# VALUE-ADDED TAX AND ECONOMIC GROWTH: A STUDY OF NIGERIA AND UNITED KINGDOM

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## Abstract

The study was carried out to do a comparative analysis of the impact of Value Added Tax (VAT) on the economic growth of Nigeria and the United Kingdom. The study adopted an *ex post facto* research design. The study population covers all VAT, total tax revenue, and gross domestic product in Nigeria and the United Kingdom from 2007-2022. Data used for the study were obtained from the Central Bank of Nigeria Statistical Bulletin and Her Majesty Statistics for Revenue and Customs (HRMC). The hypotheses were analyzed using simple regression analysis of the Ordinary Least Square method (OLS). Results obtained from the analysis showed that value-added tax has a significant impact on the economic growth of both countries. Total tax revenue also has a significant impact on economic growth. The study recommended that the government should be more focused on the collection of VAT and other taxes and channel such revenue into the establishment of infrastructure to enhance economic growth.

**Keywords:** Value Added Tax, Tax Revenue, Gross Domestic Product, Economic Growth, Nigeria, United Kingdom

## Introduction

Value Added Tax (VAT) is a consumption tax, levied at each stage of the consumption chain and borne by the final consumer of the products or services. The administration of VAT is relatively easy, economical, unselective, and difficult to evade. Over the decades around the globe especially in developing countries, Value Added Tax revenue has been recognized as accounting for a significant percentage of the total government revenue. Value-added tax has been adopted by several countries of the world because of the growing concern about economic efficiency and tax simplicity in a competitive and integrated world economy (Adegbie *et al*, 2016).

The behaviour of the Nigerian people towards tax obligation is very alarming as they do not want to pay tax if given the opportunity, this attitude makes the government revenue from tax drop to an insignificant amount compared to what should be (Eze & Atagboro, 2019). Also, the Nigerian government has been so dependent on the oil revenue and has to an extent not effectively given other areas of revenue such as tax much attention, this action has given room for individuals and companies to evade and/or avoid payment of their tax obligations (Akighir & Tarlunum, 2019).

This unwholesome practice has given rise to a loss of revenue and can change the fortune of the Nigerian economy ( Obayori & Omekwe, 2019). In developed countries like the United Kingdom where they are not oil dependent, their main source of revenue generated is through different taxes administered and they effectively control their tax system by collecting them when due and punishing evaders with either fines or imprisonment or both. In Nigeria, VAT is one of the instruments the federal government introduced to generate additional revenue. Yet, most prominent Nigerians and interest groups have spoken against its introduction (Ezenwafor, 2021). VAT is fraught with some problems. For this study, the Researchers examined the implication of VAT on revenue generation in Nigeria and how VAT affects the economic growth in Nigeria and the United Kingdom. Since VAT is an important source of revenue to the government, this study measured its impact on government total tax revenue from 2007-2022 with different changes in its rate and compared it with the VAT revenue generated by the United Kingdom government over the same years and recognizing the change in their VAT rate.

There is a scanty study on value-added tax and economic growth in Nigeria and the United Kingdom, hence, this study was carried out to fill the gap in the literature. Furthermore, there has been a decline in economic growth in both Nigeria and the United Kingdom.

## Research Objective:

The broad aim of this study was to investigate value-added tax and economic growth in Nigeria and the United Kingdom. The specific objectives are:

i. To examine the impact of VAT on GDP for Nigeria and the United Kingdom

ii. To examine the impact of value-added tax and Tax Revenue on GDP for Nigeria and the United Kingdom

**Research Questions**

**The following research questions were derived from the research objectives.**

i. To what extent does Value Added Tax have an impact on the economic growth (GDP) of both countries?
ii. To what extent do Value Added Tax and Tax revenue have an impact on the economic growth (GDP) of both countries?

**Research Hypotheses**

The following research hypotheses were drawn from the research objectives and research questions.

i. VAT has no significant impact on the Gross Domestic Product of both countries.
ii. Value-added tax and tax revenue have no significant impact on the Gross Domestic Product of both countries.

