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Original Article

Valued Added Tax Automation and Revenue Generation in Nigeria

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Abstract: *The study examined Valued Added Tax (VAT) and Automation of Revenue Generation in Nigeria. Specifically, it examined the effect of the adoption of a manual VAT system on Revenue Generation, determined the effect of the adoption of VAT automation through the Integrated Tax Administration System process on Revenue Generation, assessed the impact of the adoption of Valued Added Tax automation through Amanda process on Revenue Generation; examined the relationship between adoption of Valued Added Tax automation through TaxPro-max system and Revenue Generation. Ex-post-facto research design was employed, and the required data were gathered from the FIRS statistical bulletin from 1994-2021. Four hypotheses were tested using ordinary least squares with the aid of the Economic view (E-view). The findings revealed that VAT through a manual process and revenue generation ($ß_1$=-461.9704; p=0.0893>0.005); VAT through Integrated tax administration system and revenue generation ($ß_2$ = -260.2918; p=0.0920>0.005); VAT through Amanda process and revenue generation ($ß_3$ = -205.4177; p=0.0917>0.05); VAT automation through TaxPro-Max ($ß_4$ = -4250.894; p=0.0066<0.05). The results implied that amid the variable measured, only TaxPro-Max has a significant relationship with Revenue Generation. The study, therefore, concluded that the integrated tax administration system had the capacity to deliver its required tax revenue. However, the taxpayers lacked operational understanding of the process, likewise the Amada process. The TaxPro-Max system performed significantly despite a year of data observation (i,e, 2021). This indicated that if TaxPro-Max is allowed for 5 to 10 years, automation of the tax system would gain a full length of operation in Nigeria. The study also recommended that the Nigerian Tax Administration at all levels should invest more strategies to improving TaxPro-Max in order not to suffer the same short-comings experienced by the previous methods of the VAT collection system.*

Keywords: *Value Added Tax, Revenue Generation, Manual Process, Integrated Tax Administration System, Amanda, TaxPro-Max.*

I. INTRODUCTION

The establishment of an effective and efficient tax system that improves the VAT collection process and encourages taxpayers' compliance is a long-term method to guarantee the Nigerian government a consistent revenue stream. This is consistent with the fundamental tax principles which promote simplicity of compliance and effectiveness of collection. A system like this would ensure that taxation (VAT) become the "new crude oil" in terms of revenue generation in Nigeria. As a result, the study typically employs the Federal Inland Revenue Service as a case study for assessing the relationship between VAT and Automation of Revenue Generation in Nigeria.

One of the fundamental issues which the Nigerian government faces is the annual decline in revenue generation which post a negative impact on budget deficits as there are inadequate resources to enhance growth and development in the economy (Efuntade, 2020). Many countries around the world have traditionally implemented VAT as the primary driver of revenue generation. In order to eliminate the previous system and guarantee complete compliance, the Nigerian Tax Administration system created the Integrated Tax Administration System (ITAS) in 2013. ITAS is an online platform that users utilize to execute various tax-related tasks. A tax identification number is given to taxpayers once they register with the tax authority and allow them to access the online platform. However, ITAS supports a "do it yourself" methodology for taxpayer calculating and filing and is specifically created to reflect Nigerian tax legislation. The ITAS is a complete tax administration solution that would allow the tax authorities to automate and streamline the operations for managing VAT (PwC, 2015).

Furthermore, the ITAS system includes e-tax payments, e-filing, e-tax clearance, computing and applying late filing penalties with tax officials (PwC, 2015). This innovation makes it simple for taxpayers to file their tax returns at convenient places and times within the mandatory filing period, minimizing the difficulty, as well as expense of paying taxes. The cost of tax administration considerably decreases with competent management and full adoption which increases compliance and at the same time the level of government revenue. While tax officers are equipped to conduct timely reviews of tax returns, taxpayers make better use of the time and money spent traveling to tax offices by ensuring their tax returns are current.

The appointment of a new Executive Chairman of the FIRS brought in a new dimension of tax techniques gearing toward achieving 100% automation of the VAT process and other tax entities. Amanda system was implemented in 2015 by Babatunde Fowler, to effectively sophisticate the Nigerian Tax Administration system (Olasunkanmi, 2021). The Amanda system, however, added to the Nigerian tax system by utilizing e-tax, e-filling, e-receipt, and e-voicing to simplify further the VAT collecting operations, the flexibility of time, reduces errors computations on tax return forms to the tax payers and taxpayer privacy and security (Obiora & Sunday, 2021). The system was, however, subjected to several critics as a result of a steady decline in revenue generated by the service since the inception of the process in 2015. The revenue performance between 2011 and 2019 also revealed that, although having fewer employees of (6,445), the agency's actual revenue generation (N4.629 trillion) exceeded the planned collection objective of N3.639 trillion by almost 127.2%.

Unfortunately, in 2015, FIRS has been failing to fulfil the revenue target of N4.572 trillion, realizing only N3.7 trillion in actual tax collection despite having larger personnel (7,182) than before. Moreover, in 2016, the revenue collection target of N4.9 trillion was not achieved, only N3.3 trillion was attained even with the same level of staff (7,182). With a significant increase in the level of personnel (9,448) and a revenue target of N8.802 trillion in 2019, the FIRS was only able to realize N5.008 trillion (Premium Times, 2023). Based on the failure of Amanda's system, the appointment of a new D. G. (Muhammed Nami) was officially flagged up in 2021 which brought in the new face of the tax collection system called TaxPro-Max. The introduction to this system brought in e-tax administrative resolution to enhance the level of VAT revenue, which in turn increases the national government's overall revenue gathered, as observed in different nations during the system's adoption (Premium Times, 2023).

