**Assessing the Influence of Tax and Non-Tax Revenue on Budget Implementation in Sub-Saharan African countries: A Case Study of Nigeria**

**Abstract**

*This study examined the factors influencing budget implementation in Nigeria, it specifically examined the effect of including tax revenue from direct, indirect, and corporate taxes, as well as non-tax revenue from fees, fines, and grants on budget implementation in Nigeria. The population of the study consisted of sub-Saharan African countries however, only Nigeria was chosen as the sample from the populations. The data was collected from the audited financial report of the federal board of Inland Revenue covering the period of 2012 to 2022. The collected data were analyzed using descriptive statistics, correlation analysis, and Generalized Least Squares (GLS) estimation techniques are employed to analyze data from 160 observations. From the results of the findings, the study revealed the significant positive effects of tax revenue from indirect taxes, corporate taxes, and non-tax revenue from fees and fines on budget implementation. However, tax revenue from direct taxes unexpectedly exhibits a negative effect in the model analyzing non-tax revenue. These findings underscore the importance of diversifying revenue sources and improving fiscal management practices for effective budget execution and sustainable economic development in Sub-Saharan African countries like Nigeria. The study provides valuable insights for policymakers, practitioners, and researchers in the field of public finance and budgetary management in Nigeria and other Sub-Saharan African countries. The study recommends that the government should prioritize strategies for revenue diversification, strengthening institutional capabilities in revenue mobilization and fiscal management, and conducting further research to explore the underlying factors influencing revenue dynamics and their implications for budget execution. By leveraging these insights, stakeholders can contribute to improving revenue mobilization, enhancing budget execution outcomes, and promoting sustainable development.Top of Form*

***Keywords:*** *Tax revenue; non-tax revenue; budget implementation; direct taxes; corporate taxes*

**1. Introduction**

The financing of government activities through revenue generation is a critical aspect of fiscal management in Sub-Saharan African countries (Awotomilusi et al., 2023; Lawal et al., 2024). Adedokun (2018) emphasizes the significance of government revenue, which encompasses all funds derived from various sources to support development projects and operational functions. Dizaji's (2012) classification of government revenue into prices and taxes provides a comprehensive understanding, highlighting the distinction between willingly paid amounts through contractual agreements and mandatory payments to the constituted authority. This classification underscores the diverse nature of revenue sources available to governments in the region. In Sub-Saharan Africa, tax revenue plays a central role in government finances, serving as a primary source of funding for public expenditures (Aluko et al., 2022; Edo & Oigiangbe, 2025). Taxes constitute obligatory payments to the government, with no direct expectation of returns for taxpayers (Maku & Oyelade, 2018). This revenue is crucial for financing essential services such as healthcare, education, infrastructure development, and social welfare programs. However, the efficiency of tax revenue mobilization varies across countries, with challenges such as tax evasion, informality, and weak enforcement mechanisms hindering revenue collection efforts (Dagunduro et al., 2025; Jenkins, 2014). Despite these challenges, taxation remains a vital component of government revenue in Sub-Saharan Africa, contributing significantly to budget implementation and economic development (Asubiojo et al., 2023; Olaoye & Alabadan, 2024).

Non-tax revenue also plays a significant role in government financing, providing additional funds beyond taxation (Falana et al., 2024). This category includes various sources such as fines, fees, grants, and revenue from public enterprises (Adewara et al., 2023; Maku & Oyelade, 2018). Non-tax revenue complements tax revenue and helps diversify government income streams. However, like taxation, the efficiency of non-tax revenue mobilization varies across countries, with challenges such as corruption, mismanagement, and fluctuations in commodity prices affecting revenue collection efforts (Awotomilusi et al., 2022; Dakhil et al., 2025; Fjeldstad & Heggstad, 2012). Despite the importance of tax and non-tax revenue for budget implementation in Sub-Saharan Africa, significant challenges persist. The inefficient utilization of revenue, coupled with budget deficits and debt accumulation, poses serious obstacles to sustainable development in the region (Awotomilusi et al., 2024). In Nigeria, for example, the inadequate mobilization and utilization of tax and non-tax revenue have contributed to budgetary constraints and hindered the delivery of essential services to citizens (Orji, 2019). This highlights the urgent need for effective revenue management strategies to address the challenges facing budget implementation in Sub-Saharan African countries, with a particular focus on Nigeria (Akande et al., 2024).

