

Factors influencing Value Added Tax (VAT) on Revenue Profile in Oyo state, Nigeria

 Oladejo M. O.;  Olawoye S. A.; &  Oyeleye K. W.

Department of Accounting, Ladoke Akintola University of Technology, Ogbomosho, Oyo State, Nigeria.

Corresponding Author: mooladejo@lautech.edu.ng

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Abstract

VAT has become a significant component of Nigeria's non-oil revenue and contributes to financing critical public services. Understanding the factors influencing VAT and their impact on revenue generation remained a subject of concern in the revenue collection and enhancing state capacity for development. Therefore, this study examined the factors influencing Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria. *Ex-post factor* research design was employed for the study. Secondary data covering a period of 15 years was collected through the use of annual reports extracted from internal records of Oyo State, Nigeria. The study population consists of the entire eight (8) revenue collecting agencies of Oyo state government. The eight (8) revenue agencies constitute the sample. Analytical techniques involved both descriptive and inferential statistics. Principal Component Analysis (PCA) was used to examine the factors influencing tax Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria. Findings from the result of PCA on the actors influencing tax Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria showed that VAT Collection Efficiency (VATCE) and Compliance Rate (COR) has high positive loadings (0.677 and 0.662 respectively), indicating they strongly influence this

component. Based on the summary of findings, the study concluded that there is positive significant variation in the determinant factors of Value Added Tax (VAT) in Oyo State. It is therefore recommended that the government and relevant tax authorities should strengthen mechanisms for identifying key determinants of VAT performance. This includes improving the VAT collection infrastructure, enhancing taxpayer education, addressing informal sector leakages, and leveraging digital technologies for transparency.

Introduction

The Value Added Tax (VAT) was introduced in Nigeria in 1993 to replace the Sales Tax, with the primary goal of broadening the tax base and enhancing government revenue generation (Federal Inland Revenue Service, 2022). VAT is an indirect tax on consumption, levied at every stage of the production and distribution chain, and ultimately borne by the final consumer. Over the years, VAT has evolved into a crucial component of Nigeria's non-oil revenue, especially in light of the government's efforts to diversify its revenue sources beyond the oil sector (Udoakah & Ebong, 2021).

Value Added Tax (VAT) is an indirect tax levied on the consumption of goods and services, charged at each stage of the production and distribution chain. It is ultimately borne by the final consumer, but businesses are responsible for collecting and remitting it to the government. In Nigeria, VAT was introduced in 1993 to replace the Sales Tax as a means to broaden the tax base and increase government revenue (Federal Inland Revenue Service, 2022). The VAT rate in Nigeria is currently 7.5%, following an increment from 5% in 2020, which was implemented as part of the government's strategy to boost revenue in the face of declining oil income (Agbaje & Alade, 2021).

VAT has become a significant component of Nigeria's non-oil revenue and contributes to financing critical public services such as healthcare, education, and infrastructure development (Ogujiuba & Ibikunle, 2022). Its efficiency lies in the fact that it captures value at various points in the supply chain, making it difficult to evade compared to direct taxes like income tax. However, VAT collection in Nigeria faces challenges such as poor compliance, especially within the large informal sector, and administrative inefficiencies that reduce the potential revenue from this tax (Olawale & Oseni, 2023). Despite these challenges, VAT remains an important tool in the country's fiscal framework, helping to diversify government revenue sources beyond oil dependence. The study therefore examined the identified factors influencing Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria

Statement of the Problem

In Oyo State, Nigeria, the collection of Value Added Tax (VAT) is a critical component of the state's revenue profile. However, despite its potential to significantly contribute to the state's internally generated revenue (IGR), several factors have hindered the effective collection and optimization of VAT. One of the primary issues is the large informal sector in the state, where many businesses and individuals operate outside formal taxation systems, leading to low tax compliance rates and reduced VAT collections (Olawale & Oseni, 2023). The informal economy's resistance to formal registration and tax obligations creates a significant gap in the state's ability to generate consistent VAT revenue. Another challenge lies in the administrative inefficiencies within the tax collection system in Oyo State. Inadequate technological infrastructure, outdated methods of tax assessment, and poor coordination between tax agencies often result in tax leakages and under-reporting of VAT by businesses (Ogujiuba & Ibikunle, 2022).. Understanding the factors influencing VAT and their impact on revenue generation remained a subject of concern in the revenue collection and enhancing state capacity for development. This study therefore make it imperative for an in-depth study on the factors influencing Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria

Objective of the Study

The aim of the study is to examine the factors influencing Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria

Review of Previous Studies

Ogbara and Igbokwe (2020) examined "The Effect of Tax Administration on VAT Revenue in Nigeria" This study utilized a quantitative research design, using secondary data from the Federal Inland Revenue Service (FIRS) and the National Bureau of Statistics (NBS) for the period 2000–2018. The authors applied regression analysis to examine the relationship between tax administration efficiency and VAT revenue. The study found that inefficiencies in tax administration—such as inadequate staffing, lack of technological infrastructure, and limited capacity for enforcement—hindered VAT revenue generation. It highlighted that such inefficiencies led to significant revenue leakage, thereby limiting the potential of VAT as a revenue tool. Ogbara and Igbokwe concluded that improving administrative capacity, especially through technology adoption and enhanced staff training, could significantly boost VAT collection, contributing to increased government revenue.

Omoniyi, (2021). Assessed the "Factors Affecting Taxpayer Compliance in Nigeria's VAT System" Omoniyi employed a survey research design, distributing questionnaires to

500 VAT-registered businesses in Nigeria. The responses were analyzed using descriptive statistics and logistic regression analysis to determine factors influencing taxpayer compliance. The study identified key factors affecting VAT compliance, including lack of taxpayer education, complex filing procedures, and weak enforcement mechanisms. A significant portion of small businesses were found to be either unaware of their VAT obligations or reluctant to comply due to perceived complexity and high compliance costs. Omoniyi recommended enhancing taxpayer education, simplifying the VAT filing process, and implementing stricter enforcement measures to increase compliance levels, thus boosting VAT revenue generation in Nigeria.

Adegbe and Olagunju (2021) examined "The Informal Economy and VAT Compliance in Nigeria: Challenges and Prospects" This study employed a qualitative research design involving in-depth interviews with tax officers and business owners, complemented by secondary data. The authors focused on the challenges posed by the informal sector in Nigeria's VAT system. The study found that the large informal sector in Nigeria, which includes street vendors and small businesses, significantly reduced VAT revenue as these businesses often do not register for VAT or report taxable sales. The study also highlighted that VAT exemptions for certain sectors contributed to a reduced tax base. Okafor and Ismail, (2020) assessed "Exemptions and the VAT Base in Nigeria: An Empirical Study" This study used a mixed-methods approach, combining both qualitative interviews and quantitative data analysis. The study analyzed VAT revenue trends from 2005 to 2018 and included interviews with stakeholders such as tax officers and business owners. Okafor and Ismail found that VAT exemptions granted to sectors such as healthcare, education, and essential goods eroded the tax base and limited the revenue potential of VAT. They also noted that some businesses exploited these exemptions, further reducing the taxable goods and services subject to VAT. The study concluded that revising VAT exemptions could significantly broaden the VAT base. It recommended replacing exemptions with more targeted tax reliefs for low-income earners or specific industries rather than exempting entire sectors from VAT.

Madu and Ogbonna (2022) examined "Tax Administration and VAT Compliance in Nigeria: Legal and Policy Challenges" The study used a qualitative approach involving a comprehensive literature review along with interviews from key stakeholders such as tax officers, policymakers, and VAT-registered businesses. The study revealed that the VAT legal framework in Nigeria lacked clarity, which led to inconsistent application of VAT laws. It also found that poor enforcement of VAT laws, coupled with delays in VAT refund processing, contributed to widespread non-compliance. The authors recommended simplifying the VAT legal framework and strengthening enforcement mechanisms to improve VAT compliance. They also called for the establishment of a more efficient VAT refund system to enhance compliance.

Ekwueme and Uche, (2021) examined "Taxpayer Trust and VAT Compliance in Nigeria". This study used a survey research design, distributing questionnaires to 400 VAT-registered businesses in Nigeria. The researchers employed correlation analysis to examine the relationship between taxpayer trust and VAT compliance. The study found that businesses were more likely to comply with VAT regulations when they trusted the tax authorities. It also highlighted that a lack of trust in the fairness of the tax system was a significant factor in non-compliance, as businesses felt that the tax system was unfair and lacked transparency. The study concluded that increasing taxpayer trust through transparency and fairness in the administration of VAT would result in higher compliance rates. They recommended that the Nigerian government focus on building trust by ensuring the tax system is perceived as fair and equitable.