The finding of the study is useful to improve VAT automation policies in order to ensure full compliance, reduce tax risk and prevent tax frauds, as well as easier VAT collection processes. The study would be extremely useful to future researchers, policymakers, and students. For sophisticated analytical purposes, the study gathered relevant information from 1994 to 2021. This covers the manual era of VAT to the era of TaxPro-Max in the Nigerian Tax Administration System. However, the adoption of TaxPro-Max (e-tax administrative solution) has yet to establish any empirical evidence demonstrating the degree to which the latest innovation succeeded in this goal value added tax and automation of revenue generation, hence the need for the study.

II. STATEMENT OF THE PROBLEM

The Nigerian Tax Administrative System has applied a series of VAT techniques to ensure full compliance of tax-payers coupled with the responsibility of easing the process and at the same time, generating high VAT returns. The Integrated Tax Administration System (ITAS) was implemented in 2013 to abolish the manual VAT collection process. While the administration discovered that no method is perfect enough for the system, the adoption of Amanda suffered the same loophole, and subsequently delivered TaxPro-Max, while the system is kept under review for further improvement.

III. AIM AND OBJECTIVES OF THE STUDY

The main goal of this study is to investigate the connection between VAT and revenue generation computerization in Nigeria, while the specific goals are to:

1. examine the effect of adopting a manual VAT system on Revenue Generation in Nigeria
2. determine the effect of adopting VAT automation through the ITAS process on Revenue Generation in Nigeria
3. assess the impact of the adoption of VAT automation through Amanda process on Revenue Generation in Nigeria
4. examine the relationship between the adoption of VAT automation through the TaxPro-max system and Revenue Generation in Nigeria

A) Research Questions

1. How does adopting a manual VAT system affect Revenue Generation in Nigeria?
2. What is the effect of the adoption of VAT automation through the ITAS process on Revenue Generation in Nigeria?
3. How does VAT automation through Amanda process impact Revenue Generation in Nigeria?
4. What is the relationship between adopting VAT automation through the TaxPro-max system and Revenue Generation in Nigeria?

B) Hypotheses

H_{01}: Adoption of a manual VAT system has no significant effect on Revenue Generation in Nigeria.

H_{02}: Adoption of VAT automation through the ITAS process has no significant effect on Revenue Generation in Nigeria.

H_{03}: Adoption of VAT automation through the Amanda process has no significant impact on Revenue Generation in Nigeria.

H_{04}: Adoption of VAT automation through the Tax Pro-max system has no significant relationship with Revenue Generation in Nigeria.

IV. LITERATURE REVIEW

A) VAT Antecedent

The first nation to implement national VAT administration was France. April 1954 marked the beginning of this (James, 2011). Its initial scope was constrained, and France didn't implement a complete VAT until 1968 when it began to cover a larger portion of the retail industry. The first complete VAT was implemented in Denmark in 1967. There were two main stages to the implementation of VAT. The second phase of VAT adoption happened in the late 1980s, whereas the first phase largely occurred in Western Europe and Latin America throughout the 1960s and 1970s. Thereafter, numerous developed nations outside the European Union, including Australia, Canada, Japan, and Switzerland, began implementing VAT. The rapid spread of VAT in transitional and developing economies, particularly in Africa and Asia, was also observed during the second phase. The International Monetary Fund and the World Bank, two major players, were instrumental in making this possible. In Nigeria, the VAT was originally implemented in 1994 to replace the sales tax. The fact that VAT is applied to a wider variety of products and services (including those that were sales tax exempt) and was intended to increase the government's tax base had a role in the decision to replace the sales tax with VAT. Currently, 5% VAT is applied to all products and services (Efuntade, 2020).

B) Value Added Tax

Value Added Tax (VAT), also referred to as a goods and services tax (GST), is a kind of tax that is gradually assessed and imposed on the price of a good or service at each stage of its creation, distribution, or sale to the final consumer. A taxpayer can now access all services provided by a tax authority through the internet thanks to the automation of the VAT system. By having taxpayers complete their tax returns electronically through e-processes; the VAT automation was introduced as part of the modernization initiative, which also improved taxpayer privacy and security, time flexibility, and the accuracy of the computations on tax return forms (Federal Inland Revenue Service, 2021). All products and services supplied in Nigeria are subject to VAT, with the exception of those specifically enumerated in the First Schedule to the VAT Act (as amended), according to section 2 of the law there (Appah, 2014).

C) Registration and Deregistration

In section 8 of the VAT, as amended, requires all taxable individuals to register for the tax as soon as their business, as defined in Section 46 of the VAT Act, officially begins. Failure to do so will result in penalties ranging from N10,000 to N50,000 for the first month of default to N5,000 to N25,000 for the following month. According to the Act, a taxable person must notify the Service within 90 days of permanently ceasing to do trade or business in Nigeria to be deregistered (Appah, 2014). Taxable supplies made following cessation are considered as having occurred on the day before cessation. The penalty for inability to file comes back will remain in effect if taxpayers fail to notify the Service of their business's closure.

