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Original Research Article

Value-added Tax, Revenue Generation and Economic Growth in Nigeria

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Abstract

This study investigated the effect of Value-added Tax (VAT) on revenue generation and economic growth in Nigeria. It specifically examined the effect of VAT on Gross Domestic Product (GDP) and the total revenue generated in Nigeria for the period (1994-2018) as well as the trend of VAT in the period under review. Time-series data were employed in the study to run the regression for VAT on total tax revenue and GDP. The vector error correction and autoregression models were used in the regression. VAT, total tax revenue and GDP were included in the data at the end of each year for the period (1994-2018). In other to accommodate the long-run properties of the variables, tests for stationarity and co-integration were carried out. The study finds that VAT has a significant effect on total tax revenue with a two-year lag and it increasingly explains changes in total tax revenue with time. The study also shows that VAT has a significant and negative effect on GDP with a one-year lag. The trend in VAT has a positive coefficient, indicating that VAT increases with time. In view of the findings, the study, therefore, recommends that government should critically evaluate the process of VAT collection, eliminate bureaucratic procedures and improve transparency so that economic units can synchronise their efforts with those of tax authorities.

Keywords: *Economic growth, GDP, Nigeria, Revenue generation, VAT.*

JEL Classification Code: H25

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1 INTRODUCTION

There are several modifications to tax system all over the globe with the aim of increasing the revenue base of the tax authority (government). The Nigerian tax administration has gone through various reforms with the objective of an effective tax system to better the country's revenue generation. One of the tax reforms in Nigeria is the Value-added Tax (VAT) Act of 2004. The concept of Value-added Tax (VAT) was first proposed by a German industrialist in 1918 (Adekunle, 2010). The economic history of both developed as well as developing countries shows that taxation is a weapon that is important in the hands of the tax authority, not only for revenue generation, but also for the achievement of fiscal goals such as influencing the direction of investment and taming the consumption of certain goods and services (Naiyeju, 2014).

Over the past century, the VAT has been adopted by many developing and transition countries (Ebrill, Keen, Bodin & Summer, 2002). International Monetary Fund (IMF, 2002), study reports came to the conclusion that the VAT can be a good way of raising revenue or resources. It is a modernised system of tax, but this entails that the tax must be well designed for implementation.

The IMF (2001), studies report finds that VAT is broadly desirable and successful in most countries. Ebrill et al. (2002) discover that VAT is efficient cost of raising revenue and hence higher revenue. They also opine that value-added tax is related to a higher ratio of Government tax revenue and boost revenue efficiently.

Studies have shown that in countries that are still developing, the growing of VAT is very low even though there is no growing evidence that VAT is not a regressive tax. It was discovered that VAT failed in Ghana in 1995, when it was first introduced and almost failed in Uganda in 1996. The reason for almost failure of VAT in these countries was because of lack of good administration; the VAT was based and concentrated among relatively few firms; particularly smaller firms are exempted from VAT (IMF, 2002).

However, VAT has become the primary source of revenue to a lot of countries that are still developing. For instance, in Sub-Saharan Africa, value-added tax has been introduced in Kenya, Cote d'Ivoire, Mauritius, Guinea, lately, Nigeria, Senegal, Madagascar, Togo and Niger. Evidence shows that in these various countries, value-added tax has become a vital contributor to the entire Government tax revenues. VAT was introduced by the Federal Government of Nigeria in January 1994. The belief was that it was introduced as a means of income and to avoid dependence/taking loans from different international agencies like IMF, World Bank, Paris Clubs (CITN, 2010). The tax was intended to be a super tax to eliminate completely so many other taxes related to goods and services like sale tax.

The value-added tax has somehow effectively replaced the former sale tax, but VAT base and administration has not been

expanded to cover some untapped areas. With the introduction of VAT the cost of goods and services like beer, increased by 5% (Ajakaiye, 2009) even the government has tried to increase VAT to 10%, but such move was resisted by the citizen in 2007.

A number of studies have been conducted in the past on the subject, but the review of prior empirical literature indicates inconsistency in the research findings of previous researchers which shows the existence of a research gap. Abiola and Asiweh (2012) argued in their study that VAT does not significant impact on economic development while researchers like Chigbu (2014) argued that VAT has a positive and significant influence on economic growth. Based on this, this study is therefore designed to investigate the effect of VAT on revenue generation and economic growth in Nigeria as an attempt to fill that gap. The broad objective of this study is to examine the effect of value-added tax on revenue generation and economic growth in Nigeria, the specific objectives are to examine the impact of VAT on revenue generation in Nigeria. to determine the impact of VAT on economic growth in Nigeria and to ascertain the trend of growth of VAT revenue in Nigeria.