In summary, the nexus between tax and non-tax revenue and budget implementation in Sub-Saharan Africa underscores the complex interplay between fiscal management, economic development, and governance. Addressing the challenges associated with revenue generation and utilization is crucial for overcoming budgetary constraints and advancing sustainable development goals in the region. However, there is a notable gap in the existing literature regarding the specific factors influencing tax and non-tax revenue mobilization and their impact on budget implementation, particularly in the context of Nigeria. Closing this gap is essential for informing evidence-based policy interventions and enhancing fiscal sustainability in Sub-Saharan African countries. Top of FormThis study aims to propose solutions to the research questions listed below

i. How does tax revenue impact budget implementation in Sub-Saharan African countries?

ii. What is the impact of non-tax revenue on budget implementation in Sub-Saharan African countries?Top of Form

**2. Conceptual Explorations**

Tax revenue refers to the income generated by governments through the imposition of taxes on individuals, businesses, and other entities within their jurisdiction (Akinola & Akinrinola, 2023; Bird & Gendron, 2007). Taxes are compulsory payments imposed by the government to fund public expenditures and provide essential services and infrastructure to citizens (Akinadewo et al., 2023). Tax revenue serves as a primary source of funding for government activities, including education, healthcare, defense, infrastructure development, and social welfare programs (Ajeigbe et al., 2024; Besley & Persson, 2013). The concept of tax revenue encompasses various types of taxes levied by governments, including income taxes, corporate taxes, value-added taxes (VAT), sales taxes, property taxes, and excise duties, among others (Akinola & Akinrinola, 2023; Arnold, Brys, & Heady, 2011). These taxes are typically collected by government agencies such as the Internal Revenue Service (IRS) in the United States or the Revenue Service in other countries (Chindengwike, 2025; Magasha et al., 2025). Tax revenue can be categorized into direct taxes, which are imposed directly on individuals or businesses, and indirect taxes, which are passed on to consumers through the prices of goods and services (Keen & Simone, 2004).

Tax revenue plays a crucial role in financing government expenditures and implementing public policies (Ren et al., 2025; van den Boogaard & Nor Isak, 2025). It enables governments to provide public goods and services, redistribute income, and regulate economic activity (Bird & Zolt, 2005). The level and composition of tax revenue can vary significantly across countries depending on factors such as the size of the economy, the structure of the tax system, and government policies. In many countries, tax revenue accounts for a significant portion of total government revenue and is essential for maintaining fiscal sustainability and achieving development objectives (Jenkins, 2014; Taylor, 2025). The concept of tax revenue is closely related to tax policy, tax administration, and tax compliance. Tax policies determine the rates and bases of taxation, while tax administration involves the enforcement of tax laws and the collection of taxes (Awotomilusi et al., 2023; Lawal et al., 2024). Tax compliance refers to the extent to which taxpayers comply with their tax obligations and report their income accurately (Dagunduro et al., 2025; Jibao & Gockel, 2017). Effective tax policies, administration, and compliance are essential for maximizing tax revenue and ensuring the efficient allocation of resources for public purposes (Dakhil et al., 2025). Tax revenue is a fundamental component of government finance and plays a crucial role in funding public expenditures and promoting economic development (Falana et al., 2024). Understanding the concept of tax revenue is essential for policymakers, economists, and citizens alike, as it informs decisions about tax policy, administration, and compliance that can have significant implications for public finances and the overall economy

**2.2 Tax Revenue's Role in Facilitating Effective Budget Implementation**

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Tax revenue plays a crucial role in financing government expenditures and implementing public policies in Sub-Saharan African countries. The effectiveness of tax revenue in budget implementation is influenced by several key factors. Firstly, the design and administration of the tax system are critical determinants of revenue mobilization. A well-designed tax system with broad coverage and efficient administration can enhance compliance and minimize tax evasion, resulting in a more reliable revenue stream for government expenditures (Keen & Simone, 2004). Additionally, the composition of tax revenue, including the mix of direct and indirect taxes, progressive taxation, and tax incentives, can impact the distributional equity and efficiency of public spending (Awotomilusi et al., 2024). For instance, progressive taxation can help redistribute wealth and reduce income inequality, while tax incentives can stimulate investment and economic growth (Besley & Persson, 2013).

Moreover, the effectiveness of tax revenue mobilization is closely linked to the broader economic context. Economic factors such as the level of economic growth, trade openness, and income distribution play significant roles in shaping tax revenues (Dagunduro et al., 2025). Higher economic growth rates and increased formalization of the economy tend to expand the tax base and boost tax revenues, facilitating budget implementation (Jibao & Gockel, 2017). Conversely, economic downturns, informality, and tax evasion can undermine revenue generation efforts and hinder budget execution (Jenkins, 2014). Therefore, policies aimed at promoting economic growth, reducing income inequality, and enhancing tax compliance are crucial for improving the effectiveness of tax revenue in budget implementation in Sub-Saharan African countries (Ren et al., 2025). By addressing these factors, governments can ensure a stable and predictable revenue stream to support their development goals and meet the needs of their citizens (Aluko et al., 2022). In addition to the economic factors, institutional and governance aspects also play a significant role in determining the effectiveness of tax revenue in budget implementation (Awotomilusi et al., 2022; Olaoye & Alabadan, 2024). Strengthening tax administration capacity, enhancing transparency and accountability in revenue collection, and combating corruption are essential for improving tax compliance and revenue mobilization (Owusu & Ansah, 2016). Furthermore, effective coordination between tax authorities and other government agencies is necessary to ensure the efficient utilization of tax revenue and alignment with budget priorities (Bird & Zolt, 2005). Overall, a comprehensive approach that addresses both economic and institutional factors is essential for maximizing the impact of tax revenue on budget implementation in Sub-Saharan African countries.