D) Rate of Tax

Section 4of the VAT Act as amended changed the VAT rate from 5% to 7.5%. The new rate becomes effective from the 1st February 2020. Consequently, all transactions carried out from the period shall reflect the new rate of 7.5%

E) Transitional Issues

Section 13a (2) of the VAT Act, Cap V1, LFN 2004 as amended states that: Tax invoice shall be issued on supply whether or not payment is made at the time of supply. For the purposes of VAT:

1. A service is supplied when it is performed or an agreed milestone is reached;
2. Goods are supplied upon delivery or risk transfer, whichever occurs first.

Where determining the supply period as aforesaid is impractical, the product or service can depend on the times suggested on the appropriate invoices, bills, debit notes, good received notes, waybills, journal entries, etc. (Appah, 2014).

V. INTEGRATED TAX ADMINISTRATION SYSTEM (ITAS)

The Integrated Tax Administration System (ITAS) is a tax administration project in Nigeria that aims to automate and streamline all tax administration procedures, including online tax return filing and payment. With businesses expected to embrace this system voluntarily, it was put into place in 2017. With the implementation of this system, it is unclear how well it will accomplish its goal and how much taxpayers would accept it. The reason for this hazy anticipation is that Nigerians have historically adopted few computerized technologies connected to finance (Premium Times, 2023). For instance, the Central Bank's 2011 introduction of the mobile money service has seen a pitiful adoption rate of approximately 13%. Nevertheless, less than 10% of Nigerians utilize Smartphones for using financial institutions or other types of accounts let alone mobile money accounts or the internet to pay bills.

A) Key Features of ITAS

The following are some of the e-filing method's attributes:

a. Online Submission of Tax Returns

Through the portal, taxpayers can submit their tax returns for various taxes such as Petroleum Profits Tax (PPT), Companies Revenue Tax (CIT), Value Added Tax (VAT), and Capital Gains Tax (CGT). Once logged in, an e-filing account for the taxpayer will be established depending on the kind of taxation that the company pays is required for payment, whether for its own account or as the government's representative. A taxpayer, on the other hand, will only be able to They must file back over the revenue with which they're registered.

b. Electronic Tax Clearance Certificate (e-TCC) processing:

A Tax Clearance Certificate generated by the system is available for online application by taxpayers. Even if physical copies are still accessible to gathering, a system-generated TCC will be equally viable as the hard copy. In any case, ITAS enables TCC validation so that a TCC can be checked online by outside parties using the TCC number. In cases when a dispute has not yet been settled, restricted TCCs can also be created online and used temporarily. This ensures that the taxpayer is not inconvenienced unnecessarily while the tax dispute is resolved, at which point a complete TCC can be obtained.

c. Validation of Tax Identification Number (TIN)

On ITAS, the TINs of taxpayers can be verified by other parties. The TIN of a company's vendors can be verified using this tool, among other things, for Withholding Tax (WHT) purposes.

d. Online correspondence with FIRS

The "message Centre" feature in the online platform allows taxpayers to interact with FIRS. Using this feature, FIRS can also issue assessments to which taxpayers can object.

e. Automatic imposition of late filing penalties and interests:

The procedure was created to consequently determine and enforce interest and penalties for late filing of taxes or late tax payment.

f. Automatic allocation of WHT credit to taxpayers:

It is intended to automatically repay taxpayers for WHT deductions they have incurred that have been deposited to FIRS by their client, even though this feature is not yet operational.

g. Redesigned tax forms and unique filing numbers:

Several tax return kinds were revamped to accommodate the e-filing system. Account numbers vary based on the type of tax. In addition, everyone submitted exchange receives a unique document number that can be used to make tax payments.

h. Electronic tax payment:

Beginning in March 2015, taxpayers can pay their taxes online using the corporate bank accounts they have established. This application, developed in collaboration with the Nigeria Inter-Bank Settlement System (NIBBS), is hosted on the relevant commercial bank's internet banking platform.

i. Issues with ITAS in Nigeria

The majority of businesses that have used the system have stated they'd favour the traditional tax procedure over the alternative ITAS, which may be due to a lack of understanding of the technology. The manual system is preferred to ITAS by two-thirds of the enterprises polled. Other factors, such as the need for small businesses to avoid tax officer monitoring, actions to avoid tax payments like paying tax officers informally to lower tax liabilities, and other forms of disincentives to use ITAS, such as small business affiliation with tax officers or government officials, may have an impact on the low adoption rate of ITAS. There is food for thought in these elements as well as in the survey's findings and other considerations.

j. TaxPro-Max Concept

To make tax compliance easier, the Federal Inland Revenue Service (FIRS) has adopted a tax management solution (TaxPro-Max) as part of its efforts to modernize tax administration in Nigeria. The automated crediting of tax withholding along with other credit to the taxpayer's user accounts, in addition to the effortless enrollment, filing, and payment of taxes are all made possible by TaxPro-Max (Premium times, 2023). From June 7, 2021, TaxPro-Max will be the platform for filing tax returns in Naira (Federal et al., 2021). In light of the aforesaid, this publication serves as notification to all taxpayers:

1. All tax returns in Naira must be submitted via the TaxPro-Max solution in order to generate the mandatory Document Identity Number (DIN);
2. Taxpayers cannot pay without DIN; Taxpayers who want to submit their tax returns manually must therefore contact the responsible tax office, where FIRS employees will help them upload the declarations and create the DIN
3. DIN is encouraged to bring manual declarations with them to upload at least two weeks before the due date

k. Revenue Generation

One of the most significant tasks any company can undertake is generating income. It can be described as how a business strategies how it will advertise and market its goods or services to bring in revenue. (Olaoye, & Atilola, 2018). The governing body got revenue from assets like charges imposed on people's and organisations' earnings and development, as well as in the assets and offices built, fares and imports, non-assessable resources such as government-claimed organisations' advantages, national bank earnings and capital gains, as well as outside loans and commitments from international monetary foundations. (Okunowo, 2015). Total tax revenue as a percentage of GDP shows how much of a nation's output is collected by the government through taxes. It can be seen as one measure of the degree of authority the government has over the assets of the country's economy.The tax burden is calculated by dividing total tax revenues received by GDP. This indicator pertains to the government as a whole (all levels of government) and is measured in millions of dollars and as a percentage of GDP **(**Barney, 1991).