To achieve the objectives of this study, the following hypotheses were formulated in their null form and tested.

$H0_1$ there is no significant effect of Value-added Tax (VAT) on Total Revenue (TR) in Nigeria.

$H0_2$ Value-added Tax (VAT) has no significant effect on Gross domestic product (GDP) in Nigeria.

$H0_3$ there is a negative trend in Value-added Tax (VAT) over the period of study.

2 LITERATURE REVIEW

This section review literature on the concept of value-added tax and revenue generation, value-added tax and economic growth, empirical review of related study, theories, data presentation and analysis and conclusion.

2.1 Concept of Value-added Tax and Revenue Generation

Value-added tax is a Consumption tax that has been embraced by so many countries all over the world. Because it is a consumption tax, it is relatively difficult to evade and easy to administer (Okwoli, 1998). Value-added tax in its simplest form is a tax chargeable on the supply of goods and services and only indirectly on the people who consume such goods and services. Baker and Elliott (1997) explain that VAT is an indirect tax and is imposed on the value-added in production during the different stages of production. Since the introduction of VAT, there have been a lot of arguments for and against it. For those on the supporting side, VAT has been introduced in most countries of the world to replace sale tax and as a source of revenue to the government (Delfin, 2016). VAT is described as a money-spinnerr, it has assisted so many developed countries to increase the percentage of indirect tax contribution to gross tax receipt (Naiyeju, 1996). Keen and Smith (2007) explain that VAT is a money-machine. VAT is one of the major generators of revenue for the government (Zubairu, 2010). It was recognized at the international tax dialogue held in Rome, on Value-added Tax (VAT) that more revenue is rraisedby countries with VAT than those without. It is also the most effective way of raising tax revenue for the government (Cnossen, 1990). Revenue is more protected under VAT by imposing tax levy on every stage of production (Smith, 2007). Okowoli (1998) and Delfin (2016), both agree that the input-output mechanism in VAT and the method of

VAT collection make it self-policing and difficult to evade. Despite some shortcomings of VAT, the government sees it as dependable broad-based (Delfin, 2016). Liam et al. (2002) find that in value-added tax there is growing evidence that the value-added tax is especially not a regressive tax. For instance, studies in Madagascar, Cote d Voire, Guinea, as well as Tanzania revealed that those that are poor happen to pay less than their share of total value-added tax consumption as their share of total value-added tax revenues. Notably, the value-added tax prove more progressive that the trade taxes it often replaced. Fourie and Owen (1993) stress the need for the progressiveness of the complete tax system to be taken into account and not the regressiveness of VAT. VAT is therefore like a money-spinning machine for the government in raising revenue high than any other indirect tax.

2.2 Value-added Tax and Economic Growth

Economic growth has been one of the most concerns of both the developed and the developing nations globally. The Organisation for Co-operation and Development (OECD) see economic growth has a phenomenon of an active market productivity resulting in increase in Gross Domestic Product (GDP). Economic growth, according to Al-Faki (2006), is the increase in the value of goods and services produced by an economy. Several studies have examined the nexus between value-added tax and economic growth in both developed and developing countries. Owolabi and Okwu (2011) conducted a study on the empirical evaluation of the contribution of value-added tax to the development of Lagos State Economy and find that VAT a has positive effect on the nation's economic growth and development like provision of infrastructural services, health services and education. In the same vein, a study carried out by Unegbu and Iretin (2011) found that VAT has a significant impact on economic development. The administration of VAT in Nigeria, according to Olaoye (2009) is channelled toward the objective of enhancing government revenue generation in order to provide for infrastructural development towards stimulating the growth of the economy. Saeed, Ahmad and Zaman (2012) also explored the revenue effect of the value-added tax (VAT), in the SAARC region. Panel data of SAARC countries from 1995 to 2010 on various macroeconomic factors were obtained to determine the effect of VAT on revenue ratio. The result shows a prosperous set of determinants of VAT adoption as it proves to be a vital instrument to collect tax and enhance revenue ratio. The result reveals that most of the SAARC countries that adopted value-added tax have gained a more effective tax instrument to upgrade their GDP to revenue ratio.