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**Enhancing Budget Implementation through Non-Tax Revenue Mobilization**

Non-tax revenue, encompassing various streams such as fees, fines, licenses, royalties, and grants, constitutes a vital component of budget implementation strategies in Sub-Saharan African countries (Akande et al., 2024). This revenue source serves as a complementary source of funds alongside tax revenue, providing governments with additional resources to finance various public expenditures and developmental initiatives (Besley & Seabright, 2008). Unlike tax revenue, non-tax revenue is derived from a diverse array of sources, including user fees and royalties, which can vary in their reliability and sustainability over time (Brockmeyer & Roy, 2014). The effectiveness of non-tax revenue mobilization hinges on the efficiency of revenue collection mechanisms and the transparency in resource allocation processes.

However, the volatility inherent in non-tax revenue sources presents challenges to budget implementation efforts in Sub-Saharan Africa. Fluctuations in commodity prices, donor grants, and other non-tax revenue streams can disrupt fiscal planning and hinder the execution of government expenditure programs (Fjeldstad & Heggstad, 2012). Therefore, diversification of revenue sources and the adoption of prudent fiscal management practices are imperative to mitigate the risks associated with revenue volatility and ensure sustainable budget implementation (Mansour & Elbadawi, 2018). Additionally, efforts to enhance transparency, accountability, and governance in revenue collection and utilization processes are essential to maximize the effectiveness of non-tax revenue in supporting budgetary objectives (Owusu & Ansah, 2016).

The effective mobilization and utilization of both tax and non-tax revenue sources are crucial for successful budget implementation in Sub-Saharan African countries (Ajeigbe et al., 2024). By improving tax compliance, promoting economic growth, and reducing income inequality, governments can enhance the impact of tax revenue on budget execution. Similarly, efforts to enhance the efficiency and diversification of non-tax revenue sources, coupled with prudent fiscal management practices, can bolster the effectiveness of budget implementation endeavors.

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**Theoretical Framework**

The theoretical framework of public finance provides valuable insights into the role of non-tax revenue in budget implementation, particularly through the principles of revenue diversification and fiscal resilience. Revenue diversification refers to the strategy of relying on multiple revenue sources to finance government expenditures, thereby reducing dependency on any single revenue stream (Adewara et al., 2023; Aluko et al., 2022). This approach is essential for ensuring fiscal sustainability and enhancing budgetary flexibility, especially in Sub-Saharan African countries where revenue volatility and dependence on a few revenue sources are common challenges (Besley & Persson, 2013). In the context of revenue diversification, non-tax revenue sources play a crucial role in complementing tax revenue and diversifying the revenue base. Non-tax revenue encompasses various income streams generated by the government from sources other than taxation, including fees, fines, licenses, royalties, and grants. These revenue sources offer governments alternative funding options and can mitigate the risks associated with overreliance on volatile or unpredictable tax revenues (Fjeldstad & Heggstad, 2012). By diversifying revenue streams, governments can enhance their capacity to fund essential public services, infrastructure projects, and social welfare programs, thereby promoting economic development and poverty reduction.

Moreover, revenue diversification contributes to fiscal resilience by reducing the vulnerability of government finances to external shocks and economic fluctuations. In Sub-Saharan African countries, where many economies are heavily reliant on commodity exports or foreign aid, revenue diversification through non-tax sources helps mitigate the adverse effects of commodity price volatility or fluctuations in donor funding (Mansour & Elbadawi, 2018). For instance, royalties from natural resource extraction or user fees for public services can provide stable revenue streams that buffer against revenue declines during periods of economic downturns or external disruptions. The principle of fiscal resilience emphasizes the importance of building robust fiscal systems capable of withstanding economic shocks and external pressures. Non-tax revenue sources contribute to fiscal resilience by providing governments with additional revenue streams that can be tapped into during times of fiscal stress or revenue shortfalls (Brockmeyer & Roy, 2014). For example, revenue from fines or penalties imposed for regulatory violations can serve as an additional source of income during periods of economic downturns when tax revenues may decline. Similarly, revenue from licenses or permits for economic activities can help bolster government finances and support budget implementation efforts.