VI. THEORETICAL REVIEW

A) Resource Based View Theory (RBV).

The Resource View Theory (RBV) claims that a company's or government's ability to succeed depends on the assets and competencies under its control, which can provide a competitive edge (Adam Smith, 1776). It denotes a significant organizational and strategic process the government uses to alter its resource base and produce new, value-adding initiatives. This theory is anchored to this study because it presupposes that the Federal Inland Revenue Services (FIRS) in Nigeria implemented the online tax administration solution (TaxPro-Max) as one of the measures taken by the government to ease corporate tax payments and also improve government revenue (resources) generation. A company that adopts e-payments would significantly increase the nation's revenue collection.

B) Ability to Pay Theory

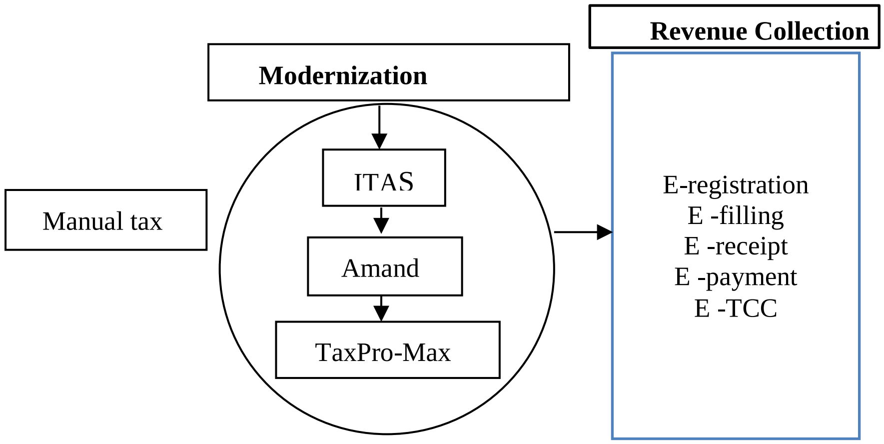
The theory of ability to pay claims that in its establishment, taxpayers should only pay taxes that he/she can afford (Olurankinse, & Oladeji, 2018). This notion states that higher earners should pay a bigger share of taxes than lower earners. In this situation, taxes should be collected by a person's ability to pay. This strategy assumes no exchange of goods or services between the people and the government and views tax liability in its most basic form as a requirement to pay money to the government without any conditions. Everyone must people who can do so pay their fair share of the total tax burden depending on how much they can afford to pay.

C) Empirical Review

There was a study of Self-evaluation, electronic tax payment methods, and generating income in Nigeria, where 30 businesses are listed on the NSE. Using SPSS version 20.0, the Pearson Product Moment Correlation Coefficient statistical tool and regression analysis were used to test the hypothesis. The study's findings revealed a positive and statistically substantial correlation between earning income and e-tax payment and self-assessment structures (Olurankinse, & Oladeji, 2018). Additionally, there was an examination of the effect of electronic taxes on Nigeria's income and economic expansion using quarterly statistical and economic reports from the second quarter of 2013 to the fourth quarter of 2016. The information has been split into two sections: pre-e-tax and post-e-tax. The study's findings revealed that implementing electronic taxation did not affect tax revenue, federal revenue, or the tax rate in Nigeria (Chijioke, Leonard, Bossco, & Amaefule, 2018).

Furthermore, an examination of the impact of electronic tax systems on Nigerian tax management to ascertain how tax administration is affected by electronic taxation in Nigeria showed that the decline in crude oil prices, Nigeria's principal source of income, has brought the government's attention and key players in the country to locally generated revenue. However, to advance tax administration in the country, the adoption of electronic tax system technological advances is necessary to meet the challenging task of boosting internally produced revenue. It serves as a catalyst for faster economic growth and the eradication of extreme poverty in Nigeria and across the African continent. (Adedeji, & Oboh, 2012).

D) Conceptual Model



Source: *Researcher`s View (2023)*

VII. METHODOLOGY

Ex-post-facto research design is used in the investigation. Given that the study's variables can be found in historical data obtainable from the federal Inland Revenue Service.

A) Data Collection Method

In this study, data relating to VAT and revenue generation were gathered from Federal Inland Revenue Service Statistical Bulletin from 1994-2021

B) Techniques for Data Analysis

This study's data analysis techniques shall include the unit root test and the Johansen Co-integration test.

C) Model Specification

In order to achieve the major purpose of this study, the ordinary least square model shall be used to look into the connection between VAT Automation and Revenue Generation in Nigeria. As a result, I estimated Revenue Generation as a function of VAT techniques (i.e., Manual process, ITAS, Amanda, TaxPro-Max) in this study. The researcher initially selects the variables and describes their interactions in the model to specify the association between them.

