IMPACT ASSESSMENT OF FEDERAL TAX REVENUE ON INFRASTRUCTURAL DEVELOPMENT: THE NIGERIA PERSPECTIVE.

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 Abstract
The study assessed the impact of Federal Tax Revenue on Infrastructure development of Nigeria from 1990 -2022. Infrastructure development was measured by actual capital expenditure while petroleum profit tax, company income tax, information technology tax and value added tax were used as proxies for federal tax revenue. The Augmented Dickey Fuller (ADF) test result was performed to determine the stationarity of the data while exploratory ex-post facto used for research design. Collected data were analyzed using error correction mechanism and E-views 9.0 software. Findings from the F-statistic indicated that PPT, VAT, CIT and ITT have significant and positive impact on infrastructure development of Nigeria. Conversely, T-statistic results suggested that ITT has insignificant impact on IFD while CIT has negative and insignificant impact on infrastructure development of Nigeria. The study among other things recommends that concerted efforts be made to increase and sustain tax revenue generation for improved infrastructural facilities development in Nigeria.
Keywords: Federal Tax revenue, Infrastructure development, Nigeria perspective.

Background to the study

Globally, tax revenue is a vital means available to any government for the generation of the quantity of revenue needed to provide the social, political, economic and infrastructural needs of the citizens. The ultimate essence of taxation is the provision of adequate revenue for government to carry out its statutory obligations for the economic wellbeing of the society (Azubike, 2009). Generation of sufficient revenue calls for the formulation and implementation of efficient and effective tax policies and strategies and fine-tuning the tax system towards achieving these objectives. It is a known fact that governments of highly developed countries such as Canada, United States of America, the Netherlands Italy, China and United Kingdom to mention but a few have used tax revenue to create wealth and prosperity which have ultimately impacted on their infrastructure. This cannot be said to be the case with Nigeria as financial analysts have argued that since the discovery of crude oil in marketable quantity, oil revenue has accounted for at least 70 percent of Nigeria's total revenue thus, indicating that conventional tax system has never performed significant role in the country's quest for infrastructure development.

The Nigerian tax system under the pre-independence British government was basically structured as a tool for revenue collection and the system sustained this legacy for a long time (Okafor and Azubike, 2018). This system has not made significant change. Taxation should however, play strong role in determining the country's infrastructural development, economic stability, income redistribution and most of the time helps in deciding government's social, political and economic direction.

The Nigeria economy faces challenges with respect to taxation and its ability to perform optimally in providing adequate revenue for government's fiscal operations. Additionally, the Nigeria tax system has problems ranging from an obvious resistance or/and unwillingness of citizens mainly those in the informal sector to pay tax, poor tax policies and poor tax policy implementation, under-utilization of tax revenue sources due to activities taking place underground, over reliance on other sources of revenue (such as crude oil, foreign aids and grants and in some cases, borrowing), corrupt tax officials, poor utilization of tax revenue by the government and other inherent problems in its structure. Observably therefore, negative economic impact of persistent fiscal deficits was suspected to have primarily arisen from inadequacy of the revenue base to cope with the targeted level of economic activities (Fasoranti, 2013).

Tax responsibilities rests on three key participants; taxpayers, tax authorities and government. Each of these players play significant role in the success or failure of the tax system in generating adequate revenue. The rate of tax to be paid by the citizens and the items to be taxed is determined by the government following its policy direction. The tax policies formulated by the government are implemented by the tax authorities while the citizens are expected to comply. However, the extent to which the impact of taxation is felt is dependent on the level of compliance with tax payments which is further dependent on the level of tax literacy (Ojong, Anthony and Arikpo, 2016). In Nigeria, the incidence of tax evasion and avoidance by taxpayers is high, leading to low level of government tax revenue which further reduces the level of infrastructural development, culminating into reduction in per capita income and standard of living of the people.

As a result of the importance of tax revenue in infrastructural development in particular and economic growth of Nigeria in general and in the bid to transform and diversify the existing tax revenue base, successive governments have introduced several reforms to the Nigerian tax system to enable it contribute sufficiently to the economy. Some of the reforms introduced in recent times include; the Companies Income Tax Amendment Acts of 2007, the Value Added Tax Act of 2004, the Personal Income Tax Act of 2011, the Stamp Duties Act of 2004, the Industrial Development (Income Relief) Act 2004, the National Information Technology Development Agency Act of 2007, the Petroleum Profit Tax Act of 2004, the Capital Gains Tax Act 2004, the Education Tax Act of 2004 and so on. Some of these Acts have undergone some changes. In spite of the various reforms, tax policy critics observe that the tax system still have some setbacks especially in its structure and administration (Odusola, 2003). Again, the

National Tax Policy Document of 2008 pointed out that the system lacked sufficient information for tax payers on tax compliance requirements which has created room for leakages. To Akintoye and Tashie (2013) the Nigerian economy has remained in a deep slumber with macro-economic indicators reflecting an economy in dire need of rejuvenation, revival and indeed a radical reform for enhanced economic growth. However, these reforms have made significant impact on improving government tax revenue generation.