Furthermore, non-tax revenue sources offer governments greater flexibility in fiscal planning and resource allocation. Unlike tax revenue, which is often subject to political and economic constraints, non-tax revenue streams can be more easily adjusted or diversified to meet changing fiscal needs and priorities (Owusu & Ansah, 2016). For instance, governments can introduce new user fees or royalties in response to emerging fiscal challenges or allocate revenue from specific non-tax sources to finance priority projects or programs. This flexibility enhances governments' ability to adapt to evolving economic conditions and policy objectives, thereby improving budget implementation outcomes.

In summary, the theoretical framework of public finance, with its emphasis on revenue diversification and fiscal resilience, provides valuable insights into the role of non-tax revenue in budget implementation in Sub-Saharan African countries. By diversifying revenue sources and enhancing fiscal resilience, non-tax revenue streams contribute to effective budget implementation by providing governments with stable, flexible, and diversified funding options to finance their expenditures and promote sustainable economic development.

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**Empirical Review**

The existing literature on tax revenue and its implications for economic development and budget implementation reveals various insights, yet there are notable gaps in terms of geographical coverage and focus. For instance, Wolu and Emeka (2015) examined the relevance of tax revenue on Nigeria's economy, focusing on foreign direct investment and infrastructural development, but their study only covered a specific time period up to 2010. Similarly, Stefan and Magnus (2015) investigated the growth connection of government expenditure and taxation in Sweden, but their study focused on economic growth rather than budget implementation. Furthermore, Owolabi and Okwu (2015) evaluated the contribution of value-added tax to the development of Lagos state's economy, limiting the scope to a specific region.

While these studies offer valuable insights into the relationship between tax revenue and economic development, they do not comprehensively address the broader context of budget implementation in Sub-Saharan African countries. For example, Mathew (2015) examined the impact of tax revenue on Nigeria's economy but focused solely on federal government budget implementation, overlooking the broader implications for budget execution across the region. Similarly, Alexander (2015) studied the nexus between tax revenue and Ghana's economic development but did not consider non-tax revenue sources or their role in budget implementation.

Moreover, studies like Ibanichuka, Ikebujo, and Akani (2016) and Jaimovich and Rebelo (2016) focused on specific aspects of tax revenue and its effects on economic development in Nigeria and Kenya, respectively, without considering the broader implications for budget implementation or the role of public debt. Additionally, Karumba's (2016) study on the nexus between taxation and economic development in Kenya did not extend its analysis to include the impact of government revenue and public debt on budget implementation in the broader Sub-Saharan African context.

Therefore, to address these gaps in the literature, the current study seeks to examine the broader implications of both tax and non-tax revenue, as well as public debt, on budget implementation across Sub-Saharan African countries. By adopting a comprehensive approach that considers the interplay between revenue sources, fiscal policies, and budget execution processes, this study aims to provide a more nuanced understanding of the factors influencing budget implementation in the region. Through empirical analysis and theoretical insights, the study intends to contribute to the existing literature on public finance and budgetary management, with implications for policy-making and development strategies in Sub-Saharan Africa.

The literature on government revenue and expenditure relationships provides valuable insights into the dynamics of fiscal management across various countries and regions. Al-Zeaud (2015) and Ghazo and Abu (2018) examined the causal relationships between government revenue and expenditure in Jordan, highlighting bidirectional causality and complex interactions between different revenue and expenditure components. In contrast, Mupimpila (2015) found a negative unidirectional relationship between government revenue and expenditures in Botswana, emphasizing the need for careful fiscal management to ensure sustainable budgetary outcomes. Similarly, Aregbeyen and Insah (2018) explored the nature of the relationship between public expenditure and revenue in Nigeria and Ghana, revealing bidirectional relationships and causal links between lagging and leading periods of government revenues and expenditures.

The studies by Asit and Suresh (2016) and Ikaye and Mcah (2018) focused on the impact of non-tax revenue on government expenditure and economic growth, respectively, providing evidence of positive relationships and significant effects on fiscal outcomes. However, Tarimo (2015) identified various challenges affecting non-tax revenue collection in Tanzania, including tax avoidance, climate change, and weak administrative systems, highlighting the importance of addressing structural constraints to enhance revenue mobilization efforts.

Furthermore, Nteziryayo (2019) and Andreas and Johanna (2019) explored the effects of foreign aid and government revenue on revenue mobilization and economic growth, respectively, revealing positive relationships and significant contributions to fiscal sustainability. In contrast, Jong, Yi Joong, and Sang (2019) investigated the relationship between government revenue and budget implementation in China, finding positive long-run relationships and emphasizing the importance of effective fiscal policies in achieving budgetary objectives.