Mathematically, Y = F(X)
Y =Revenue Generation (RG); X_1= Manual process = Mp; X_2= ITAS = Itas; X_3= Amanda = Ama; X_4= TaxPro-Max = TaxProm; μ =unexplained variable
$Y = \alpha_0 + \beta x + \mu_1$ ………………………………Normal

$$Y_1 = \alpha_0 + \beta_t x_1 ++ \beta_t x_2 + \beta_t x_3 + \beta_t x_4 + \mu_1 \quad \text{……………………………….(1)}$$

Where; RG is the dependent variable and x_1 to $x_4$are the independent variables β_{01} = constant term β_1- β_4= parameters to be estimated

D) Estimation Technique

To be more explicit, the Ordinary Least Squares (OLS) method shall be utilized to construct independent variable coefficients and dependent variable proxies. A model must be accepted if at least half of the independent variables are significant.

E) Data Presentation and Analysis

The table below shows the descriptive analytical relationship among the variables measured: revenue generation, manual process, integrated tax administration system, Amanda, and tax pro-max process.

Table 1: Descriptive Statistics

	RG	MP	ITAS	AMA	TAXPROM
Mean	2487.902	153.3904	57.34429	173.7821	128.7121
Median	2029.835	42.70000	0.000000	0.000000	0.000000
Maximum	6402.710	710.5600	802.9600	1189.980	2072.850
Minimum	62.34000	0.000000	0.000000	0.000000	0.000000

Std. Dev.	2068.918	215.7774	210.5518	385.7832	478.3100
Skewness	0.260461	1.433875	3.328201	1.801733	3.464210
Kurtosis	1.619506	3.775626	12.07692	4.445028	13.32687
Jarque-Bera	2.539976	10.29652	147.8146	17.58526	180.4217
Probability	0.280835	0.005810	0.000000	0.000152	0.000000
Observations	28	28	28	28	28

Source: *Author's computation, 2023(Eview-9.0)*

The table 1 descriptive statistics are shown above to examine the relationship between VAT Automation and Revenue Generation in Nigeria. At first, revenue generation values (in NTrillion) were considered through its descriptive analysis; the table depicted its minimum and maximum values of: N62.34000trillion and N6402.710trillion respectively, with an average value of N2487.902 trillion. The variable according to the value deviates with N2068.918 trillion from its mean and is positively skewed with the value of N0.260461trillion which showed that RG has a long right-tail and the kurtosis is Mesokurtic distribution in nature (i.e,1.619506< 3). Further, the value of Jarque-Bera: 2.539976 was observed for RG which implied that the variable had a good fit in the distribution but was statically insignificant (i,e, 0.280835< 0.05).

Also, the table related to manual process data with revenue generated over the stated period. VAT generated through the manual process between 1994-2012 had an average value of N153.3904 trillion, which showed that its accumulated contribution to revenue generation was 6.2% over the period. The table further confirmed that VAT (manual process) had a median value of N42.70000trillion with a maximum value of N710.5600trillion. The VAT (manual process) according to the table deviates with N 215.7774trillion from its mean value and is positively skewed at 1.433875 (long right-tail); the kurtosis is leptokurtic, simply because the VAT manual process exhibits the value of 3.775626>3. This implies that the variable has fatter tails and an elongated shape, increasing the likelihood of extreme either beneficial or adverse events. Further, the value of Jarque-Bera: N10.29652trillion was observed VAT (manual process) which implies that the variable has a good fit in the distribution and confirms statically significant at 0.005810.

The period of ITAS according to the data gathered was between: 2013-2015. An average value of N57.34429 trillion indicated that ITAS accumulated contribution to revenue generation was 2.31% over a period of 2years. Further, the table showed the maximum value of N802.9600 trillion, a deviation of N210.5518trillion from its mean value and positively skewed with N3.328201 trillion. The kurtosis is leptokurtic (i,e, 12.07692>3). The value of Jarque-Bera was 147.8146 and statistically insignificant at 0.00000

Furthermore, the data Amanda tax process depicted an average value of N 173.7821trillion as the accumulated contribution on Revenue generation between 2015-2018 in Nigeria. The table further confirmed that the variable had a maximum value of N1189.980trillion and a deviation of N385.7832trillion from its mean value. A positive skewness value of 1.801733 was indicated and the kurtosis is leptokurtic, 4.445028> 3. Further, its Jarque-Bera value of 17.58526 was observed which implied that the variable has a good fit in the distribution and is statically significant at 0.000152.

Finally, an average value of N128.7121trillion was recorded VAT (TaxPro-Max) which indicated that VAT (TaxPro-Max) accumulated contribution on revenue generation was 5.17% for just 1 year. The table indicated its maximum value of N2072.850trillion and deviation of N478.3100trillion from its mean value. According to the table, VAT (TaxPro-Max) exhibited positive skewness of 3.464210 and the kurtosis is leptokurtic, 13.32687>3. However, the value of Jarque-Bera of 180.4217 was observed which implied that the variable has a good fit in the distribution but statistically confirmed insignificant at 0.000000.

F) Diagnostic Test

a. Unit Root Test

The outcomes of regressions with irregular time series variables have been demonstrated to yield erroneous and misleading conclusions. If a series has a steady mean and a steady finite variation, it is referred to as stationary. A non-stationary series, on the other hand, possesses a distinct time pattern and variation that changes over time. A non-stationary series will have a high degree of persistence. To solve this issue, the researcher checks on the time series for stationarity using Augmented Dickey Fuller (ADF) test to ascertain whether the research's variables have a unit root. The outcomes of the unit root test are shown below.