Statement of the Problem

In most advanced countries, tax revenue plays significant role in infrastructural development. This may in part explain why they have standard hospitals and health care management system, quality education, good road network system, constant power supply to mention but a few. Infrastructural development in Nigeria is nothing to write home about as our health care management system has either collapsed or at stage of collapsing, the education system seems to have lost significant quality with both academic and nonacademic staff in the tertiary institutions consistently on strike, the roads are mere death traps while electricity supply goes from bad to worse. Notwithstanding that our tax system and structure has undergone several reforms leading to increase in revenue generation, the impact of the improvement in revenue generation has not been felt in infrastructure development. It is evidenced that the role of taxation in promoting economic growth in Nigeria is not felt (Otu and Theophilus, 2013). It is therefore wise to investigate the extent federally collected tax revenue which makes up over 90 percent of tax revenue in Nigeria has impacted on the infrastructural development of nation.

Objectives of the Study

The key objective of this study is to investigate the extent federal tax revenue has impacted on Nigeria's infrastructural facilities. The study made an examination of the impact of; Company income tax, Value added tax, information technology tax and petroleum profit tax on infrastructural development of Nigeria.

Research Hypotheses

To enable us evaluate the impact of federally collected tax revenue on Nigeria's infrastructure, the study tested the following hypotheses.

H_{01}:   Company income tax has no significant impact on infrastructural development of Nigeria.

H_{02}:   Value added tax has no significant impact on infrastructural development of Nigeria.

H_{03}:   Information technology tax has no significant impact on infrastructural development of Nigeria.

H_{04}:   Petroleum profit tax has no significant impact on infrastructural development of Nigeria.

Conceptual Review
Concept of Federal Tax Revenue

Contributing towards government upkeep and activities in the form of taxation is not new in political and economic theory. Taxation could be trace to the early days of civilization when a group of people leaving together appointed group of persons as their leaders. To sustain the leadership and protect the territory, there was need for obligatory contributions in the form of property and/or self-service. While the farmers were required to provide part of their farm produce, non-farmers

contributed services for public work. Typical cases are bound: In the construction of Solomon's house and other structures during his reign, the Israelites were subjected to compulsory levy which constrained able-bodied men to fetch "costly stones" and other building materials required for the construction (1 Kings). Also, the ancient empires of Egypt and Babylon obtained revenues from public land owners and extracted levies in kind in the form of forced labour. Again, during the European middle age, public revenue was derived largely from the public landlords by the Crown Local Lords or Bishops.

Taxation in the concept of this study can be classified into two; federally collected taxes and taxes collected by the states and local government authorities in Nigeria. Some of the taxes collectable by the federal government in Nigeria include company income tax, value added tax, information technology tax, petroleum profit tax, stamp duties, education tax and so on. Altogether, these taxes make up to about 90 percent of tax revenue in Nigeria thus living 10 percent to states and local government authorities.

Taxation is a compulsory and obligatory contribution made by individuals and organisations towards defraying the expenditure of government (Chigbu, Eze and Appah, 2012). It is the transfer of real economic resources from the private sector to the public sector to finance public sector activities (Okafor, 2012).These definitions are narrow as they see taxation as only a tool for revenue generation. Taxation helps in regulating economic activities. Taxation is the demand made by the government of a country for a compulsory payment of money by the citizens of the country with

the objectives of raising revenue to finance government expenditures, satisfying collective wants of the people and regulating economic and social policies (Ezejelue and Ihendinihu, 2006). This definition of taxation equally has some issues as taxes mainly in the olden days were paid with other objects which were not money. It is a compulsory levy by the government through its agents on the incomes and consumption of the citizens and profit of companies towards defraying government expenditure and regulating government economic, social and political activities. One word we have used in this study to define taxation and which is very common in every definition of taxation is "compulsory". Compulsory here means that by law, it is mandatory or a must for the citizens and corporate bodies earning income to pay tax. That is to say that non-payment of tax is unlawful and the offender could be subjected to legal action. The term taxation does not mean specific charges made against a person or payments made by persons for current or permanent benefits and privileges accruing only to those making such payments.

Going by the definition of taxation, Nzotta (2007) identified four features of taxation in any society; first, it is a compulsory contribution made by the citizens to the government and this contribution is for common goal. Secondly, tax payment is a general obligation to the payer. Thirdly, there is a presumption that the taxpayer's contribution to the public pulse may not be equivalent to the benefits received by the taxpayer or his immediate family. Finally, tax is not imposed on a citizen by the government because it has rendered specific service to him or his

family. Nightingale (2010) buttressed the benefit received/contribution made by the taxpayer by asserting that tax is discriminatory in the sense that it is assessed on persons or property based on profits/incomes or gains, the benefit derived by citizens from tax payment is without reference to the contribution of individual taxpayer.