2.3 The Theory of Optimal Taxation

This study was anchored on the theory of optimal taxation. The theory of optimal taxation was believed to have begun with moral philosophers such as John Stuart Mill in the 19th century. The theory posited that a tax system should be chosen to maximize a social welfare function subject to a set of constraints. The notion behind this theory is that a good tax system should be able to promote a utilitarian society in meeting the greatest sum of happiness for the greater number of citizens as a criterion for taxation (Mankiw, Weinzierl & Yagan, 2009). John Stuart Mill stated that the sacrifices required by taxation should put equal pressure as possible upon all taxpayers. This rule suggested that the tax burden should be distributed in such a way that the rich pay higher sums in taxes than the poor.

The theory of optimal taxation was extended a step further by Ramsey in 1927 when he introduced a rule for optimal commodity taxes. He pointed out that instead of uniform taxes on all goods, taxes on commodities should be designed in such a way that introducing them reduces the production of each taxed commodity in the same proportion. He further noted that a social planner who wants to raise a certain amount of tax revenue through taxes on commodities should impose such taxes in an inverse proportion to the representative consumer's elasticity of demand for the good so that commodities which experience inelastic demand are taxed more heavily. Moreso, with the large population of the business populace hidden under the informal sector to evade direct form of taxation, indirect taxes would be a good weapon for galvanizing the needed revenue for economic growth and developmental activities in the country. Owolabi and Adegbite (2013) considered VAT as a tool for reducing the amount of unregistered economy in a country. The assertion is also in line with the submission of Onaolapo, et al. (2013) when they opined that if more goods and services are taxed, the government will be able to generate enough revenue to meet up with the challenges of her expenditures in terms of the provision of social amenities and the running costs of the Government. Thus, the Nigerian government could extensively explore both direct and indirect form of taxation to generate the needed revenue for economic activities in the country. Therefore, increasing tax revenue through purposive taxations will lead to economic growth and development in the country.

2.4 REVIEW OF EMPIRICAL LITERATURE

Bonga (2017) examined the relationship between VAT and total tax revenues in Zimbabwe. Time series analysis was used in the study for the period 2011-2017. The regression result shows that both the VAT on local sales and VAT significantly impacted total revenue. Value-added Tax (VAT) on imports is negatively impacted while that on local sales is positively impacted. The introduction of Automated Teller Machines (ATM) was acknowledged by the revenue authority in the study.

Ogwuche, Abdullahi and Oyedokun (20J9) examined the impact of company income tax on economic growth in Nigeria for eleven years from 2007 to 2017. The study employed multiple regression analysis techniques and descriptive statistics to analyze the data that were obtained on gross domestic product and company income tax. The findings indicated that company income tax has a significant influence on economic growth in Nigeria. They, therefore, recommended among others that the policies on company income tax should be reviewed to block the loopholes that encourage tax avoidance which most companies capitalize on to avoid tax payments.

Ilaboya and Mgbame (2012) employ a combination of cointegration and error correction models to investigate the effect of indirect taxes on economic growth in Nigeria. The short-run dynamics of the model were accommodated using the Engel-Granger two-step procedure and the discrepancies between the short and long-run impact of the explanatory variable were considered using an Autoregressive Distributed Lag (ARDL). The primary motivation for the study was the drift from direct taxes to indirect taxes from a host of countries. Using data obtained from the CBN from 1980 to 2011, the study shows that there

was a negative but insignificant relationship between VAT, CED and economic growth.

Okafor (2012) investigated the impact of income tax revenue on economic growth in Nigeria. Using data obtained from the CBN on Petroleum Profit Tax (PPT), Company Income Tax (CIT), Customs and Excise Duty (CED), Value-added Tax (VAT) and GDP (economic growth) from 1981 to 2007, the study employed ordinary least square estimation technique. The study shows a positive relationship between company income tax and economic growth.