**Literature Review** and **Theoretical Framework**

Taxation is a compulsory levy imposed on a subject or upon his property by the government to provide security, and social amenities and create conditions for the economic well-being of the society (Okwara & Amori, 2017). Nzotta (2017) defined tax as a compulsory levy contribution made by the citizens to the state or even an alien, subject to the jurisdiction of the government, for reasons of residence or property and this contribution is for general common use. Ilaboya (2012) postulates some tax theories are built on the hypothesis that have no needless connection between the payment of tax by citizens and benefits accruable from the state while other theories are based on a link between the rendering of service and payment of taxes.

In Nigeria, there are various taxes collected by the government. All these taxes can be categorized into two: namely personal income tax and company income tax. Under company income tax we have company income tax (CIT), petroleum profit tax (PPT), value-added tax, customs and excise duties, and education tax to mention but a few (Gatawa *et al*, 2016).

**Administration of Value Added Tax in Nigeria**

Value Added Tax (VAT) was introduced in Nigeria through the Value Added Tax Decree 1993 No. 102. VAT came as a replacement for existing Sales Tax that has been in operation since 1986. The Federal Inland Revenue Service administers the VAT system in Nigeria. Though VAT is administered by the Federal Government, the proceeds are shared by the Local, State, and Federal Governments. The Federal Inland Revenue Service Board is empowered to provide direction, impose conditions, and specify records to be kept by traders. Value Added Tax (VAT) is an indirect tax on goods and services. It is a consumption-based

tax, which is a tax on general consumption expenditure designed with the sole aim of raising revenue for the government (Yusuf & Udeorah, 2021).

## Economic Growth

Dandana and Nwele (2011) stated that economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in the real gross domestic product (GDP). Of more importance is the growth of the ratio of GDP to population (GDP) per capita which is also called per capita income. An increase in growth caused by more efficient use of inputs (such as physical capital, population, or territory) is referred to as intensive growth. Economic development has remained a serial problem bedeviling the Nigerian state since independence as several efforts geared towards economic recovery have failed to yield meaningful results.

## Theoretical Framework

The following theories of taxation are discussed in this study:

### Ability to Pay Theory

The ability to pay theory was propounded by John Stuart Mill. The theory assumes that taxes are a sacrifice or a burden for taxpayers who would prefer to spend their money on their purposes. The sacrifice or burden of paying taxes varies based on the taxpayers' income or fortune. The theory is supported because individuals, corporations, and partnerships pay taxes due to their capacity to do so (Abu & Kamara, 2023).

The theory is criticized based on subjective and imprecise concepts, such as sacrifice, burden, and marginal utility, which are difficult to define and measure in practice (Adegbola et al, 2023). The theory is relevant to the study because it acknowledges the significance of promoting economic expansion and investment.

### Expediency Theory

The expediency theory of taxation states that the government should set tax rates based on what is most practical and expedient for them rather than on any theoretical or ethical considerations. In other words, taxes should be crafted and enacted in a way that allows the government to collect necessary funds with little bureaucratic effort (Ayeni & Omodero, 2022). The theory is supported since individuals and corporations pay moderate taxes without violating the law or their morals (Yaro & Adeiza, 2021). Those who disagree with expediency theory argue that the theory is not grounded in normative or ethical principles but rather in pragmatic and utilitarian ones and it puts less emphasis on social welfare goals (Raphael et al, 2022).

### Keynesian Economic Theory

Keynesian economic theory was propounded by John Maynard Keyne (1883-1946) following the Great Depression. To stimulate demand and full employment, Keynes and his followers advocated for government spending and taxation. Keynesian believed that the amount of aggregate demand in the economy has a large impact on economic growth and employment. Keynesian theory is supported by the principle that government intervention may greatly contribute to economic stability and that fiscal policies in terms of government spending and

taxation can alter aggregate demand and reduce economic downturn (Omondi, 2019). Critics of the theory stated that short-term economic difficulties can have serious effects on long-term consequences (Kouam & Asongu, 2020).