Critically, the main objective of taxation is to raise revenue to meet government fiscal operations, to redistribute wealth and manage the economy (Ola, 2018; Jhingan, 2014; Bhartia, 2009). A good tax structure plays multiple roles in the process of economic development of any nation which Nigeria is not an exception (Appah, 2010). Taxation plays three key roles; to raise revenue for the government, to regulate the economy and economic activities and to control income and employment (Appah, 2010). Taxes generally have allocation, distributional and stabilization functions (Nzotta, 2017). While the allocation function entails the determination of the pattern of production (Nzotta, 2017), the distribution function deals with the distribution of income and wealth to ensure conformity with what society considers fair and just (Musgrave and Musgrave, 2016). The stabilization function seeks to attain high level of employment, a reasonable level of price stability, an appropriate rate of economic growth, stable balance of trade and balance of payments (Nwezeaku, 2015).

Tax revenue can also be expended on capital projects otherwise called consumer expenditure thereby creating social and economic infrastructure which will improve the social life of the people (Angahar and Alfred, 2012).

The Nature and Purpose of Infrastructure Development

All over the world, governments are not only saddled with the responsibilities of protecting life and properties of its citizen but providing basic infrastructure. Infrastructure is basic essential service that should be put in place to enable development to occur (Ude and Uzuegbu, 2018). It is basic amenity mostly provided by the government to facilitate and accelerate economic growth and most of the time helps to improve life expectancy. Infrastructure development can be seen as the creation of capital-intensive projects and services, which are publicly owned and regulated and which not only provides the backbone for economic growth but facilitates the production and distribution system. Traffic congestion, power black outs, bad roads, lack of access to capital and money markets, telecommunication services failure, shortage of drinking water, poorly equipped schools at all levels, lack of and in most cases, non-availability of quality hospitals, absence of welfare services to mention but a few, all bear witness to the inadequate existence of infrastructure in Nigeria. The important roles which the availability of quality infrastructural facilities play in economic growth and development cannot be over-emphasized: infrastructural facilities stimulate foreign direct investment Wheeler and Moody (1992), Richard (1999), Morisset (2000), Sckkat (2004). They attract certain levels of industrial activities (Lorce and Guisinger, 1995, Asiedu, 2000). Availability of infrastructure facilitates investment in less developed areas and helps to increase productivity (Wei, 2000). Edun (2011) concluded by saying that it is imperative for countries to invest more on infrastructural

facilities as they try to bring down the escalating prices of productive and distributive activities. From the endogenous growth models, infrastructure leads economic to growth while the Wagner's law sees the increase in GDP as being driven by public investment in infrastructural facilities. Following from the above, infrastructure can be said to be more than just a factor of production, but rather a veritable tool necessary for increasing the rate of economic activities

Theoretical Underpinning
Optimal Theory of Taxation.

Samuelson (2000) proposition of optimal tax theory focused on equality of tax system which according to Ene (2008), forms the basis of major tax reforms. Central to this theory, Samuelson (2000), opined that a tax system should minimize the administrative cost and disincentive effects. This theory is closely link to the canon of Economy of taxation propounded by Adam Smith. In the words of Adam Smith, 'every tax ought to be contrived as both to take out and to keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state'. By this, Adam Smith meant according to Kiabel (2011), that tax should not be; expensive to collect, harmful to the production of good, irksome to the people in that it exposed them to much trouble, vexation and oppression and a disincentive to effort. Since every tax has cost of collection, this theory is of the view that the cost of collection both in terms of monetary resources expended and in the use of human resources should be as optimal as possible. The theory thus, recommends that the cost of administering

tax should not be higher than the revenue derived from it.

Ability to Pay Theory

The theory states that tax system ought to be charged on the basis of taxable adult's ability to pay. Government operating expenses ought to emanate from 'someone who has' rather than 'someone who does not have'. Bhartia (2009) argues that a resident ought to pay tax simply for the reason that he/she has capability to pay and taxpayers comparative contribution to the entire tax-profile should be determined by the taxpayer's proportional payment capability. Individual tax ought to be based on the ability to pay (Anyanfo, 1996). Eftekhari (2009) avers tax system remains a painful rehearsal comparatively for government and taxpayers since start of human advancement. This painful challenge elicited controversies and strong dissenting political views over time. This precept conceived and contrived originally in the 16th century which technically was made popular by Swiss philosopher Jean Jacques Rousseau (1712-1778), the French political economist, Jean Baptiste Say (1767-1832), and the English economist John Stuart Mill (1806-1873).

The ability to pay theory can equally be traced to the canon of Equality of Adam Smith of 1776. According to Adam Smith, the subject of every state ought to contribute towards the support of the government as nearly as possible in proportion to their respective abilities: that is, in proportion to the revenue which they respectively enjoy under the protection of the state (Adedeji, 2014). Contributing to the up-keep of the state 'as nearly as possible' may justify the essence of minimum tax system operating in Nigeria.