Yusuf (2018) examined the causal relationship between value-added tax and economic growth in Nigeria from 1980 to 2016 using a simple linear regression technique to analyze the data that were obtained for the period. The study utilized data from the gross domestic product, value-added tax, domestic investment, degree of openness, corruption index, interest rate and real exchange rate as proxy variables to determine the relationship between value-added tax and economic growth in the country. The findings from the study revealed that value-added tax, domestic investment and degree of openness have significant positive relationships with gross domestic product in Nigeria while the corruption index has a negative significant relationship with gross domestic product in the country. The study, therefore, recommends that tax administrative loopholes should be plugged for tax revenue to contribute to the economic growth of the country. The study also recommends among others that the services of tax professionals should be employed by the government to reduce tax malpractice by taxpayers and other forms of tax evasion.

Okoror and Onatuyeh (2018) carried out a study to investigate the relationship between value-added tax and economic growth in Nigeria from 1994 to 2017 by utilizing gross domestic growth rate, value-added tax, labour force participation, the share of investment in GDP, openness and population growth rate for the study. The study employed the Ordinary Least Square regression technique to estimate the data that were obtained for the period. The study revealed that a negative relationship exists between value-added tax and economic growth in Nigeria. The study also revealed that labour force participation, the share of investment in GDP, and Population growth rate are all positively related to the gross domestic product in the country. And the relationship between openness and economic growth in Nigeria is negative. Okoror and Onatuyeh (2018) opined that the negative relationship shows that there are leakages arising from the poor administration of value-added tax in Nigeria. To overcome the leakages, they recommended that the FIRS should embark on sensitization and human resource capacity development to meet the growing challenges of effective tax administration in the country.

Chime, Okwara, Agu and James (2009) investigated the causality between value-added tax and the Nigeria Economy. The study covered 21 years period from 1994 to 2015. Data on value-added tax and gross domestic product were gotten from the CBN statistical bulletin as well as the Federal Inland Revenue services. The error correction model (ECM) was used for the analysis of the result. The result shows that value-added tax positively and significantly influences the gross domestic product while there an was indication of unidirectional causality running from value-added tax to gross domestic product.

Afolayan and Okoli (2015) stated that the introduction of VAT in Nigeria was based on the fact that taxation as an instrument of fiscal policy will serve as a vital tool in generating the needed revenue to finance government activities, redistribute income, and stabilize the economy as well as stimulating economic growth and development. Owolabi and Adeghite (2013), stated that VAT replaced sales tax in 1994 because it is applied on a broader range of goods and services, emphasizes employment more than consumption, provides neutral treatment for import and export at the same rate and is viewed as a fiscal tool for control of inflation in the country.

2.5 METHODOLOGY

For the objective of this study to be achieved, time-series data was employed in the study to run the regression for Value-added Tax (VAT) on total tax revenue and Gross Domestic Product (GD P). The Vector Error Correction Model (VECM) and Vector Auto Regression Model (VARM) were used in the regression. VAT, total tax revenue and GDP were included in the data at the end of each year for the period (1994-2018). The study covers the revenue generation of the government via the FIRS with specific reference to the impact of VAT on revenue generation by FIRS visa-vi the total revenue generated by the federal government. The sample period is for twenty (20) years which covers the period 1997 to 2017. The choice of the federal government revenue was arrived at because mostly the revenue from the federal government is distributed to the state and the local governments as subvention and grants.

2.5.1 Model Specification

Simple linear regression was used to investigate the impact of Value-added Tax (VAT) on revenue generation in Nigeria. The Estimated regression relationship model as y = a + bx. Where, y = Total Revenue, a = Constant Revenue without VAT, b = VAT Revenue, x = Change in total Revenue, multiple regression was employed to investigate the impact of VAT, PPT and CIT on the total revenue generated by the federal government. The assumption is that the dependent variable is a linear function of the explanatory variable.

$Y = f(X_0, X_1, X2)$

The estimated multiple regression relationship is

$Y = a + b_oX_0 + b_1X_1 + b_2 X_2$

where y = total revenue,

a = constant revenue without VAT, PPT and CIT,

b_0 = VAT revenue, X_0 change in total revenue,

b_1 = PPT revenue, X_1 = change in total revenue,

b_2 = CIT revenue, X_2 = change in total revenue.