Table 2: Unit Root Test

	At Level (1(2))			At First difference (1(0))		
Parameters	ADF test statistic	Test critical value @ 5%	Prob.*	ADF test Statistic	Test critical value @ 5%	Prob.*
RG	-0.052642	-2.976263	0.9451	-4.591101	-2.986225	0.0013
Mp	-1.763436	-2.976263	0.3896	-4.858395	-2.981038	0.0006
Itas	5% level	-2.981038	0.0106	-5.744562	-2.986225	0.0001
Ama	-4.673318	-2.998064	0.0012	-5.207717	-3.004861	0.0004
TaxProm	1.578057	-2.976263	0.9991	-3.364179	-2.981038	0.0220

Source: *Author's computation, 2023(Eview-9.0)*

During the period, It is visible from Table 2 that, at some level, the factors are non-stationary. but Amanda data. This is because their P-value of Augmented Dickey Fuller (ADF) is greater than the significance value (0.05). However, at 1st difference, all the variables are stationary.

b. Co-integration Test

In this study, Johansen's test of co-integration was used to perform co-integration tests on the variables in the models. Table 3 shows the co-integration data regarding the variables. At the 5% level of significance, the result indicates the existence of a co-integrating equation.

Table 3: Summary of Johansen's test of co-integration

Trace Statistics				Maximum Eigen Value			
Null Hypotheses	ADF test statistic	Test critical value @ 5%	Prob.*	Null Hypotheses	Max-Eigen Statistic	Test critical value @ 5%	Prob.*
r = 0*	215.9283	69.81889	0.0000	r = 0*	33.87687	0.0000	
r = 1*	71.15003	47.85613	0.0001	r = 1*	49.38946	27.58434	0.0000
r = 2	21.76058	29.79707	0.3120	r = 2	16.26799	21.13162	0.2096
r = 3	5.492586	15.49471	0.7545	r = 3	5.492586	14.26460	0.6788
r = 4	0.000000	3.841466	0.9999	r = 4	0.000000	3.841466	0.9999

Source: *Author's computation, 2023(Eview-9.0)*
Trace test indicates 4 cointegratingeqn(s) at the 0.05 level

In trace statistics, the hypotheses of no co-integration at 5%significance level were accepted according to the test result. This is because 2 of 5 of the parameters tested revealed values below 0.05. This result indicates that the trace statistic indicates the existence of a short-term relationship between the variables in the model. Similarly, the Max Eigen value exhibited 2 of 5 results, which satisfied the assumption (null hypothesis of no co-integration). This could be rejected at the 5% level of significance. As a result, this result indicated that each of the variables in the framework has a short-term relationship with one another. This mean that the series are not related and can be perfectly combined in a linear fashion. I therefore conclude that the parameters measured over time have no long-run relationship.

G) Heteroscedasticity Test

a. Decision Criteria

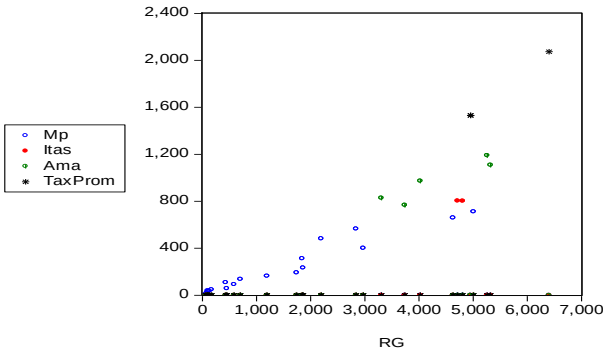
If the p-value < 0.05: Reject the null hypothesis and determine that there is significant evidence of heteroscedasticity in the model.

Table 4: Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	4.344571	Prob. F(4,23)	0.0092
Obs*R-squared	12.05083	Prob. Chi-Square(4)	0.0170
Scaled explained SS	11.18858	Prob. Chi-Square(4)	0.0245

Source: *Author's computation, 2023(Eview-9.0)*

The Heteroscedasticity test in the table 4 above revealed that there are constant (equal variances). This implied that the alternative hypothesis of heteroscedasticity could not be disproved at the 5% level of relevance. Hence, the regression results in the preceding section are devoid of homoscedasticity problems and are thus fit for the study.



b. Normality Test

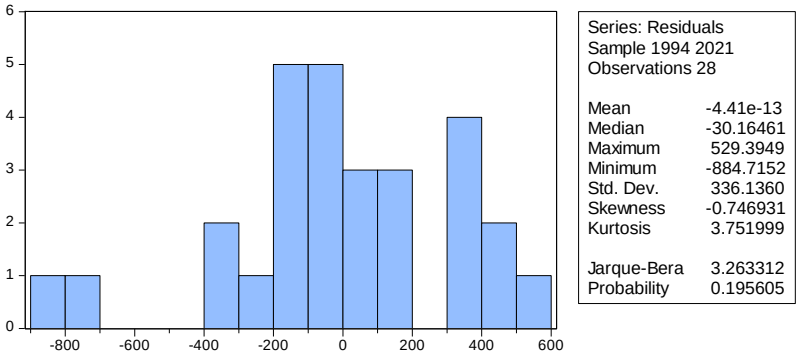
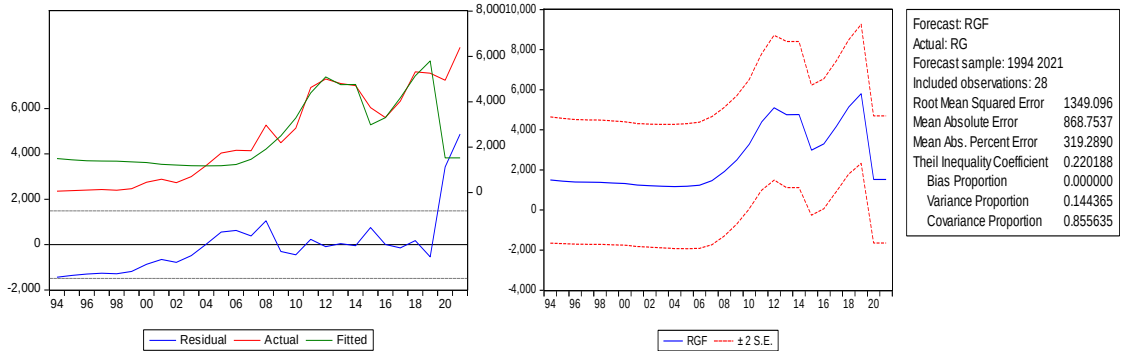