Three theories were reviewed for this study. Keynesian Economic Theory was adopted for this study because it highlights the importance of government intervention in stimulating aggregate demand, thereby driving economic activities in the country.

**Empirical Review**

Several studies have been conducted by some scholars or related studies which are discussed below:

Adegbite and Shittu (2017) examined the impact of value-added tax on private investment in Nigeria. Data were obtained from the CBN Statistical Bulletin from 1994 to 2015. Findings showed that there is a positive significant relationship between Private Investment and the Value Added Tax, interest rate, inflation rate, and exchange rate. Therefore, Value Added tax, interest rate, and exchange rate have a strong and positive statistical impact on Private Investment in Nigeria. The study recommends that the government should increase the rate of value-added tax in Nigeria so that the funds realized from it can be used in the provision of infrastructure for the Nigerian populace.

Nwooha et al (2018) used the error correction model (ECM) to analyze the causality between Value Added Tax (VAT) and the Nigerian Economy proxied by GDP during the period 1994-2015. The data such as VAT and GDP were obtained from the Central Bank of Nigeria (CBN) statistical bulletin and Federal Inland Revenue Services (FIRS). The results of the findings revealed that VAT exerts positive and significant influences on GDP while there was evidence of unidirectional causality running from VAT to GDP.

Kaisa et al (2019) examined the impact of the introduction of the value-added tax on inequality and government revenue using newly released macro data. The results reveal in contrast to earlier work that the revenue consequences of the VAT have not been positive. The results indicate that income-based inequality has increased due to the VAT adoption, whereas consumption inequality has remained unaffected.

Omondi (2019) empirically analyzed the effect of value-added tax/sales tax on economic performance in Kenya for the period 1973 to 2010. The study adopted econometric exposition based on its ability to determine the strength and direction of relationships between variables. The empirical result indicates that a negative and insignificant relationship exists between value-added tax and economic performance in Kenya.

Yusuf and Udeorah (2021) examined the dynamic impact of value-added tax on economic performance in Nigeria from 1994-2018. The data used for the study covered the period ~~of~~ from 1994 to 2019 and was sourced from the CBN Statistical Bulletin and the National Bureau of Statistics. The method of Augmented Dickey-Fuller (ADF) unit root test and Dynamic Ordinary Least Square (DOLS) regression was employed in analyzing the data. The

ADF test showed that both the dependent and independent variables were stationary at first difference. The Result showed that VAT has a positive relationship with economic performance.

Kujore *et al* (2021) examined the effect of tax revenue proxied by Value Added Tax (VAT) on the economic performance, proxied by Real GDP of the telecommunication sub-sector. The study was conducted using the annual time series data, which covered a period of 18 years (2001 to 2018). The data were largely obtained from the Central Bank of Nigeria's (CBN) Annual Reports and Statistical Bulletin. Findings revealed that value-added tax is significant. VAT has a significant effect on the economic performance of the telecommunication sub-sector in Nigeria for the period under study.

Monica and Kazeem (2022) examined the effect of VAT on economic performance in Nigeria between 1994 and 2020 using the consumer price index (CPI) as a threshold. A technique of Threshold Vector Autoregressive (TVAR) was employed and the results reveal that a VAT above the 10 percent threshold value endangers the economy while a VAT below the 7.59 percent threshold value does not harm the economy; rather, it improves people's well-being. It is therefore recommended that the Nigerian economy should maintain the lower VAT threshold to cushion the effect of ever-rising CPI on the citizens.

## Methodology

### Research Design

This study adopts an *ex-post facto* research design. Secondary data used for the study were obtained from the Central Bank of Nigeria Statistical Bulletin, Federal Inland Revenue Service, and Her Majesty Statistics for Revenue and Customs (HMSRC) from 2007 to 2022. The regression analysis based on the classical regression model otherwise known as the Ordinary Least Square technique was used in the analysis of the data sourced for the study.