Operationalization of variables

S/N	Variables	Proxy	Definition	Sources	Apriori Sign
1	Economic Growth	RGDP	The sum total of goods and services produced in a given year using a base year price.	Rudolf (2014); and Inimino et al (2018).	Nil
3	Value-added Tax Revenue	VAT	Tax revenue is realized from the imposition of VAT on goods and services.	Okoror & Onatuyeh (2018); and Yusuf et al (2018)	Positive

4	Company Income Tax Revenue	CIT	Revenue realized from the imposition of CIT on companies.	Adegbie & Fakile (2011); and Ogwuche et al (2019).	Positive
5	Petroleum Profit Tax Revenue	PPT	Revenue realized from the imposition of PPT on oil companies.	Anyaduba & Aronmwan (2015); and Saheed et al, (2014).	Positive
6	Tertiary Education Tax Revenue	TET	Revenue realized from the imposition of TET on companies' assessable profit.	Amos et. al (2017); Oraka, et al (2017)	Positive
7	Custom and Excise Duties Revenue	CED	Revenue is realized from the collection of CED on imports and exports.	Ibadin & Oladipupo (2015); and Asaolu et al., (2018).	Positive

Sources: Researcher's Compilation fron2 Various Sources (2022)

4. PRESENTATION OF RESULTS

Table 4.1 Descriptive Statistics

	Mean	Median	Max	Min	Std. Dev.	J-B	Prob
VAT	371,907	221,600	998,798	7,261	340,472	2.75	0.25
PPT	10,986,146	1,500,600	39,116,980	42,803	15,180,600	4.39	0.11
CED	261,037	232,800	550,161	18,295	170,961	1.91	0.38
PIT	497,037	320,010	1,328,206	29,453	444,557	2.84	0.24
CIT	418,474	244,900	1,186,449	12,275	412,541	2.94	0.23
TTR	12,534,602	2,677,900	43,180,594	110,087	16,445,509	4.33	0.11
GDP	34,526,349	18,564,595	103,000,000	899,863	36,891,679	3.63	0.16

From table 4.1 we observe the descriptive statistics of the variables in the study. VAT has a mean of 371.9 billion with a median value of 221.6 billion naira and a standard deviation of 340.5 billion, which reveals a reasonable dispersion from the mean such that observations are not concentrated around it. PPT has a mean value of 10,986 billion with a standard deviation of 15,180 billion. From the mean and median values, we see a concentration around the mean value. CED mean and standard value stands at 261 billion and 170 billion respectively, with the median almost equal to the mean at 232.8, indicating a reasonable dispersion from the mean CED. The mean and median value for PIT is 497 billion and 320 billion respectively, with a standard deviation of 444 billion, which points to the normal distribution of the variable. CIT has a mean of 418.5 billion and a standard deviation of 412.5, with the median value at 245billion, revealing that observations are not concentrated around the mean. TTR has a mean value of 12,535 billion and a median value of a relatively low 2,677.9 billion but the standard deviation is 16,446billion pointing to well-distributed observations of the variable. The mean and standard deviation of GDP are relatively close at 34,526 billion and 36,892 billion respectively, but the median is just about half of the mean at 18,565billion. The Jarque

Bera (J-B) statistics for the variables in the study strongly indicate accepting the hypothesis of normality of the observations.

Table 4.2 Correlation Matrix

	VAT	PPT	CED	PIT	CIT	TTR	GDP
VAT	1						
PPT	0.910	1					
	0.000						
CED	0.970	0.904	1				
	0.000	0.000					
PIT	0.989	0.930	0.975	1			
	0.000	0.000	0.000				
CIT	0.989	0.918	0.963	0.997	1		
	0.000	0.000	0.000	0.000			
TTR	0.923	0.999	0.915	0.941	0.930	1	
	0.000	0.000	0.000	0.000	0.000		
GDP	0.973	0.970	0.951	0.979	0.974	0.976	1
	0.000	0.000	0.000	0.000	0.000	0.000	

Source: As compiled from E-views9 Output p-values are parenthesis ( )

From table 4.2 we observe that the variables are highly correlated such that the study had to address the issue of multicollinearity. The correlation coefficients are quite high and are significant, even at a stringent 1 per cent**.**

4. Regression Diagnostic Tests

The estimation process in this study is founded on some underlying assumptions to avoid spurious regression and meaningless results. Three underlying diagnostic tests were conducted to ascertain if the basic assumptions underlying the regression modelling were not violated.