This principle according to Kiabel (2011) observes the objective of economic justice. Citizens in equal circumstances with approximately the same incomes should pay approximately the same level of taxes. In absolute terms, the richer should pay more taxes because without the protection of the state they could not have earned and enjoyed the extra income. This theory supports progressive tax system, that is, the more the income earned, the more the tax burden. While this theory holds in the case of direct tax system, it does not hold in the case of consumption tax scheme.

The theory is described to be highly unbiased and commonly in use in developed economies. The ability –to-pay theory is justifiably encouraged and embraced on the bases of equal sacrifice on the part of taxable public and government. Tax payments are perceived as though taxpayers are being deprived since it requires surrendering a proportion of proceeds to the state which ordinarily would have been plowed into private concerns.

Empirical Review

Oriakha and Ahuru (2014) investigated the Impact of Taxation on Federal Revenue Generation in Nigeria. The researchers examined the relationship between Federal tax collectable Revenue and specific tax revenue generation sources. The study employed annual time series data spanning from 1981-2011 and used various income taxes as proxies for tax. Data collected were analyzed using ordinary least square regression techniques (OLS). VAT and CIT was found by the study as good tax handle for the government to maximize its revenue.

Ihenyen and Mieseigha (2014) examined Taxation as an Instrument of economic growth: The Nigeria Perspective. The purpose of the study was to examine the extent taxation may function as an instrument for infrastructure growth in Nigeria. Using annual time series data sourced from the Central Bank of Nigeria Statistical Bulletin for the period of 1980 to 2013, a linear model of Companies Income Tax (CIT), Value Added Tax (VAT) and capital formation was estimated using the ordinary least square regression technique. The empirical result showed that the hypothesized link among CIT, VAT and growth in infrastructure indeed exist in the Nigerian context at 5% level of significant. They thus conclude that the result offers tantalizing evidence that taxation is an instrument of economic growth in Nigeria.

Afuberoh and Okoye (2014) carried out a study on 'The Impact of Taxation on Revenue Generation in Nigeria: A Study of Federal Capital Territory and Selected states in Nigeria'. The broad objective of the study was to investigate the impact of taxation on revenue generation in Nigeria with reference to the FCT and selected states in Nigeria. The study made use of secondary data in reviewing the related literature while primary data was employed to analyze the data collected for the study. Hypotheses were tested using regression analysis computed with the aid of SSPS version 17.0. The study revealed among other things that taxation has made significant contribution to revenue generation and GDP of Nigeria.

Usman & Bilyamina (2013) carried out a research on Taxation and Social Development in Nigeria: Tackling Kano's Hidden Economy. The broad objective of the study was to look at taxation as a tool for social development with a view to assessing the nature and size of Kano's

hidden economy, identifying those in the hidden economy and appropriate approach to tackling the revenue loss. The study adopted surveyed design, administered 40 questionnaires to generate data which was measured on a simple majority or percentage of opinions. The study found that more tax compliance is significantly associated with adequate campaign and judicious utilization of tax funds.

Otu & Adejumo (2013) carried out a research on 'The Effects of Tax Revenue on Economic Growth in Nigeria (1970-2011)'. Utilizing time series data for the period spanning from 1970- 2011, adopting the ordinary Least Square (OLS) regression technique, the study established that tax revenue has positive effect on economic growth in Nigeria within the period studied by the researchers. The result revealed that tax revenue affected domestic investment, labour force and foreign direct investment positively which on the other hand had significant effect on economic growth in Nigeria.

Onwuchekwa and Aruwa (2014) examined the impact of value added tax on infrastructure in Nigeria. Primary data was employed to analyze the data collected for the study. Hypotheses were tested using regression analysis computed with the aid of SSPS version 17.0. The study revealed among other things that value added tax has made significant contribution to infrastructural growth of Nigeria.

Ayinde, Kuranga and Lukman (2015) investigated the impact of federal tax revenue on capital expenditure and recurrent expenditure in Nigeria. Secondary data collected for the study spanned from 1981 to 2011, a linear model of Companies Income Tax (CIT), Value Added Tax (VAT)

and capital formation was estimated using the ordinary least square regression technique. The empirical result showed that the hypothesized link among CIT, VAT and growth in infrastructure indeed exist in the Nigerian context at 5% level of significant.

Methodology
Research Design

The study employed the exploratory and ex-post facto research design. The exploratory design was used to gather relevant data while the ex-post facto design was adopted on the basis that it does not provide the researcher an opportunity to control the variables as they have already occurred and cannot be manipulated. Again, it helps in establishing causal or/and correlational relationship among variables. The study aimed at investigating the extent federal tax revenue impacted on the infrastructure development of Nigeria from 1990 to 2022.

Nature, Sources and Methods of Data Collection

The study employed secondary source of data collection. The data were time series data derived using the desk survey approach from Central Bank of Nigeria (CBN) Statistical Bulletin, internet and World Bank Annual reports.