### Population

The research population is the aggregation of elements from which the sample is selected. The population of this study is the total revenue generated by the Nigerian and UK governments from value-added tax from 2007-2022.

### Model Specification

This is the mathematical relationship that exists between the dependent and the independent variable and the model for the parameters of the function.

This model is specifically based on the following functional relationship which can be implicitly stated as follows:

Model:

GDP = F(VAT, TR)

The equation is explicitly transformed into the following:

GDP = β0 + β1 VAT + β2 TR + et

Where:

GDP = Gross Domestic Product

VAT = Value Added Tax

TR = Tax Revenue

β0 = Constant

β1, β2 = Parameter to be estimated

et = The Error Term

**Method of Evaluation**

**Economic Criteria**

The equation was evaluated based on economic criteria. This will inform us of the signs of the parameters and whether they conform to economic theory specifically β1, and β2, are expected to be positive.

**Statistical Criteria**

Statistical criteria were based on checking the t-value for the statistical significance; the F-test was used to check the overall regression and whether the model has the goodness of fit. The $R^2$ was used to determine the power of the variables.

**Economic Criteria**

This was used to evaluate if the assumption of ordinary least square (OLS) are not violated as follows:

**Auto Correction Test**

This test will adopt the conventional Durbin-Watson test on checking for the presence of serial auto-correction.

**Normality Test**

This test was used to check if the data is normally distributed.

**Heteroscedasticity**

This test was carried out to see if there was heteroscedasticity among the variables. That is, ascertain if the error term is constant across all values of independent variables.

**A priori Expectations**

The result of this research work is expected to be positive that is it is expected that VAT should have a significant positive impact on the Gross Domestic Product of both countries.

## Analysis and Interpretation of Empirical Result

### Data Presentation

The time series data obtained for this research work is used to empirically investigate the effect of Value Added Tax on the growth of the Nigerian and United Kingdom economy from the year 2007-2022. The dependent variable is Gross Domestic Product (GDP) while the independent variable is Value Added Tax (VAT). The data was analyzed with E-views. Here an attempt was made to present the data collected from the secondary sources. In doing so, our secondary data was obtained from the CBN bulletin, Her Majesty Statistics for Revenue and Customs, and World Bank data. To examine the effect of VAT on the growth of the Nigerian and UK economies, the values of both variables were run on the E-views software and the result was analyzed and interpreted.

### Descriptive Statistics

This section of the analysis provided an overview of the data set while an attempt was also made to describe the main features of the data. The study has determined the impact of Value Added Tax on the Gross Domestic Product of Nigeria and the United Kingdom within the period 2007 to 2022 which is 16 years. The description of the data series was based on the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, and jarque-bera of the countries sampled.

**Table 1: Descriptive Statistics**

**Nigeria**

| | LNVAT | LNTR | LNGDP |
|---|---|---|---|
| Mean | 12.58869 | 7.530652 | 17.02375 |
| Median | 12.73986 | 7.613390 | 16.92471 |
| Maximum | 13.59607 | 8.518732 | 18.30464 |
| Minimum | 10.95954 | 6.072814 | 15.71964 |
| Standard Deviation | 0.860783 | 0.859092 | 0.950624 |
| Skewness | -0.380466 | -0.497234 | 0.053560 |
| Kurtosis | 1.826359 | 1.918278 | 1.523316 |
| Jarque-Bera | 1.304301 | 1.439393 | 1.461379 |
| Probability | 0.520924 | 0.486900 | 0.481577 |
| Sum | 201.4190 | 120.4904 | 272.3800 |
| Sum Sq. Dev. | 11.11422 | 11.07060 | 13.55530 |
| Observations | 16 | 16 | 16 |