4.4.1 Variance Inflation Factor (VIF)

Table 4.3

Variance Inflation Factors			
	Coefficient	**Uncentered**	**Centered**
Variable	**Variance**	**VIF**	**VIF**
C	1.90E+12	2.66	NA
VAT	43.12671	15.06	6.72

TTR	0.018485	10.78	6.72

From the results in Table 4.3 the variance inflation factor shows that VIF for VAT and TTR are 15.08 and 10.78 respectively which exceeds the benchmark of 10 and thus indicates the problem multicollinearity that was corrected for in this study.

4.1 Test for Stationarity

The unit root test was used to determine the stationarity of the data and the result of the test is shown in table 4.4. The result in table 4.4 shows that the variables are integrated of the order one at a 5 per cent significance level. They are all integrated of the same order. They are found to be stationary at the first difference. The null hypothesis of unit root is rejected as the probability of t-statistic is significant and the absolute value of ADF and PP test statistic for the first difference is greater than 5 per cent level of significance.

Table 4.4

	LEVEL		**FIRST DIFFERENCE**		
VAR	**ADF Test Statistic**	**PP Test Statistic**	**ADF Test Statistic**	**PP Test Statistic**	ADF/PP CV
VAT	0.743717	1.249464	-3.455036	-5.30787	0.59522883
GDP	1.071143	0.974357	-3.697945	-3.83426	1.0993332
TTR	0.794698	0.996435	-4.99552	-9.27056	0.79754123

Table 4.4 shows the result of the Augmented Dickey-Fuller and the Phillip Peron test for stationarity. The results show that at levels the ADF test statistic and Phillip Peron test statistic have their absolute value less than the critical value at 5 per cent, indicating non-stationarity of the data at levels. However, at first difference, the ADF and PP test statistic have their absolute value greater than the critical value at 5 per cent which shows that the variables are stationary at first difference.

4.4.3 Test for Co-integration

Table 4.5

Sample (adjusted): 1996 2018
Included observations: 23 after adjustments
Trend assumption: Linear deterministic trend
Series: GDP VAT TTR
Lags interval (in first differences):1to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**

None *	0.796	54.012	29.797	0.000
At most 1 *	0.449	17.498	15.495	0.025
At most 2	0.152	3.793	3.841	0.052

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 4.5 shows the result of the Johansen test for co-integration. The result indicates the presence of 2 co-integrating equations. In the light of the foregoing result, we conduct the Error Correction Model to ascertain the short run and the long-run effect of the explanatory variable on the dependent variable.

4.2 Vector Auto Regression (VAR) Model

Table 4.6

Sample (adjusted): 1996 2018
Included observations: 20 after adjustments
Trend assumption: Linear deterministic trend
Series: TTR VAT
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.523145	23.57497	15.49471	0.0025
At most 1 *	0.354806	8.764094	3.841466	0.0031

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 4.6 shows that from the result of the Trace statistic compared to the critical value at 5 per cent, the variables of VAT and TTR are not co-integrated. The implication of this is that there is no long-run equilibrium to which the variables converge. In the light of this result, we conduct a Vector Auto Regression instead of Vector Error Correction Model.

4.3 Error Correction Model (ECM)

Table 4.5 Parsimonious ECM result

Dependent Variable: D(GDP) **Method: Least Squares**				
	Coeff	Std. Error	t-Stat	Prob.
ECM(-1)	-0.917795	0.207348	-4.42635	0.0006
D(GDP(-1))	-0.02353	0.219187	-0.10735	0.916
D(GDP(-2))	-0.071686	0.253321	-0.28298	0.7813
D(VAT(-1))	-90.3622	38.41349	-2.35236	0.0338
D(VAT(-2))	-48.60712	25.51615	-1.90496	0.0775
D(TTR(-1))	8376.222	3467.942	2.415329	0.03
D(TTR(-2))	3530.839	3293.476	1.07207	0.3018
C	7536760	2163068	3.484291	0.0036
R-squared	0.643395	Mean dep var		4561191
Adj R-squared	0.465092	S.D. dep var		7392921
Log-likelihood	-367.3153	Han-Quinn criter.		34.21303
F-statistic	3.60844	Durbin-Watson		2.229538
Prob(F-stat)	0.0196			

Table 4.5 shows the result of the parsimonious Error Correction Model. The table revealed that the model has a good fit since the coefficient of determination is 64 per cent, with the absence of autocorrelation as indicated by the Durbin-Watson statistic of 2.22. The overall model passes the test of significance at a 5 per cent level, as the F-statistic of 3.61 has an associated p-value of 0.02. The Error Correction Model (ECM) has a negative coefficient and is significant at a 1 per cent level. This means that 64 per cent of the deviation from the long-run equilibrium relationship between Growth Domestic Product (GDP) and its determinants are corrected within two years. A cursory examination of the t-statistics of the coefficients of the explanatory variables reveals that both the one-year lag of VAT and the one-year lag of TTR are significant in explaining changes in GDP at a 5 per cent level.