Data Analysis Technique

The analytical tools employed in this study were Descriptive Statistics, Unit root test, error correction model, Hausman test, Serial Correlation and LM Test.

Model Specification

The model specification is based on the assumption that federally collected tax revenue (FCTR) plays significant role on infrastructural development in Nigeria. For the purpose of this study, Company income

tax (CIT), Value added tax (VAT), Petroleum profit tax (PPT) and Information technology tax (ITT) were employed as proxies for federally collected tax revenue while infrastructure development (IFD) was measured by actual capital expenditure in line with Ajayi and Edewusi (2020) and Hayati, Shafinar and Abdul (2019).

The model states as follows:

IFD = f(FCTR)

IFD= f(CIT+VAT+PPT+ITT).

The model above is deterministic and thus prone to frailties hence to remove such frailties that may make the model weak, the variables were translated into econometric model as show below.

IFD= $\beta_0 + \beta_1 FCTR_{it} + \mu_{it}$

IFD =$\beta_0 + \beta_1 CIT + \beta_2 VAT_+ \beta_3 PPT + \beta 4 ITT + \mu_{it}$ ...

The variables are heteroscedasticity in nature and as such the values vary significantly from one another. For the purpose of analysis, the model was logged to normalize the data set.

Thus,   log   IFD= $\beta_0 + log\beta_1 FTCR_{it} + \mu_{it}$ ....Broad objective.

log   IFD   =$\beta_0 + log\beta_1 CIT + log\beta_2 VAT_+ log\beta_3 PPT + log\beta 4 ITT + \mu_{it}$........Specific objectives.

Where: IFD   =   Infrastructure development, CIT = Company income tax, VAT = Value added tax, PPT = Petroleum profit tax, ITT= Information technology tax,

$\beta_{0=}$ Intercept of the Regression, β_1, β_2, β_3 $\beta4$ are Coefficients of the regression, μ = Error Term and t = Time.

Data Analysis and Discussion
Data Presentation

The study examined the impact of federal tax revenue on infrastructure development in Nigeria. The data extracted from the records of the Central Bank of Nigeria Statistical bulletin and Federal office of Statistics were estimated based on the error estimation model and analyzed with the aid of E-views version 9.0. The study employed 5 variables. Infrastructure development (IFD) was used as proxy for the dependent variable while Company income tax (CIT), Value added tax (VAT), Petroleum profit tax (PPT) and Information technology tax (ITT) were used as measures of the independent variable. The values were stated in billions of Nigerian naira. The variables were logged due to the different magnitude of the values extracted. The adjusted R square which is the coefficient of determination and the F statistic were used to ascertain the significance of the overall model. Specifically, the probability of the F-statistic test was used to test the hypotheses of the study to determine the relationship between the variables.

Data Analysis and Discussion of Results
Analysis and Discussion of Descriptive Statistics

The descriptive statistics for both the dependent and independent variables are presented in table 4.1 below:

Table 4.1: summary of descriptive Statistics of the variables in the model

Variables	IFD	PPT	CIT	VAT	ITT
Mean	4.771287	4.25396	4.29320	3.89763	2.406310
Median	3.000423	47.54503	4.168134	3.102673	2.607467

Maximum	47.45126	68.02736	5.671400	4.023921	4.063637
Minimum	40.100218	22.54308	3.318966	2.440995	-0.558919
Std. Dev.	5.296211	9.559574	0.615151	0.435181	0.828505
Skewness	0.791036	-0.046262	0.746168	0.340648	-0.586049
Kurtosis	2.50377	2.579727	2.599595	1.958177	3.302217
Jarque-Bera	6422.311	2.716114	35.01511	22.72687	21.48887
Probability	0.000000	0.257160	0.000000	0.000012	0.000022
Sum	1327.493	16633.39	1523.921	1087.596	894.3017
Sum Sq. Dev.	9845.499	32076.29	132.8220	66.47321	240.9334
Observations	33	33	33	33	33

Source: Researcher's computation using E-views 9.0

The summary statistics were used to compare the measures of central tendency, the measures of dispersion and the measures of normality of the data set. The measures of central tendency compared the mean and median values of the data set. While the mean considered the average values of the variables, the median looked at the middle distribution of the data set. The measures of dispersion considered in this study were the maximum and the minimum values and the standard deviation while the measures of normality considered were skewness and kurtosis.

From the result, it could be observed that the sample mean value of infrastructure development of 4.771 and median of 3.000 have difference of 1.77. From the difference of 1.77, it is assumed that there are outliers in the data set IFD. This is reflected in the value of the maximum of 47.451 and minimum of 40.100 which has difference 7.351. The measures of variability for IFD have 5.296 as the standard deviation with coefficient of variation (standard deviation/mean) of 1.404 indicating the dispersion from the mean. The skewness of 0.791 suggested that the frequency of the data set for IFD is

not centrally distributed and is skewed towards the right. The kurtosis value of 2.503 indicated that the distribution is flat while the Jarque-Bera test value of 6422.311 with probability of 0.00 suggested the reject of the null hypothesis that the distribution is normal hence we conclude that the distribution is far from normality.