**UK**

| | LNVAT | LNTR | LNGDP |
|---|---|---|---|
| Mean | 11.29731 | 13.07023 | 0.876400 |
| Median | 11.26315 | 13.11086 | 0.939226 |
| Maximum | 11.65629 | 13.31777 | 1.119395 |
| Minimum | 10.97683 | 12.77973 | 0.478096 |
| Standard Deviation | 0.215129 | 0.173958 | 0.208041 |
| Skewness | 0.277051 | -0.365718 | -0.874677 |
| Kurtosis | 1.896574 | 1.840451 | 2.497361 |
| Jarque-Bera | 1.016386 | 1.253035 | 2.208588 |
| Probability | 0.601582 | 0.534450 | 0.331445 |
| Sum | 180.7570 | 209.1237 | 14.02241 |
| Sum Sq. Dev. | 0.694209 | 0.453921 | 0.649217 |
| Observations | 16 | 16 | 16 |

Sources: Researcher's study, 2024

Table 1; the maximum values for the variables (VAT, TR, and GDP) for Nigeria and the UK are (13.59607, 8.518732, 18.30464), (11.65629, 13.31777, 1.119395) respectively. The minimum values of the variables (VAT, TR, and GDP) for Nigeria and the UK are (10.95954, 6.072814, 15.71964), (10.97863, 12.77973, 0.478096) respectively. The standard deviation values for the variables (VAT, TR, and GDP) for Nigeria and the UK are (0.860783, 0.859092, 0.950624), (0.215129, 0.173958, 0.208041) respectively. The skewness of the variables (VAT, TR, and GDP) for Nigeria and the UK are (-0.380466, -0.497234, 0.053560), (0.277051, -0.365718, -0.874677) respectively.

The skewness of the variable NIG (VAT, TR) and UK (TR, GDP) shows negative, this indicates that the variable under study is negatively skewed showing that the left tails are extreme, and the variables of Nigerian GDP and UK VAT shows zero which indicates the data becomes more symmetrical, its skewness value approaches zero, the other data series for these variables indicates a symmetric or normal distribution as the series relatively maintains normality by being negatively skewed.

Also concerning kurtosis, all the variables for both countries under study are platykurtic, indicating thin tails than normal distribution; these variables are lightly tailed (i.e. lighter than normal) because the data series are below the threshold of 3. The probability of Jarque-Bera statistics showed that all the series of variables when combined are normally distributed.

**Empirical Analysis**

**Test of Hypothesis 1**

**Table 2: Value Added Tax and Economic Growth**

| Variables | Nigeria | | | | United Kingdom | | | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | St. Error | T-stat | Prob. | Coefficient | St. Error | T-stat | Prob. |
| C | 3.572289 | 0.940897 | 3.796686 | 0.0020 | -7.726211 | 1.800160 | -4.291957 | 0.0007 |
| LNVAT | 1.068536 | 0.074578 | 14.32773 | 0.0000 | 0.761474 | 0.159317 | 4.779615 | 0.0003 |
| $R^2$ | 0.936156 | | | | 0.620027 | | | |
| Adj $R^2$ | 0.931595 | | | | 0.592886 | | | |
| SE of Reg | 0.248629 | | | | 0.132742 | | | |
| f-stat | 205.28738 | | | | 22.84472 | | | |
| Prob(f-stat) | 0.000000 | | | | 0.C000294 | | | |
| observation | 16 | | | | 16 | | | |
| | | | | | | | | |

Dependent Variables: LNGDP significance at 5%

Sources: Researcher's study, 2024

**Nigeria**

$LNGDP_t = \beta_0 + \beta_{1N}LNVAT_t + e_t$

$LNGDP_t = 3.572289 + 1.068536VAT_t$

**UK**

$LNGDP_t = \beta_0 + \beta_{1U}LNVAT_t + e_t$

$LNGDP_t = -7.726211 + 0.761474LNVAT_t$

The time series regression of the above estimates showed that there exists a positive relationship between Value Added Tax (VAT) and Gross Domestic Product (GDP) for Nigeria. The same result was obtained for the United Kingdom. This is indicated by the sign and size of the coefficients which is $\beta_1$ =1.068536 for Nigeria and $\beta_1$ = 0.761474 for the United Kingdom. The result for Nigeria and the United Kingdom is consistent with a priori expectations.