4.4 Vector Auto Regression (VAR) Model

Table 4.7 Vector Auto Regression Model Results

	TTR	VAT
TTR(-1)	0.381752	-0.000151
	-0.23516	-0.00184
	[1.62338]	[-0.08225]
TTR(-2)	-0.386875	0.00065
	-0.23193	-0.00182
	[-1.66809]	[0.35802]
VAT(-1)	-40.38753	2.538226
	-46.1388	-0.36109
	[-0.87535]	[7.02936]
VAT(-2)	91.35085	-1.703361
	-56.1268	-0.43926
	[1.62758]	[-3.87783]
C	-2147615	8274.589
	-1898170	-14855.4
	[-1.13141]	[0.55701]

From table 4.7 above we see the VAR model results in which the year lag of Total Tax Revenue (TTR_{t-1}) explains about 38 per cent of the changes in Total Tax Revenue, but a two-year lag is negative related to TTR. One lag of Value-added Tax (VAT_{-1}) is not significantly related to TTR, however, a two-year lag of Value-added Tax (VAT_{-2}) is significantly associated with TTR, explaining about 91 per cent of the changes in TTR. The implication of this is that it takes about two (2) years for VAT to have a significant impact on Total Tax Revenue (TTR). The effect of TTR lags on VAT is negligible and insignificant. The above results can be corroborated the Variance Decomposition Results shown in table 4.8

Table 4.8 Variance Decomposition

Variance Decomposition of TTR:				**Variance Decomposition of VAT:**			
Period	**S.E.**	**TTR**	**VAT**	**Period**	**S.E.**	**TTR**	**VAT**
1	5219780	100	0	1	40850.79	0.34	99.66
2	5792762	91.92	8.08	2	111405.5	0.27	99.73
3	6032841	89.32	10.68	3	223640.5	0.37	99.63
4	6435968	82.23	17.77	4	386222.3	0.51	99.49
5	8889007	43.15	56.85	5	606743.3	0.62	99.38
6	14555640	16.73	83.27	6	890358.5	0.70	99.30
7	23509004	6.89	93.11	7	1237264	0.77	99.23
8	36116445	3.29	96.71	8	1639313	0.84	99.16
9	52696283	1.93	98.07	9	2076240	0.91	99.09
10	73212195	1.40	98.60	10	2512163	0.98	99.02

From Table 4.8 we observe that in the short-run periods 1 and 2 VAT explains 0 and 8 per cent of the forecast error variances of TTR. The table also shows that over time and in the long run VAT explains an increasing proportion of the forecast error variance of TTR. However, unlike VAT, TTR does not explain a significant portion of the forecast error variances of VAT. The Variance Decomposition results clearly show that VAT over time increasingly explains changes in TTR. The implication of the foregoing result is that VAT has significant power in explaining changes in the TTR with the passage of time.

Table 4.9:

Dependent Variable: VAT				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-174893.3	44171.36	-3.959428	0.0008
TIME	40812.54	3363.15	12.13521	0

Table 4.9 shows the result of the regression of VAT against time, in order to determine how VAT changes with time. From the table above we find that the coefficient of time has a positive value of 40,812.5 with a t-statistic of 12.1 and a p-value of 0. This indicates that the trend in VAT is positive over time, and that VAT increases over time.

4.5 Test of Hypotheses

The three hypotheses formulated in the section One of this study were tested in this sub-section. The t-statistics and probability values of each variable were employed to confirm or disaffirm the hypotheses.

