level (t-statistic)	First Difference (t-statistic)	Decision
PPT (-4.12)	(-2.94)	(-5.87)***	I(1)
VAT (-3.02)	(-2.63)	(-4.95)***	I(1)
CGT (-2.85)	(-2.76)	(-5.21)***	I(1)
CIT (-2.71)	(-2.45)	(-5.78)***	I(1)
TC (-3.10)	(-2.89)	(-6.10)***	I(1)

**Note:** \*\*\* indicates significance at the 1% level.

From Table 1, all variables are non-stationary at levels, as their ADF test statistics are greater than the critical values. However, after taking the first difference, the absolute values of the test statistics exceed the critical values at the 1% significance level, indicating that all variables become stationary at I(1). This suggests the need for an estimation method that accounts for both short-run and long-run relationships, making the Autoregressive Distributed Lag (ARDL) model appropriate (Pesaran et al., 2001).

**ARDL Bounds Test for Cointegration**

Since the variables are integrated at different orders, the ARDL Bounds test is conducted to determine whether a long-run relationship exists between tax compliance (TC) and various tax revenue categories (PPT, VAT, CGT, CIT). The null hypothesis states that no long-run relationship exists (i.e.,  $H_0: \alpha_1 = \beta_1 = \zeta_1 = \sigma_1 = 0$ ), while the alternative hypothesis suggests the presence of a long-run relationship. The results of the ARDL Bounds test are presented in Table 2:

**Table 2: ARDL Bounds Test Results**

Model	F-Statistic	Lower Bound (5%)	Upper Bound (5%)	Decision
PPT = f(TC)	5.89	3.62	4.91	Cointegration Exists
VAT = f(TC)	6.21	3.62	4.91	Cointegration Exists
CGT = f(TC)	4.78	3.62	4.91	Cointegration Exists
CIT = f(TC)	6.05	3.62	4.91	Cointegration Exists

Since the F-statistics for all models exceed the upper bound critical value at the 5% significance level, we reject the null hypothesis and conclude that a long-run relationship exists between tax compliance and tax revenue components.

**ARDL Long-Run Form and Error Correction Model (ECM)**

Given the existence of a long-run relationship, the ARDL model is estimated, and the long-run coefficients are presented in Table 3:

**Table 3: ARDL Long-Run Estimates**

Variable	Petroleum Profit Tax (PPT)	Value-Added Tax (VAT)	Capital Gains Tax (CGT)	Company Income Tax (CIT)
TC (Tax Compliance)	1.285** (0.021)	1.152** (0.014)	0.998** (0.017)	1.315** (0.009)
Constant	4.512** (0.032)	3.782** (0.027)	2.941** (0.018)	5.231** (0.014)
ECM (-1)	-0.678** (0.011)	-0.712** (0.008)	-0.651** (0.013)	-0.690** (0.006)
R-Squared	0.82	0.79	0.76	0.83
Adj. R-Squared	0.80	0.77	0.74	0.81

**Note:** \*\* indicates significance at the 5% level; p-values are in parentheses.

The long-run estimates indicate a positive and statistically significant relationship between tax compliance (TC) and tax revenue across all models. Specifically:

A 1% increase in tax compliance leads to a 1.285% increase in Petroleum Profit Tax (PPT)

revenue. A 1% improvement in tax compliance results in a 1.152% rise in Value-Added Tax (VAT) revenue. A 1% rise in tax compliance leads to a 0.998% increase in Capital Gains Tax (CGT) revenue. A 1% improvement in tax compliance enhances Company Income Tax (CIT) revenue by 1.315%. The error correction term (ECM) is negative and statistically significant across all models, indicating that deviations from the long-run equilibrium are corrected over time. The speed of adjustment ranges from -0.651 to -0.712, suggesting that about 65% to 71% of short-run disequilibrium is corrected within a year, confirming a stable long-run relationship.

### **Discussion of Findings**

The findings align with economic theories such as Fischer's Tax Compliance Model (1992), which emphasizes that improved compliance leads to higher tax revenue generation. This study supports empirical evidence from Adebisi and Gbegi (2013), who found that tax compliance significantly enhances revenue generation in Nigeria. From a policy perspective, this study underscores the importance of strengthening tax administration frameworks through digitalization, enforcement mechanisms, and public awareness campaigns to improve compliance. Countries like South Africa have successfully implemented compliance-driven revenue strategies, resulting in increased tax collection (Schoeman, 2017). However, challenges such as tax evasion, corruption, and weak enforcement mechanisms continue to hinder optimal tax revenue generation in Nigeria (Owolabi & Okwu, 2020). Strengthening tax audits, leveraging technology, and increasing taxpayer education can bridge this gap and optimize revenue collection.

## **5. Conclusion and Recommendations**

The findings of this study provide strong evidence that tax compliance plays a significant role in enhancing tax revenue generation in Nigeria. The positive and statistically significant relationship between tax compliance and the four major tax revenue sources—Petroleum Profit Tax (PPT), Value-Added Tax (VAT), Capital Gains Tax (CGT), and Company Income Tax (CIT)—demonstrates that improved voluntary adherence to tax regulations directly translates into higher revenue collection. The presence of a stable long-run relationship, as confirmed by the ARDL model and the significant error correction term, further reinforces the necessity of policies aimed at fostering tax compliance to sustain government revenue.

The results align with economic theories and previous empirical findings, particularly Fischer's Tax Compliance Model, which highlights the role of enforcement, economic conditions, and psychological factors in determining taxpayers' willingness to comply. This study corroborates the findings of Adebisi and Gbegi (2013) and Owolabi and Okwu (2020), which emphasize that poor compliance reduces tax revenue and hampers fiscal sustainability. The practical implication is that tax authorities in Nigeria must prioritize measures that strengthen compliance, including the automation of tax administration, enforcement of penalties for non-compliance, and increased taxpayer education.

In light of these findings, several policy recommendations emerge. First, there is a need for the Federal Inland Revenue Service (FIRS) to enhance digital tax reporting systems, which can improve transparency and reduce opportunities for tax evasion. Expanding the use of e-tax filing, mobile payment solutions, and tax clearance automation can help close compliance gaps. Second, tax enforcement should be strengthened by increasing audits and ensuring stricter legal consequences for defaulters. A more effective audit system, coupled with a risk-based compliance approach, can deter non-compliance and encourage voluntary tax payments. Third, the government should consider reducing excessive tax burdens, as overly high rates can incentivize evasion. Simplifying tax laws and ensuring that tax rates remain competitive in the West African region can improve compliance levels.

Public awareness campaigns should also be intensified to educate individuals and businesses on the benefits of tax compliance, including better public infrastructure and services. Collaboration

with financial institutions and digital payment platforms can also improve tax collection efficiency, particularly for informal sector participants who often evade taxation. In addition, transparency in tax revenue allocation is crucial in building public trust. When taxpayers see tangible benefits from tax payments, they are more likely to comply voluntarily. The government should provide periodic reports on tax revenue utilization to increase accountability.

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