Table 5: Regression Results

Dependent Variable: RG				
Method: Least Squares				
Date: 03/05/23 Time: 16:47				
Sample: 1994 2021				
Included observations: 28				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MP	-461.9704	260.4399	-1.773808	0.0893
ITAS	-260.2918	148.0551	-1.758074	0.0920
AMA	-205.4177	116.7071	-1.760113	0.0917
TAXPROM	4250.894	2374.574	1.790171	0.0066
C	-87270443	48750305	-1.790152	0.0866
R-squared	0.559046	Mean dependent var		2487.902
Adjusted R-squared	0.482358	S.D. dependent var		2068.918
S.E. of regression	1488.531	Akaike info criterion		17.60940
Sum squared resid	50961686	Schwarz criterion		17.84729
Log likelihood	-241.5316	Hannan-Quinn criter.		17.68213
F-statistic	7.289900	Durbin-Watson stat		0.460342
Prob(F-statistic)	0.000605			



In the analysis above, the estimate showed that if all of the independent variables (Mp, Itas, Ama, Taxpro-Max) are held constant, the dependent variable (RG) will still be positive but statistically significant at the 1% level (0.0866). Further, the OLS estimate established a coefficient of determination of R2 of 0.559046(55.9%), indicating that all of the independent variables (Mp, Itas, Ama, Taxpro-Max) are jointly accounted for 55.9% of the variation in the regressed (RG) with the stochastic term accounting for the remaining 0.99%. When adjusted, the regressor only accounted for 0.440954 (44.1%) of the variance. This suggests that the model as a whole had a high explanatory power. In the meantime, the Durbin Watson test on RG revealed that the model is serially correlated as the value is0.460342< 2 but statistically insignificant at first and second lag.

Also, it could be read from the same estimate that VAT (manual process) in Nigeria had an estimated coefficient of -461.9704indicating that for every single change in manual process, there will be a corresponding decrease of 461.97% in revenue generated during the period of 1994-2012. However, an estimate on VAT (Itas process) showed a coefficient of -260.2918 indicating that the implementation of the ITAS process jointly reduced revenue generated between 2013-and 2015. This showed that for every single change in the ITAS process, there will be a corresponding decrease of 260.29% in revenue generated. A similar change occurred during Amanda process in 2016-2019 with a coefficient of -205.4177(205.42%) in revenue generated during the period. Further, an estimate on VAT (TaxPro-Max) showed a coefficient of 4250.894 indicating that implementing the TaxPro-max system increased the revenue generated for the period. This showed that for every single change in VAT generated through TaxPro-max, there will be a corresponding 4250% in revenue generated and TaxPro-max is statistically significant at 0.0066.

H) Hypotheses Testing

a. Hypothesis One

H_{01}: Adoption of a manual VAT system has no significant effect on Revenue Generation in Nigeria.

It could be read from Table 4.5, above VAT through the manual process in Nigeria experienced an estimated coefficient of -461.9704 within the period of 1994-2012 and was statistically insignificant (i,e.0.0893>0.005). As a result, there is insufficient data to support the null hypothesis. So the adoption of a manual VAT system has no appreciable effect on Revenue Generation in Nigeria.

b. Hypothesis Two

H_{02}: Adoption of VAT automation through the ITAS process has no significant effect on Revenue Generation in Nigeria.

Also from the table, an estimate on VAT through the Integrated tax administration system indicated a coefficient of -260.2918 between the period of 2013-2015 and statistically insignificant at (i,e.0.0920>0.005). This showed that the alternative hypothesis had no good stand in this study; therefore, adopting VAT automation through the ITAS process has no significant effect on Revenue Generation in Nigeria.

c. Hypothesis Three

H_{03}: Adoption of VAT automation through the Amanda process has no significant impact on Revenue Generation in Nigeria.

The analysis conducted on OLS further showed that VAT through Amanda process during 2016-2019 had a declining co-efficient of -205.4177(205.42%) on revenue generated and statistically insignificant at (i,e, 0.0917>0.05). This showed that there is enough concrete proof against the null hypothesis. In light of this, I concluded that the adoption of VAT automation through the Amanda process has no appreciable effect on Revenue Generation in Nigeria

d. Hypothesis Four

H_{04}: Adoption of VAT automation through the TaxPro-Max system has no significant relationship with Revenue Generation in Nigeria.