Petroleum profit tax (PPT) and Company income tax (CIT) have mean values of 48.554 and 4.329 respectively and median of 47.545 and 4.168 respectively. The results also showed maximum values of 68.027 for PPT and 5.671 for CIT and minimum values of 22.543 and 3.319 respectively for PPT and CIT which suggested that PPT is not evenly distributed among the years meaning that there were years with better PPT contribution than others. The measure of variability for CIT such as the standard deviation (0.615) and coefficient of variation 0.142 (0.615/4.329) is low suggesting that the variation from the mean among the years is low. The kurtosis value of 2.599 indicates that the distribution of CIT is flat while the Jarque-Bera test of 35,015 with probability of 0.00 suggests that there is no normality in the distribution. The skewness of -0.0463 for

PPT is an indication that the values were negatively skewed.

The descriptive statistic result on table 4.1 also, has mean results of 3.089 and 2.541 respectively of the logged data for Value added tax (VAT) and information technology tax (ITT). The distribution of the data has median values of 3.103 and 2.607 for VAT and ITT respectively which are very close to the mean values. The median result of VAT (3.103) depicts that the data set has distribution that is symmetrical in nature. ITT has standard deviation of 0.435 and coefficient of variation of 0.141 suggesting that the dispersion from the mean is considerably low among the variables. The mean and median values for VAT and ITT shown above suggested that the frequency of the distribution is skewed towards the left while the kurtosis value 1.958 showed that the distribution is flat. The probability of the distribution is far from normality based on the Jarque-Bera test result with probability of 0.00.

In summary, given the descriptive statistics result in table 4.1 above, the JB values of 6422.311, 2.716, 35.015, 22.726, 21.488 and 6.436 with their respective p-values of 0.000000, 0.257160, 0.000000, 0.000012, 0.000022 and 0.040024 respectively for IFD, PPT, CIT, VAT and ITT respectively, the null hypotheses for IFD, CIT, VAT and ITT were rejected while that of PPT was accepted

Analysis and Discussion of Stationarity/ Unit Root Tests

To avoid running a spurious regression, a unit root test was carried out to ensure that the variables employed in this study are mean reverting. For this purpose the Augment Dickey Fuller test was utilized and the result of the test is presented in the table 4.2 below.

Table 4.2: Summary of Augmented Dickey Fuller (ADF) Unit root tests result

Variable	P-value	Critical values	Order	Statistic
logIFD	0.0000	-7.58138	1(1)	-8.43237
logPPT	0.0000	-5.54216	1(1)	-6.98854
logCIT	0.0016	-1.53201	1(1)	-2.69920
logVAT	0.0008	-2.56041	1(1)	-3.16352
logITT	0.0023	-2.54321	1(1)	-3.81896

Source: Computation by author using E-view 9.0.

Table 4.2 above is the result of the first test required to know the individual stationarity of the variables. The Augmented Dickey Fuller (ADF) unit root test result can be interpreted using either the t-statistic or the p-value. A variable is stationary if the ADF t-statistic in absolute term is greater than the ADF critical value or the p-value is less than or equal to 0.05 level of significance. The result in table 4.2 above showed that all the variables are stationary at level and are therefore assumed to be co-integrated.

Table 4.3: Error Correction Regression
Dependent Variable: D(LOGIFD)
Method: Panel Least Squares
Date: 09/07/23 Time: 04:37
Sample (adjusted): 1990 2022

Total panel (balanced) observations: 33

Variables	Coefficient	Std. Error	t-Statistic	Prob.
LOGIFD	7.63261	0.000640	6.587962	0.0020
LOGPPT	0.270170	0.053332	5.065853	0.0000
LOGITT	0.011811	0.000283	0.644669	0.3632
LOGVAT	0.228110	0.000250	0.312003	0.0015
LOGCIT	-0.139911	0.001315	0.636031	0.5200

R-squared	0.794001	Mean dependent var	0.019072
Adjusted R-squared	0.777091	S.D. dependent var	0.015510
S.E. of regression	0.014976	Akaike info criterion	-5.549249
Sum squared resid	0.710647	Schwarz criterion	-5.490369
Log likelihood	892.8798	Hannan-Quinn criter.	-5.525737
F-statistic	6.791993	Durbin-Watson stat	2.186103
Prob(F-statistic)	0.000030		

Source: Researcher's computation from variables using E-views 9.

The regression results employed to examine the impact of federal taxation revenue on infrastructure development of Nigeria between 1990 and 2022 showed the goodness of fit of the model as shown by the R-squared indicated a good fit of the model. An adjusted R- square value of 0.77709 or 78% indicated that the model fits the data well suggesting that the total variation in the observed behavior of infrastructure development measured by actual total capital expenditure was jointly explained by variation in petroleum profit tax, company income tax, value added tax and information technology tax while the remaining 22% is accounted for by factors not included in the model or stochastic error.