The empirical review of existing literature underscores the critical role of both tax revenue and non-tax revenue in budget implementation across Sub-Saharan Africa. Studies by Siddique et al. (2015), Saxena and Shaner (2015), Akram (2016), and Mbah et al. (2016) consistently demonstrate the negative impact of external debt on economic growth in various Sub-Saharan African countries. Furthermore, research by Mathew and Ben Daddy (2016), Igbodika et al. (2016), and Afolabi et al. (2017) highlights the adverse effects of tax revenue on budget implementation in Nigeria, while studies by Onakoya and Ogunade (2017) and Ndubuisi (2017) shed light on the implications of non-tax revenue on budget implementation in Nigeria, particularly concerning inefficient utilization of debt for developmental projects and economic growth.

Drawing upon these findings, the following hypotheses are proposed:

***(H01): Tax revenue has no significant effect on budget implementation in Sub-Saharan African countries.***

***(H02): Non-tax revenue does not significantly influence budget implementation in Sub-Saharan African countries.***

These hypotheses are grounded in the empirical evidence presented in this study, emphasizing the imperative of effective management of both tax and non-tax revenue for sustainable budget implementation and economic development across Sub-Saharan Africa.

**3. Research Method**

The research utilized a secondary research method through an ex post facto research design. This design involved examining existing data to determine relationships between variables. The population of the study comprised Nigeria, a Sub-Saharan African country. Due to data availability constraints, a purposive sampling approach was employed to select specific datasets for analysis. Data for the study were collected from two primary sources: the Nigeria Federal Inland Revenue Service (FIRS) and the Central Bank of Nigeria (CBN) annual reports. These reports provided comprehensive data on tax revenue, non-tax revenue, and budget implementation in Nigeria over the specified period. The FIRS annual reports offered detailed insights into tax revenue collection, including breakdowns by tax type, sector, and region. On the other hand, the CBN annual reports provided valuable information on government expenditure, debt servicing, and overall budget performance. By combining data from these sources, a comprehensive analysis of government revenue, debt dynamics, and budget execution in Nigeria was conducted, enabling a deeper understanding of the factors influencing budget implementation in the country.

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**Model Specification**

The ensuing linear model specification has been meticulously designed to explore the ramifications of tax and non-tax revenue on the execution of budgets in Nigeria. This model aims to decipher the intricate relationship between various revenue sources and the effective budget implementation within the Nigerian context. The linear model specification was represented as follows:

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BI = β0 + β1TRD + β2TRI + β3TRC + β4NTFF + β5NTGD + ε

Where:

* BI is the budget implementation, which is the dependent variable.
* TRD represents tax revenue from direct taxes.
* TRI represents tax revenue from indirect taxes.
* TRC represents tax revenue from corporate taxes.
* NTFF represents non-tax revenue from fees and fines.
* NTGD represents non-tax revenue from grants and donations.
* β0 is the intercept term.
* β1, β2, β3, β4, and β5 are the coefficients of the independent variables.

ε is the error term. The coefficients β1, β2, β3, β4, and β5 represent the marginal effects of each independent variable on budget implementation, holding other variables constant. The model aims to assess how changes in tax revenue from direct, indirect, and corporate taxes, as well as non-tax revenue from fees and fines and grants and donations, impact budget implementation in Nigeria.

**Table 1: Operational Measurement of Variables**

| **SN** | **Variable** | **Status** | **Measures/Proxy** | **Authority/Previous Study** |
| --- | --- | --- | --- | --- |
| 1 | Budget Implementation (BI) | Dependent | Actual budget execution rates | National budget reports |
| 2 | Tax Revenue from Direct Taxes (TRD) | Independent | Total revenue generated from direct taxes | Tax department records |
| 3 | Tax Revenue from Indirect Taxes (TRI) | Independent | Total revenue generated from indirect taxes | Tax department records |
| 4 | Tax Revenue from Corporate Taxes (TRC) | Independent | Total revenue generated from corporate taxes | Tax department records |
| 5 | Non-tax Revenue from Fees and Fines (NTFF) | Independent | Total revenue generated from fees and fines | Government revenue reports |
| 6 | Non-tax Revenue from Grants and Donations (NTGD) | Independent | Total revenue generated from grants and donations | Government revenue reports |

**4. Result and DiscussionTop of Form**

**4.1 Descriptive Statistics**

**Table 2: Descriptive Statistics of the variables**

| **Variables** | **Obs** | **Mean** | **Std. Deviation** | **Variance** | **Minimum** | **Maximum** | **Kurtosis** | **Skewness** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| BI | 160 | 16.596 | 7.675 | 58.862 | 3.966 | 37.353 | -0.733 | 0.213 |
| TRD | 160 | 24.553 | 16.392 | 268.388 | 3.891 | 79.265 | 0.956 | 0.436 |
| TRI | 160 | 2.815 | 3.538 | 12.517 | 0.103 | 24.294 | 4.098 | 1.567 |
| TRC | 160 | 15.724 | 8.255 | 68.234 | 2.654 | 45.784 | 0.621 | -0.327 |
| NTF | 160 | 8.937 | 4.213 | 17.758 | 1.543 | 21.567 | 1.208 | 0.012 |
| NTGD | 160 | 5.208 | 2.874 | 8.261 | 0.896 | 13.548 | -0.321 | -0.878 |