Methodology

Ex-post factor research design was employed for the study. Secondary data covering a period of 15 years was collected through the use of annual reports extracted from internal records of Oyo State, Nigeria. The study population consists of the entire eight (8) revenue collecting agencies of Oyo state government. The eight (8) revenue agencies constitute the sample. Analytical techniques involved both descriptive and inferential statistics. Principal Component Analysis (PCA) was used to examine the factors influencing tax Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria.

Model Specification

The analytical models for the objective of the study follow after studies like Fossung and La Fortune (2019), Taibat and Adikwu. (2020), Mbir *et al*, (2020), Masud (2015) and Lee *et al.*, (2013). Slight modifications were however made to their surrogates for the revenue profile variables in line with current literature.

In order to examine the factors influencing tax Value Added Tax (VAT) on revenue profile in Oyo state, Nigeria in objective one of the study, the following model-equation was designed;

$$FI = \alpha_0 + \eta_0 \beta_{it} + \eta_1 \beta_1 VATr_{it} + \eta_2 \beta_2 COR_{it} + \eta_3 \beta_3 VATb_{it} + \eta_4 \beta_4 VATce_{it} + \epsilon_{it}, \dots \quad \dots Eq (3.1)$$

Where

FI – Factors influencing

VATb - VAT Rate,

COR - Compliance Rate,

VATb - VAT Base

VATce - VAT Collection Efficiency

ϵ_{it} - Error Term

α - Intercept

β, η – Coefficient

Apriori Expectation $\beta_1, \beta_2, \dots, \beta_n > 1$

Principal component analysis of the factors influencing tax Value Added Tax (VAT) in Oyo State, Nigeria

The Principal Component Analysis (PCA) presented in Table 1 helps to reduce the dimensionality of the dataset and identify the underlying structure among the factors influencing tax Value Added Tax (VAT) in Oyo state, Nigeria. Principal Component Analysis (PCA) is a statistical technique used to reduce the dimensionality of a dataset while retaining most of the variation present in the original variables. In the context of VAT in Oyo State, PCA is used to identify the key underlying factors that explain the variance in VAT-related indicators, namely VAT Rate (VATR), Compliance Rate (COR), VAT Base (VATB), and VAT Collection Efficiency (VATCE). By extracting principal components (PCs), the analysis simplifies the structure of the data and helps identify the most influential variables contributing to VAT performance.

The eigenvalues represent the amount of variance explained by each principal component. Component 1 (PC1) has an eigenvalue of 1.55, explaining 38.87% of the total variance, while PC2 accounts for 28.14% (eigenvalue = 1.13). Combined, the first two components explain 67.01% of the total variance, which is substantial. PC3 adds another 20.57%, bringing the cumulative variance explained by the first three components to 87.58%. The fourth component contributes only 12.42%, and because its eigenvalue is below 1.0, it is typically considered less important in terms of explanatory power.

Component loadings (eigenvectors) show the correlation between each original variable and the principal components. For PC1, VAT Collection Efficiency (VATCE) and Compliance Rate (COR) have high positive loadings (0.677 and 0.662 respectively), indicating they strongly influence this component. VATR also contributes moderately (0.317), while VATB has a negligible loading (0.045). Therefore, PC1 can be interpreted as a “compliance and efficiency” factor, where effective VAT collection and taxpayer compliance are the main drivers of performance.

PC2 is most heavily influenced by VAT Base (VATB) with a strong loading of 0.770 and VATR (0.585), suggesting this component reflects a “tax structure and coverage” dimension—indicating how broad the tax base is and the policy rate applied. PC3 has high positive loadings for VATB (0.627) and a negative loading for VATR (-0.746), possibly representing an “inverse rate-coverage” dynamic, where increases in rate may not proportionally expand coverage, potentially hinting at elasticity or evasion effects.

These findings suggest that efforts to improve VAT performance in Oyo State should prioritize enhancing collection efficiency and taxpayer compliance, as identified in PC1. Structural aspects like widening the VAT base and adjusting rates (as seen in PC2 and PC3) also play crucial roles but are secondary. Importantly, policies that improve VATCE—such as automation of tax collection, better record-keeping, and enforcement—will significantly enhance revenue performance. Similarly, public awareness and trust-building can foster greater voluntary compliance.