4.5.1 Hypothesis One

$H0_1$ This hypothesis states that there is no significant effect of Value-added Tax (VAT) on Total Revenue (TTR). From the result of the analysis of table 4.7 which documents the VAR model, we find that the lag of VAT (-1) is negatively associated with Total Revenue however it does not pass the test of significance at the 5 per cent level. However, in the two-year lag VAT(-2) the coefficient is positive and passes the test of significance at a 5 per cent level. From the Variance decomposition result in Table 4.8 we find that as time progresses VAT explain increasingly explains changes in Total Revenue. From that table, we find that in the long-run the proportion of changes in TTR explained by VAT rises to 98 per cent by the tenth year. In the light of the foregoing, we reject the null hypothesis of no significant impact of VAT on TTR and accept the alternative hypothesis of significance of effect of VAT on Total Revenue

4.5.2 Hypothesis Two

$H0_2$ This hypothesis states that Value-added Tax (VAT) has no significant impact on GDP. Table 4.7 presents the result of the Error Correction Model. The table shows that one year lag of VAT(-1) has a positive coefficient of -90.4 with a t-statistic of -2.35 and an associated p-value of 0.038. This result reveals that there is a negative effect of VAT on GDP, and it passes the test of significance at a 5 per cent level. The implication of the result is that VAT in a particular year does contribute negatively to GDP in the following year.

4.5.3 Hypothesis Three

H0$_3$ This hypothesis states that there is a negative trend in Value-added Tax over the period of study. The regression analysis in Table 4.9 shows the relationship between VAT and Time. The tables show that the explanatory variable time has a positive coefficient with t-statistics of 12.14 and an associated p-value of 0. This indicates that there is a positive and significant trend in the Value-added Tax over the period of the study.

5 DISCUSSIONS OF RESULTS

The first hypothesis states that VAT has no significant impact on Total Revenue. From the result of the empirical analysis, we rejected this hypothesis and accepted the alternative hypothesis of a significant impact of VAT on Total Revenue. Our result is consistent with several extant studies. For instance, the result of this study is consistent with Onwuchekwa and Aruwa (2014), who employed ordinary least square estimation of multiple regression, though this study did not accommodate the long-run properties of the data of the study which covered a period of nineteen (19) years. The significant effect of VAT on Total revenue documented in this study is in consonance with Onoja and Audu (2013) who used a correlation analysis to establish the positive significant effect of VAT on national income. Our study provides more robust evidence as it employs data analysis technique of the Error Correction Model to accommodate the stationary nature of the variable in the study.

The study in testing the second hypothesis of no significant impact of VAT on economic growth finds that on the contrary, a two-year lag of VAT negatively affects economic growth measured by GDP. This finding is consistent with Ilaboya and Mgbame (2013) who document, a negative but insignificant relationship between VAT and economic growth, which in this study was shown in the one-year lag of VAT. The consistency of our results is attributable to the fact that both studies employed the same methods.

Our findings with respect to hypothesis three which states that the trend in Value-added Tax over time is not significant is that there was a positive trend in VAT under consideration. The trend is also found to be significant. The implication of this is that over the period VAT has recorded increases, indicating that tax authorities were addressing problems in VAT collection and eliminating frictions in the system. This finding is inconsistent with Okoyeuzu (2013) who found that VAT has decreased in the period 2005 to 2011. The inconsistency can be attributed to the difference in methodology, whereas this study employed secondary data, Okoyeuzu (2013) employed primary data in a survey research design. Our findings is in consonance with Izedonmi and Okunbor (2014), who documented in the period 1994 to 2010, VAT grew consistently, implying that there was a positive trend in VAT as evidenced in this study.

6 CONCLUSION AND RECOMMENDATION

This study investigated the effect of Value-added Tax (VAT) on revenue generation and economic growth in Nigeria. It specifically examined the effect of VAT on Gross Domestic Product (GDP) and the total revenue generated in Nigeria for the period (1994-2018) as well as the trend of VAT in the period under review. Time series data was employed in the study to run regression for VAT on total tax revenue and GDP. The vector error correction and auto regression models were used in the regression. VAT, total tax revenue and GDP were included in the data at the end of each year for the period (1994-2018). In other to accommodate the

long-run properties of the variables, tests for stationarity and co-integration were carried out. The study finds that VAT has a significant effect on total tax revenue with a two-year lag and it increasingly explains changes in total tax revenue with the passage of time. The study also shows that VAT has a significant and negative effect on GDP with a one-year lag. The trend in VAT has a positive coefficient, indicating that VAT increases with the passage of time. In view of the findings, the study, therefore, recommends that government should critically evaluate the process of VAT collection, eliminate bureaucratic procedures, and improve transparency so that economic units can synchronise their efforts with those of tax authorities.

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