For test of the individual statistical significant of the parameters both the t-statistics and the f-statistics were considered.

To ensure that the set of data was free from serial auto-correlation, the Durbin Watson statistic for the model specified was computed. The Durbin Watson statistics for the model specified is estimated at 2.186103. The Durbin Watson statistics for the series data is below the standard of 2.5 indicating the absence of auto-correlation. The Durbin Watson statistics ensures that the residuals of the proceeding and succeeding sets of data do not affect each other to cause the problem of auto-correlation. Gujarati and Sangeetha (2007) explained that the value for Durbin Watson should not be above the standard of 2.5. Thus, this model exhibit low risk of potential autocorrelation problem as the model shows a DW statistics below 2.5.

The coefficient of infrastructure development (7.633) and t-statistic of 6.588 are positive and statistically significant at 5% level. Also, petroleum profit tax (PPT) has positive coefficient of 0.271 which is

statistically significant at both 1% and 5% levels suggesting that the impact of PPT on infrastructure development in Nigeria was significant and positive during the period under review. The result equally revealed that a unit increase in PPT caused infrastructure development in Nigeria to improve by 0.271 (27%). On the other hand, information technology tax (ITT) showed a positive coefficient of 0.011 with t-statistics of 0.645 which is insignificant at 5% level (0.3632) indicating that the impact of ITT on infrastructure development within the period of the study was insignificantly positive. A unit change in ITT would result to an improvement in IFD at approximately 0.011 (1%). Similarly, value added tax (VAT) with positive coefficient of 0.228 is statistically significant at both 1% and 5% levels (0.001) revealing that one percent increase in VAT revenue collection made an improvement in infrastructure of approximately 0.23 (23%) within the period of the study. The result is equally of the view that VAT impacted positively on infrastructure development of Nigeria within the period of the study. Surprisingly and contrary to our expectation, the result indicated that the impact of Company income tax (CIT) was insignificant and negative on infrastructure development of Nigeria during the period of the study having negative coefficient of -0.139 (14%) and probability value of 0.520 which is insignificant at 5% level.

Test of Hypotheses

The null hypotheses formulated for this study were tested using the probability value of the F-statistic.

Decision rule: Accept alternative hypothesis and reject null hypothesis if probability value is significant at 5% level (ie P < 0.05). On the other hand, accept null hypothesis and reject alternative hypothesis if probability value is insignificant at 5% level (ie P > 0.05).

H$_{01}$:　　Petroleum profit tax has no significant impact on infrastructure development in Nigeria. To test the hypothesis that:

H$_{01}$:　　β_1=0 i.e. the slope coefficient is simultaneously equal to zero.

H$_{02}$:　　$\beta_1 \neq 0$ i.e., the slope coefficient is not simultaneously equal to zero.

If the probability of the F statistic result is less than 5% at level of significance, the study would reject the null hypothesis, H$_0$ and accept the alternative hypothesis H$_1$.

From table 4.3 above, the F statistic with value 6.7919 has probability value of 0.00% which is below 5% level of significance implying the rejection of the null hypothesis that PPT has no significant impact on infrastructural development of Nigeria. We therefore concluded that Petroleum profit tax has significant impact on infrastructural development of Nigeria. This result is in line with the t-statistic result which suggested that PPT has positive and significant impact on infrastructure development of Nigeria.

Ho$_2$: Information Technology Tax has no Significant Impact on Infrastructural Development of Nigeria.
To Test the Hypothesis that:

H$_{01}$:　　β_1=0 i.e. the slope coefficient is simultaneously equal to zero.

H$_{01}$:　　$\beta_1 \neq 0$ i.e., the slope coefficientsis not simultaneously equal to zero.

Following the same rule, the F statistic of 6.7919 has probability value of 0.00% which is below 5% level of significance indicating the rejection of the null hypothesis that ITT has no significant impact on infrastructural development of

Nigeria. This result implies that information technology tax has significant impact on infrastructural development of Nigeria. This result is somewhat different from the t-statistic result which is of the view that ITT has positive impact on infrastructure development of Nigeria but the impact was insignificant.

Ho₃: Value added tax has no significant impact on infrastructural development of Nigeria.
To test the hypothesis that:
H₀₁: $\beta_1=0$ i.e. the slope coefficient is simultaneously equal to zero.

H₀₂: $\beta_1 \neq 0$ i.e., the slope coefficientsis not simultaneously equal to zero.

In line with the stated rule, the F statistic of 6.7919 has probability value of 0.00% which is below 5% level of significance. The implication of this result is the rejection of the null hypothesis that VAT has no significant impact on infrastructure development of Nigeria. We thus conclude that Value added tax has significant impact on infrastructure development of Nigeria. This result is also in agreement with the t-statistic result which suggested that VAT has positive and significant impact on infrastructure development of Nigeria.