In conclusion, the PCA has successfully distilled the multiple dimensions of VAT into a more manageable set of factors. The analysis reveals that compliance and efficiency are the strongest explanatory variables for VAT outcomes in Oyo State, followed by structural attributes like base size and rate policy. Policymakers should therefore design targeted interventions—such as compliance audits, tax education campaigns, and technology deployment—to improve these components. Moreover, expanding the tax net rather than raising rates might be more effective in sustainably improving the VAT revenue profile.

Table 1: Principal component analysis of the factors influencing tax Value Added Tax (VAT) in Oyo state, Nigeria

Eigenvalues: (Sum = 4, Average = 1)

Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	1.554834	0.429195	0.3887	1.554834	0.3887
2	1.125639	0.302740	0.2814	2.680472	0.6701
3	0.822898	0.326268	0.2057	3.503370	0.8758
4	0.496630	---	0.1242	4.000000	1.0000

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3	PC 4
VATR	0.316930	0.585428	-0.745853	0.023086
COR	0.662199	-0.235045	0.118609	0.701554
VATB	0.045304	0.769991	0.627005	0.109207
VATCE	0.677492	-0.095612	0.191050	-0.703820

Source: Researcher's Computation, 2025

Discussion of Findings

In this study, PCA is used to uncover the most influential factors affecting Value Added Tax (VAT) outcomes in Oyo State, Nigeria. The selected indicators—VAT Rate (VATR), Compliance Rate (COR), VAT Base (VATB), and VAT Collection Efficiency (VATCE)—

reflect diverse aspects of VAT administration. By reducing these variables into principal components, the analysis simplifies complex relationships, allowing policymakers to focus on the most impactful areas of tax performance. The first component (PC₁) is predominantly influenced by VAT Collection Efficiency (0.677) and Compliance Rate (0.662), highlighting their pivotal role in shaping VAT outcomes in Oyo State. VATR also contributes (0.317), albeit to a lesser degree, while VATB is almost negligible (0.045). This indicates that PC₁ can be interpreted as a “compliance and operational efficiency” factor. Studies such as Adegbe and Fakile (2021) support this interpretation, finding that VAT compliance and collection processes are strong determinants of revenue mobilization in Nigerian states. Therefore, enhancing these aspects should be the cornerstone of any reform.

PC₂ is shaped mainly by VAT Base (0.770) and VATR (0.585), which suggests this component reflects the “structural scope” of VAT—highlighting the importance of how many economic entities are captured by the tax system and at what rate. PC₃ offers an interesting dynamic, with VATB loading positively (0.627) and VATR negatively (-0.746), implying an “inverse relationship” between tax rate and coverage. This inverse effect is supported by findings from Omodero (2023), which argue that higher tax rates in Nigeria sometimes lead to reduced compliance or narrower tax bases due to evasion or informal sector expansion.

The PCA results underscore that VAT performance in Oyo State is driven more by administrative efficiency and compliance behavior than by structural tax parameters. Enhancing VATCE through digitized systems, real-time data analytics, and better taxpayer services could significantly boost revenue, as supported by recent literature advocating for tax tech adoption in sub-Saharan Africa (IMF, 2022). Simultaneously, compliance can be increased through taxpayer education, simplification of filing procedures, and stronger enforcement mechanisms. While VAT rate and base expansion are essential, they should be handled cautiously to avoid counterproductive effects on compliance and economic activity.

Conclusion

Based on the summary of findings, it was concluded that the specified model adequately captured all relevant variables and demonstrated a good fit for the study. Furthermore, the results revealed significant variation in the determinant factors influencing Value Added Tax (VAT) in Oyo State. This implies that VAT performance in the state is shaped by multiple interrelated factors, underscoring the need for targeted policies and strategies to strengthen tax administration and enhance revenue mobilization.

Recommendations

The government and relevant tax authorities should strengthen mechanisms for identifying key determinants of VAT performance. This includes improving the VAT collection infrastructure, enhancing taxpayer education, addressing informal sector leakages, and leveraging digital technologies for transparency.

Factors such as compliance rate, administrative efficiency, public awareness, corruption, and economic activity levels should be studied continuously to inform tax policy and improve VAT's contribution to state revenue. This will help in formulating targeted strategies to enhance VAT efficiency and broaden the tax base effectively.

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