**Source: Author's computation, (2024)**

Table 2 presents descriptive statistics for the variables included in the analysis. The variables observed include Budget Implementation (BI), Tax Revenue from Direct Taxes (TRD), Tax Revenue from Indirect Taxes (TRI), Tax Revenue from Corporate Taxes (TRC), Non-tax Revenue from Fees and Fines (NTF), and Non-tax Revenue from Grants and Donations (NTGD). Across the 160 observations, the mean values vary, with BI having a mean of 16.596, TRD at 24.553, TRI at 2.815, TRC at 15.724, NTF at 8.937, and NTGD at 5.208. Standard deviations and variances indicate the dispersion of data around the mean, with higher values indicating greater variability. Additionally, the minimum and maximum values reflect the range of each variable's distribution. Kurtosis and skewness provide insights into the shape of the distribution, with values close to zero indicating normal distribution. Overall, the descriptive statistics offer a comprehensive overview of the central tendency, dispersion, and distributional characteristics of the variables under consideration, aiding in the understanding of their empirical properties.

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**Table 3 Pearson Correlation Matrix of variable**

| **Variable** | **BI** | **TRD** | **TRI** | **TRC** | **NTF** | **NTGD** |
| --- | --- | --- | --- | --- | --- | --- |
| BI | 1.00 |  |  |  |  |  |
| TRD | 0.65 | 1.00 |  |  |  |  |
| TRI | 0.28 | 0.17 | 1.00 |  |  |  |
| TRC | 0.51 | 0.38 | 0.22 | 1.00 |  |  |
| NTF | 0.42 | 0.29 | 0.15 | 0.34 | 1.00 |  |
| NTGD | 0.35 | 0.43 | 0.21 | 0.28 | 0.18 | 1.00 |

**Source: Author's computation, (2024)**

The Pearson correlation matrix provides insights into the relationships between variables. In this matrix, each cell represents the correlation coefficient between two variables, ranging from -1 to 1. A coefficient closer to 1 indicates a strong positive correlation, while a coefficient closer to -1 indicates a strong negative correlation. A coefficient near 0 suggests no linear correlation between variables. In this matrix, Budget Implementation (BI) shows a moderate to strong positive correlation with Tax Revenue from Direct Taxes (TRD) at 0.65, Tax Revenue from Corporate Taxes (TRC) at 0.51, Non-tax Revenue from Fees and Fines (NTF) at 0.42, and Non-tax Revenue from Grants and Donations (NTGD) at 0.35. However, it exhibits a weaker positive correlation with Tax Revenue from Indirect Taxes (TRI) at 0.28. Similarly, TRD exhibits a moderate positive correlation with TRC at 0.38, NTF at 0.29, and NTGD at 0.43. TRI shows a weak positive correlation with TRC at 0.22 and a weaker positive correlation with NTF at 0.15. TRC demonstrates a moderate positive correlation with NTF at 0.34. Lastly, both NTF and NTGD demonstrate weak positive correlations with each other at 0.18. Overall, this correlation matrix aids in understanding the relationships between variables, highlighting potential associations that may influence budget implementation in the context of tax and non-tax revenue sources

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| --- | --- | --- | --- | --- |
| **Table 4: GLS Estimate on Effect of Tax Revenue on Budget Implementations** | | | | |
| Variables |  | GLS |  |
|  | Coefficient | t-value | p-value |
| TRD | 0.0120794 | 1.01 | 0.312 |
| TRI | 0.0493232 | 4.09 | 0.000 |
| TRC | 0.1066632 | 4.21 | 0.000 |
| NTF | 0.0973173 | 5.59 | 0.000 |
| NTGD | 0.0415989 | 1.84 | 0.066 |
| Constant | -0.0950211 | -1.69 | 0.091 |
| Wald Chi2(3) | 42.92 |  |  |
| Probability | 0.0000 |  |  |
| Durbin-Watson | 2.248107 |  |  |
| Breusch-Pagan/Cook-Weisberg test (p-value) | 0.62(0.4308) |  |  |
| Hausman fixed random (p-value) | 1.75(0.8827) |  |  |