An estimate on VAT automation through the TaxPro-Max system indicated a coefficient of -4250.894 and statistically significant at (i,e.0.0066>0.005). This showed that H_{04} had no good stand in this study; therefore, the adoption of VAT automation through the TaxPro-Max system has a significant effect on Revenue Generation in Nigeria.

I) Summary of Findings

The investigation examined the connection between VAT Automation and Revenue Generation in Nigeria. In the research, regression analysis was used to evaluate the four hypotheses. The outcomes are encapsulated as: VAT through manual process and revenue generation ($ß_1$ = -461.9704; p=0.0893>0.005); VAT through Integrated tax administration system and revenue generation ($ß_2$ = -260.2918; p=0.0920>0.005); VAT through Amanda process and revenue generation ($ß_3$ = -205.4177; p=0.0917>0.05); VAT automation through TaxPro-Max ($ß_4$ = -4250.894; p=0.0066<0.05). From the stated results, the first-third hypotheses were statistically insignificant (moving in opposite directions with revenue generated during their respective years. But the hypothesis tested on VAT automation through TaxPro-Max and revenue generation was statistically significant (moving in the direction of revenue generation in its year)

VIII. CONCLUSION

Value Added Tax in Nigeria has experienced a new look since its inception, no method of VAT collection is bad and no method id best. Its effectiveness has to do with the preparedness and effectiveness of its administrators. The integrated tax administration system had the capacity of delivering its required tax but the taxpayers lacked of operational understanding of the process, like likewise Amada process. Based on the finding, TaxPro-Max system performed significantly despite using a year of data observation (i,e, 2021). This indicated that if TaxPro-Max is allowed for 5 to 10 years, automation of the tax system would gain a full length in Nigeria.

Recommendations

The conclusion over lead to the following suggestions being made:

1. The Nigerian Tax Administration at all levels should invest more strategies to improving TaxPro-Max in order not to suffer the same short-comings experienced by the previous methods of the VAT collection system.
2. An effective attention is needed to understudy the problem source of the previous VAT collection processes and such results should be employed to improve the TaxPro-Max in order to deliver as expected
3. The Nigerian government should consider developing tax policies that would aid in tax education, and including e-transaction taxation in tax laws. By doing so, the taxpayers would have proper knowledge of the system which would improve their understanding of how the collection process works. This would, therefore, have a huge and positive impact on revenue generation in Nigeria.

Suggestion for Further Studies

The study focused on the relationship between VAT Automation and Revenue Generation in Nigeria, using the Federal Inland Revenue Service. To the greatest extent of our understanding, this research seems to be the first of its kind. Therefore we are suggesting that future studies should establish more literature on the subject matter and at the same time extend the period of study (i.e., beyond 2021) in Nigeria.

IX. REFERENCES

[1] Adam Smith, (1776). *The Wealth of Nations: A Translation into Modern English*, ISR/Google Books. Book 5 (Government Finances: Public Expenditure, Taxation and Borrowing), pages 423, 429. Ebook ISBN 9780906321706

[2] Adedeji, T. O. & Oboh, C. S. (2012). *An empirical analysis of tax leakages and economic growth in Nigeria*. *European Journal of Economics, Finance and Administrative Sciences.* 48, ISSN 1450-2275

[3] Appah, E. (2014). *Principles and Practice of Nigerian Taxation*. Lagos: Andy Best Publishers.

[4] Barney, J. B. (1991). *Firm Resources and Sustained Competitive Advantage*. *Journal of Management*, *17*, 99–120.

[5] Chijioke, N. O., Leonard, I. A., Bossco, E. O. and Amaefule, H. C., (2018). Impact of E– taxation on Nigeria's revenue and economic growth: A Pre – Post Analysis. *International Journal of Finance and Accounting*, 7(2), 9-26

[6] Efuntade, A. O.(2020). Value added tax and its effect on revenue generation in Nigeria. *KIU Interdisciplinary Journal of Humanities and Social Sciences*, *1*(2), 353-369.

[7] Federal Inland Revenue Service (2021). *Information Circulation*. Publication 31st March, 2021

[8] James, K. (2011). Exploring the origins and global rise of VAT.Tax Analysts Faculty of law, Monash University, Melbourn.

[9] Obiora, F. & Sunday, D. (2021). Effect of Adoption of Taxpro-Max on Firs Tax Remittance in Nigeria. *International Journal of Trend in Scientific Research and Development (IJTSRD).* 6(1), 1348-1355

[10] Okunowo, A. O., (2015). *FIRS Introduces E-filing Tax System in Nigeria*. Website: https://www.linkedin.com/pulse/firs-introduces-e-filing-tax-system-nigeriaokunowo-aobafemi 2015

[11] Olaoye, C. O. & Atilola, O. O. (2018). Effect of E-Tax Payment on Revenue Generation in Nigeria. *Journal of Accounting, Business and Finance Research*, 4(2), 56–65.

[12] Olurankinse, F. & Oladeji, O. E. (2018). Self-assessment, electronic-taxation payment system and revenue generation in Nigeria. *Accounting & Taxation Review*, *2*(1), 39–55

[13] Premium times (2023) https://www.premiumtimesng.com/news/headlines/370157-new-firs-chairman-criticizesfowlers-performance-charges-staff-to-target-2012-revenue.html?tztc=1,

[14] PwC (2015). *FIRS Introduces Electronic Filing of Tax Returns and Online Payment of Taxes.* PwC Nigeria - Tax and Regulatory Services Unit. www.pwc.com.1-3