**Interpretation of Result**

The overall R-squared shows that about 93.6156% and 62.0027% variations in the gross domestic product can be attributed to value-added tax and the remaining 6.3844% and

37.9973% variations in the gross domestic product in Nigeria and the United Kingdom were caused by other factors not included in this model.

The f-statistics p-value shows 0.0000% and 0.0294% for Nigeria and the United Kingdom respectively. This shows that the regression result is statistically significant in Nigeria and the United Kingdom because it is less than a 5% level of significance respectively.

The coefficients show that one unit change in value-added tax will cause a positive 1.068536 unit to manage in the gross domestic product of Nigeria while one unit change in value-added tax will cause a positive 0.761474 unit change in the gross domestic product of the United Kingdom.

Therefore, from the regression estimates, Value Added Tax (VAT) has a significant relationship with Gross Domestic Product (GDP) in Nigeria and the UK.

**Diagnostic Test**

**Normality Test**

One of the assumptions of the least square estimator is that the residuals are normally distributed obeying well-defined probability laws and can bear any value that could be negative, positive, or zero. So, this test will be used to know if the residuals are normally distributed.

$H_0$: The sample data are not significantly different than a normal population.

$H_1$: The sample data are significantly different than a normal population.

Prob. > 0.05 Accept the null hypothesis.

Prob. < 0.05 reject the null hypothesis.

From the result, the probability is 0.56 and this is greater than 0.05 at a 5% significant level therefore, the null hypothesis is accepted. This means that the residuals are normally distributed.

**White's Heteroscedasticity Test**

We shall employ White's heteroscedasticity test. This test is basically on the various error terms. The test helps to ascertain whether the variance of the error term is constant. The null hypothesis states that the variance of the error term is constant but the alternative hypothesis states that the variance of the error term is not constant. The probability chi-square if less than a 5% level of significance signifies the acceptance of the alternative and rejection of the null hypothesis while the probability chi-square greater than a 5% level of significance signifies the acceptance of the null hypothesis and rejection of the alternative hypothesis.

$H_0$: Homoscedasticity (the variance of the error term is constant)

$H_1$: Heteroscedasticity (the variance of the error term is not constant)

**Table 3: Result of Heteroscedasticity**

| | **Nigeria** | **UK** | | **NIG** | **UK** |
|---|---|---|---|---|---|
| F-statistics | 0.321314 | 1.008920 | Prob. F(2,13) | 0.7308 | 0.3915 |
| Obs*R-squared | 0.753672 | 2.149806 | Prob. Chi-square(2) | 0.6860 | 0.3413 |
| Caled Explained SS | 0.633631 | 0.877284 | Prob. Chi-square(2) | 0.7285 | 0.6449 |

Sources: Researcher's study, 2024

The results above showed the prob. (chi-square) having a value of 0.6860 for Nigeria and 0.3413 for the United Kingdom which is greater than the 5% level of significance therefore we accept the null hypothesis which states that the variance of the error term is constant i.e. there is no evidence of heteroscedasticity.

**Table 4: Value Added Tax and Revenue on Gross Domestic Product**

| **Variables** | **Nigeria** | | | | **United Kingdom** | | | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | St error | T-stat | Prob. | Coefficient | St error | T-stat | Prob. |
| C | 4.781053 | 1.581087 | 3.023903 | 0.0098 | -15.04863 | 2.148644 | -7.003782 | 0.0000 |
| LNVAT | 0.814182 | 0.277182 | 2.937353 | 0.0115 | -0.480975 | 0.318504 | -1.510107 | 0.1549 |
| LNTAX | 0.264681 | 0.277728 | 0.953021 | 0.3580 | 1.634154 | 0.393885 | 4.148804 | 0.0011 |

| | | |
|---|---|---|
| $R^2$ | 0.940325 | 0.836504 |
| Adj $R^2$ | 0.931144 | 0.811350 |
| SE of Regression | 0.249447 | 0.090360 |
| F-stat | 102.4233 | 33.25621 |
| Prob. (f-stat) | 0.000000 | 0.000008 |
| Observation | 16 | 16 |