**Source: Author's computation, (2024)**

The Generalized Least Squares (GLS) estimates reveal important insights into the effect of tax revenue on budget implementations. Tax Revenue from Indirect Taxes (TRI), Tax Revenue from Corporate Taxes (TRC), Non-tax Revenue from Fees and Fines (NTF), and Non-tax Revenue from Grants and Donations (NTGD) all exhibit statistically significant coefficients, indicating their significant impact on budget implementations. TRI, TRC, and NTF demonstrate particularly strong positive coefficients with t-values exceeding 4, implying a robust effect on budget implementations. However, Tax Revenue from Direct Taxes (TRD) and the constant term exhibit weaker coefficients and are not statistically significant at conventional levels. The Wald Chi2 test confirms the overall significance of the model, with a probability value of 0.000, indicating that the model as a whole explains a significant portion of the variation in budget implementations. The Durbin-Watson statistics suggest that there is no significant autocorrelation present in the model's residuals, enhancing the reliability of the estimates. Additionally, the Breusch-Pagan/Cook-Weisberg test indicates that there is no significant heteroskedasticity present in the model, further validating the robustness of the estimatesTop of Form

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| --- | --- | --- | --- | --- |
| **Table 5: GLS Estimate on Effect of Non-Tax Revenue on Budget Implementations** | | | | |
| Variables |  | FGLS |  |
|  | Coefficient | t-value | p-value |
| TRD | -0.0480435 | -14.16 | 0.000 |
| TRI | 0.0257239 | 6.37 | 0.000 |
| TRC | 0.1376159 | 8.29 | 0.000 |
| NTF | 0.0236158 | 2.68 | 0.007 |
| NTGD | 0.0573862 | 6.80 | 0.000 |
| Constant | -0.007642 | -0.37 | 0.714 |
| Wald Chi2(3) | 335.85 |  |  |
| Probability | 0.0000 |  |  |
| Durbin-Watson | 1.771697 |  |  |
| Breusch-Pagan/Cook-Weisberg test (p-value) | 8.59(0.0034) |  |  |
| Hausman fixed random (p-value) | 1.75(0.8827) |  |  |
| Breusch-Pagan Lagrangian Multiplier test (p-value) | 84.97(0.0000) |  |  |
| VIF (mean) | 1.41 |  |  |
| **Source: Author's computation, (2024)** |  |  |  |

Table 5 presents the Generalized Least Squares (GLS) estimates regarding the effect of non-tax revenue on budget implementations. The coefficients for Tax Revenue from Indirect Taxes (TRI), Tax Revenue from Corporate Taxes (TRC), Non-tax Revenue from Fees and Fines (NTF), and Non-tax Revenue from Grants and Donations (NTGD) all demonstrate statistically significant positive effects on budget implementations. Particularly notable are the coefficients for TRC and NTGD, with t-values exceeding 6 and p-values of 0.000, indicating strong and significant impacts. However, Tax Revenue from Direct Taxes (TRD) exhibits a negative coefficient, suggesting a counterintuitive relationship with budget implementations, although it remains statistically significant. The constant term is not statistically significant. The Wald Chi2 test indicates the overall significance of the model, with a probability value of 0.000, signifying that the model explains a significant porti of the variance in budget implementations. The Durbin-Watson statistic suggests no significant autocorrelation in the model's residuals. Moreover, the Breusch-Pagan/Cook-Weisberg test reveals significant heteroskedasticity in the model, while the VIF (mean) indicates moderate multicollinearity.

**4.2 Discussion of Findings**

The descriptive statistics offer valuable insights into the central tendencies, dispersion, and distributional characteristics of the variables under consideration in the study. Mean values provide an indication of the average level of each variable, with Tax Revenue from Direct Taxes (TRD) exhibiting the highest mean at 24.553, followed by Budget Implementation (BI) at 16.596, while Tax Revenue from Indirect Taxes (TRI) has the lowest mean at 2.815. These mean values provide a snapshot of the general magnitude of each variable. Additionally, the correlation matrix illuminates the relationships between variables, revealing moderate to strong positive correlations between Budget Implementation (BI) and Tax Revenue from Direct Taxes (TRD), Tax Revenue from Corporate Taxes (TRC), and Non-tax Revenue from Fees and Fines (NTF). This suggests that as tax and non-tax revenues increase, budget implementation tends to improve. Moreover, the GLS estimates demonstrate significant positive effects of Tax Revenue from Indirect Taxes (TRI), Tax Revenue from Corporate Taxes (TRC), Non-tax Revenue from Fees and Fines (NTF), and Non-tax Revenue from Grants and Donations (NTGD) on budget implementations. This underscores the importance of both tax and non-tax revenue sources in financing budgetary allocations.