Ho₄: Company Income Tax has no Significant Impact on Infrastructural Development of Nigeria.
To Test The Hypothesis That:
H₀₁: $\beta_1=0$ i.e. the slope coefficient is simultaneously equal to zero.
H₀₁: $\beta_1 \neq 0$ i.e., the slope coefficient is not simultaneously equal to zero.

In line with the same rule, the F statistic of 6.7919 has probability value of 0.00% which is below 5% level of

significance suggesting the rejection of the null hypothesis that CIT has no significant impact on infrastructural development of Nigeria. We thus conclude that Company income tax has significant impact on infrastructural development of Nigeria. This result is however not in agreement with the t-statistic result which showed that CIT has negative and insignificant impact on infrastructure development of Nigeria.

Discussion of Findings
The study made an assessment of the impact of federally collected tax revenue on infrastructural development of Nigeria between 1990 and 2022. We employed error correction model and E-view 9.0 for data analysis to obtain 33 observations. Proxies used for federal tax revenue were petroleum profit tax, Company income tax, Value added tax and Information technology tax while infrastructural development (dependent variable) was measured with actual capital expenditure. All the variables were logged to arrive at the same magnitude.

Findings from the first tested hypothesis indicated that Petroleum profit tax has statistically significant positive impact on infrastructure development of Nigeria. This result was affirmed by both the t-statistic and the f-statistics result and is consistent with the findings of Okpara (2020), Akani (2019) and Kunofiwa (2018) among others. The result of the second tested hypothesis indicated that f-statistic result was slightly different from that of the t-statistic suggested that Information technology tax has positive significant impact on infrastructure development of Nigeria. The findings is consistent with the findings of Okoyamu (2021), Anusike and Abara (2019) but inconsistent with Azuka

and Nfon (2018), Oriakhi and Ahuru (2014). In the same vain, findings from the third hypothesis suggested that Value added tax was statistically significant and impacted positively on infrastructure development of Nigeria. The result which was affirmed by both the t-statistic and the f-statistic is inconsistent with the findings of Ezeudu and Ariwa (2018) but consistent with the findings of Okafor and Azubuike (2018), Ojong, Anthony and Arikpo (2016). Findings from the forth tested hypothesis gave varying results. While F-statistic revealed that Company income tax impacted statistically significant on infrastructure development in Nigeria within the period of the study, T-statistic suggested otherwise. The reason for this inconsistency might be traced to the fact that so many companies have shut-down their operations in Nigeria as a result of hash operating environment. Needless saying that revenue from company income tax will be adversely affected by this condition. While the F-statistic result is inconsistent with the findings of Okafor and Azubuike (2018), the result is consistent with the findings of Ezeudu and Ariwa (2018). An adjusted R-square value of 0.77709 or 78% indicated that the model fits the data well suggesting that the total variation in the observed behavior of infrastructure development was jointly accounted for by variation in petroleum profit tax, company income tax, value added tax and information technology tax while the remaining 22% was explained by factors not included in the model or stochastic error term.

Summary of major findings

Major findings from the tested hypotheses (F- statistic) revealed that Petroleum profit tax, Information technology tax and Value added tax have positive and significant impact on infrastructure development of Nigeria but T-statistic result showed that ITT has insignificant impact on IFD. While the f-statistic result suggested that Company income tax has significant impact on infrastructure development of Nigeria, findings from the t-statistic indicated that company income tax has insignificant negative impact on infrastructure development of Nigeria within the period of the study. Findings from the descriptive statistics with respect to JB suggested the rejection of the null hypotheses for IFD, CIT, VAT and ITT while that of PPT was accepted. The ADF test result showed that all the variables are stationary at level.

Conclusion

The provision of basic infrastructure is quite necessary for the growth and development of every nation, Nigeria inclusive. It is through efficient and effective tax system that sufficient revenue can be generated to provide the needed infrastructural facilities. This has not been so with regards to Nigeria due primarily to poor tax administration and corruption by the government and tax authorities and the unwillingness of the citizens to perform this civic responsibility. Findings from the study, suggested that company income tax performed poorly in contributing to government tax revenue due to hash operating environment. This calls for policy action.

Recommendations

There is urgent need for Nigerian government to create an enabling environment for corporate organisations to operate profitably. This can be done by providing the needed infrastructural facilities, giving companies tax incentives, having well defined policy direction capable

of stabilizing the economy and fighting insecurity at all levels.

Government should employ modern technology in tax revenue collection, ensure that only well-qualified and trusted personnel are given the opportunity to work as tax officials while a special court or tribunal is set up to adjudicate on cases of tax evasion. Accountability on the part of government is equally necessary to encourage taxpayers.

Government should ensure that all sources of revenue generation are fully tapped and the proceeds directed towards infrastructure development.

There is need to conduct extensive investigation on the reasons why companies are closing down their business operations in Nigeria which has adversely affected company income tax revenue while the findings should be addressed urgently.

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