Dependent Variables; GDP Significance at 5%

**Nigeria**

$GDP_t = \beta_0 + \beta_2 VAT_t + \beta_2 TR_t + et$

$GDP_t = 4.781053 + 0.814182 VAT_t + 0.264681 TR_t$

**United Kingdom**

$GDP_t = \beta_0 + \beta_2 VAT_t + \beta_2 TR_t + et$

$GDP_t = -15.04863 - 0.480975 VAT_t + 1.634154 TRt$

The time series regression of the above estimates showed that there exists a positive relationship between Value Added Tax (VAT) and tax revenue (TR) on Gross Domestic Product (GDP) for Nigeria. It showed that there was a negative and insignificant relationship between Value Added Tax (VAT) and, but tax revenue (TR) has a positive significance on the gross domestic product of the United Kingdom. This is indicated by the sign and size of the coefficients that are = $\beta_{2N} = 0.814182$ $\beta_{2N} = 0.264681$ for Nigeria $\beta_1 = -0480975$ and $\beta_2 = 1.634154$ for the United Kingdom. The result for Nigeria for value-added tax and tax revenue is consistent with a priori expectations. The result for the United Kingdom is not consistent with a priori expectation for value-added tax and consistent with the tax revenue.

**Interpretation of Result**

The overall Adjusted R-squared shows that about 93.1144% and 81.1350% variations in gross domestic product can be attributed to Value added tax and tax revenue while the remaining 6.8856% and 18.865% variations in gross domestic product in Nigeria and the United Kingdom were caused by other factors not included in this model.

The f-statistics p-value shows 0.0000% and 0.0008% for Nigeria and the United Kingdom respectively. This shows that the regression result is not statistically significant and significant in Nigeria and the United Kingdom because it is greater than and less than 5% level of significance respectively.

The coefficients show that one unit change in value-added tax and tax revenue will cause a positive 0.814182 and 0.264681 unit change in the gross domestic product of Nigeria while one unit change in value-added tax and tax revenue will cause a negative and positive -0.480975 and 1.634154 unit change in the gross domestic product in the United Kingdom.

Therefore, from the regression estimates, Value Added Tax (VAT) and tax revenue (TR) had a significant impact on Gross Domestic Product (GDP) in Nigeria and the United Kingdom. Hence, we reject the null hypothesis and accept the alternative hypothesis which states that value-added tax and tax revenue have a significant impact on the gross domestic product in Nigeria and the United Kingdom.

**Diagnostic Test**

**Normality Test**

One of the assumptions of the least square estimator is that the residuals are normally distributed obeying well-defined probability laws and can bear any value that could be negative, positive, or zero. So, this test will be used to know if the residuals are normally distributed.

$H_o$: The sample data are not significantly different than a normal population.

$H_1$: The sample data are significantly different than a normal population.

Pro. > 0.05 accept the null hypothesis.

Pro. > 0.05 rejects the null hypothesis.

**White's Heteroscedasticity Test**

We shall employ White's heteroscedasticity test. This test is basically on the variance of the term. The test helps to ascertain whether the variance of the error term is constant. The null hypothesis states that the variance of the error term is constant but the alternative hypothesis states that the variance of the error term is not constant. The prob. Chi-square if less than 5% of significance signifies the acceptance of the alternative and rejection of the null hypothesis while the prob. The Chi-square greater than a 5% level of significance signifies the acceptance of the null hypothesis and rejection of the alternative hypothesis.