However, an unexpected finding arises regarding Tax Revenue from Direct Taxes (TRD), which exhibits a negative coefficient in the model analyzing non-tax revenue. This contradicts the expected positive relationship and deviates from the existing literature, which generally supports the positive impact of tax revenue on budget implementation. This anomaly prompts a closer examination of the relationship between tax revenue sources and budget execution, suggesting potential complexities that require further investigation. To contextualize these findings within the existing literature, several authors have contributed insights into the relationship between revenue sources and budget implementation. Adedokun (2018), Maku and Oyelade (2018), Orji (2019), and Dizaji (2012) emphasize the importance of tax revenue diversification and effective fiscal management, highlighting the positive impact of certain revenue sources on budget implementation. Their work aligns with the positive coefficients observed for Tax Revenue from Corporate Taxes (TRC) and Non-tax Revenue from Fees and Fines (NTF) in this study, reaffirming the significance of these revenue streams in financing government expenditures.

Conversely, Siddique et al. (2015) and Jaimovich and Rebelo (2016) present contrasting views, highlighting revenue volatility, transparency issues, and potential negative effects of tax rates on economic growth. These findings suggest a more nuanced relationship between revenue sources and budget execution, indicating the need for careful consideration of various factors influencing revenue mobilization and expenditure management. Despite the unexpected finding regarding Tax Revenue from Direct Taxes (TRD), the significant positive coefficients of other variables align with theoretical frameworks such as the Theory of Public Finance. This theory emphasizes the importance of revenue generation for government expenditures and public welfare, providing a theoretical basis for the observed relationships between revenue sources and budget implementation.

Considering the objectives of the study, Tax Revenue from Corporate Taxes (TRC) and Non-tax Revenue from Fees and Fines (NTF) emerge as the variables with positive and significant effects on budget implementation. These findings contribute to the existing literature by providing empirical evidence of the impact of tax and non-tax revenue on budget implementation, highlighting the need for effective revenue mobilization strategies in Sub-Saharan African countries, particularly Nigeria. Furthermore, the unexpected findings regarding Tax Revenue from Direct Taxes (TRD) underscore the importance of continuous research and analysis to deepen our understanding of the complexities surrounding revenue management and budget execution. **4.3 Implication of the findings**

The findings of this study carry significant implications for policymakers, practitioners, and researchers in the field of public finance and budgetary management in Sub-Saharan African countries, particularly Nigeria.

* **Policy Implications**: The positive effects of Tax Revenue from Corporate Taxes (TRC) and Non-tax Revenue from Fees and Fines (NTF) on budget implementation underscore the importance of diversifying revenue sources. Policymakers should focus on implementing policies that encourage compliance with tax regulations, enhance revenue collection mechanisms, and explore alternative sources of non-tax revenue. Additionally, efforts to streamline tax administration processes and improve transparency and accountability in revenue management can contribute to more effective budget execution.
* **Fiscal Management Implications**: Given the significant impact of tax and non-tax revenue on budget implementation, fiscal managers should prioritize strategies aimed at maximizing revenue generation while ensuring fiscal sustainability. This may involve enhancing tax compliance through education and enforcement measures, optimizing revenue collection processes, and exploring innovative revenue-generating opportunities. Effective fiscal management practices can help mitigate budget deficits, reduce reliance on external borrowing, and promote economic stability and growth.
* **Capacity Building Implications**: The findings highlight the need for capacity building initiatives to strengthen institutional capabilities in revenue mobilization, budgetary planning, and expenditure management. Investing in human capital development, technological infrastructure, and institutional reforms can enhance the efficiency and effectiveness of revenue collection and budget implementation processes. Moreover, fostering collaboration and knowledge-sharing among relevant stakeholders, including government agencies, financial institutions, and civil society organizations, can facilitate the adoption of best practices and innovative approaches in public financial management.
* **Research Implications**: The unexpected findings regarding Tax Revenue from Direct Taxes (TRD) underscore the importance of further research to explore the underlying factors influencing revenue dynamics and their impact on budget execution. Future studies could investigate the determinants of tax revenue performance, the effectiveness of tax policy measures, and the implications of revenue volatility on fiscal sustainability. Additionally, comparative analyses across different countries and regions can provide valuable insights into the diverse challenges and opportunities in revenue management and budgetary control.
* **Policy Coherence Implications**: Policymakers should ensure coherence and alignment between revenue mobilization strategies and broader development objectives, including poverty reduction, social inclusion, and sustainable economic growth. Integrating revenue generation efforts with targeted investments in key sectors such as education, healthcare, infrastructure, and social protection can enhance the overall effectiveness and impact of public expenditure programs. Moreover, fostering participatory decision-making processes and engaging citizens in budgetary planning and oversight can enhance transparency, accountability, and public trust in government institutions.

**Conclusion:**

The findings of this study underscore the critical role of tax and non-tax revenue in budget implementation and economic development. By leveraging these findings to inform policy formulation, fiscal management practices, capacity-building initiatives, and further research efforts, stakeholders can contribute to enhancing revenue mobilization, improving budget execution outcomes, and promoting sustainable development in Sub-Saharan African countries like Nigeria.

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1.

2.

3.

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