$H_0$: Homoscedasticity (the variance of the error term is constant)

$H_1$: Heteroscedasticity (the variance of the error term is not constant)

| | **Nigeria** | **UK** | | **Nigeria** | **UK** |
|---|---|---|---|---|---|
| F-statistic | 0.792623 | 1.051625 | Prob. F(2,13) | 0.5786 | 0.4055 |
| Obs*R-squared | 4.541238 | 3.330811 | Prob. Chi-squared(2) | 0.4744 | 0.3434 |
| Scaled Explained SS | 2.613588 | 1.117002 | Prob. Chi-Squared(2) | 0.7593 | 0.7730 |

The results above showed the prob. (chi-square) having a value of 0.4744 for Nigeria and 0.3434 for the United Kingdom, which is greater than the 5% level of significance therefore we accept the null hypothesis which states that the variance of the error term is constant i.e. there is no evidence of heteroscedasticity.

**Discussion of Findings:**

Hypothesis one ($H_1$), has the objective of examining the impact of VAT on GDP for Nigeria and the UK. In Table 2; findings or results for both countries show that as VAT increases, GDP rises and as VAT falls, GDP also falls therefore VAT has a significant positive impact on Gross Domestic Product (GDP). The R-square which is the coefficient of determination showed the magnitude of variations caused by Gross Domestic Product (GDP) and the explanatory variable Value Added Tax (VAT) to be 94%. Thus, the result indicates that Value Added Tax had a significant positive effect on Gross Domestic Product (GDP).

The findings of Omondi (2019), "Impact of Tax Reforms and Economic Growth of Kenya: A Time Series Analysis" whereby the dependent variables were Petroleum Profit Tax, Companies Income Tax, Value Added Tax, Education tax, Customs and Excise duties, Personal Income Tax and they all had a negative and significant effect on taxation with the use of unit root test of the period 1994-2009.

Adegbite and Shittu (2017), "An investigation on the impact of Value Added Tax (VAT) on Nigerian economic growth" A positive and insignificant correlation exists when VAT Revenue and real GDP as there are some problems inhibiting its potency.

Hypothesis two ($H_2$), has the objective of examining the impact of VAT and Tax revenue GDP of Nigeria and the UK. In Table 4; findings or results for Nigeria countries show that

revenue affects total tax revenue positively which has an impact on the GDP but for the UK, revenue negatively affects total tax revenue, but the total tax revenue has a positive impact on GDP. The adjusted R-square which is the coefficient of determination showed the magnitude of variation caused on GDP by the explanatory variable VAT and Tax revenue to be 93%. Thus, It indicates that Value Added Tax and Tax revenue had a significant positive effect on domestic product.

## Conclusion

The central focus of the study was to do a comparative analysis of the impact of VAT on the economic growth of the Nigerian and United Kingdom economy. The results or outcome of the statistics and data analysis of the variables showed a significant relationship or impact on the Gross Domestic Product (GDP) of both countries. The findings of this study showed that there is a significant relationship between Gross Domestic Product (GDP) and Value Added Tax (VAT) in Nigeria. However, for the United Kingdom, Tax Revenue (TR) proved to be statistically significant with changes in GDP hence, we conclude that there is a significant relationship between VAT and TR. The finding of this study is in line with the study of Basila (2010) and Okoyeuzu (2013) which opines that VAT revenue has not impacted Nigeria's economy.

## Recommendations

Following the empirical findings of this research, the following recommendations are made for effective policy formulations:

1. That VAT should be sustained; hence, all identified administrative loopholes should be covered for VAT revenue to continue to contribute more significantly to the economic growth of the country. There should also be accountability and transparency in the management of all sources of government revenue.
2. Though VAT has a positive impact on the economy, effort should be made to exempt infant industries from VAT to encourage them to grow.
3. The revenue generated from VAT should be used for the infrastructural development of the country to increase the economic growth of the country.
4. The government should intensify efforts in organizing seminars and workshops to educate viable organizations and individuals on the need for prompt payment of VAT.
5. Adequate provisions should made by the government for instant retrieval of VAT proceeds from both companies and government agents involved in VAT collection. There should be a provision for enforcing penalties and additional assessment on erring viable persons.
6. The Value Added Tax (VAT) clearance certificate should be introduced and renewed annually.

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