ISSN: 4688 - 7263
Volume 9, Number 3, 2022
Advanced Journal of Accounting, Management and Marketing Research

ELECTRONIC TAX SYSTEM AND TAX REVENUE EFFICIENCY IN NIGERIA 2008 -2021

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ABSTRACT

The study examined electronic tax system and tax revenue efficiency in Nigeria 2008 -2021. The objectives of the study were among others; to examine the difference between pre-post company's income tax and tax revenue efficiency in Nigeria, to determine the difference between pre-post petroleum profit tax and tax revenue efficiency in Nigeria, to evaluate the difference between member pre-post capital gain tax and tax revenue efficiency in Nigeria. The study adopted quasi-experimental study designs. The population and sample size of the study was the entire 36 states and the federal capital territory of Nigeria. Covering fourteen (14) years (2008-2021) of federal government of Nigeria taxes and tax revenue efficiency. The formulated research questions were analyzed with descriptive statistics. The hypotheses were tested using The paired sample t-test also called Pre-Post Test analysis. The findings of the study among others were that; there is significant difference between Pre-Post electronic company's income tax and tax revenue efficiency in Nigeria. Also, there is not significant difference between Pre-Post electronic petroleum profit tax and tax revenue efficiency in Nigeria. And there is significant difference between Pre-Post electronic capital gain tax and tax revenue efficiency in Nigeria. The study recommended that; Government should ensure compliance to electronic tax payments system because electronic taxation system in term of company income tax generate more revenue in Nigeria. And Federal government through Federal Inland Revenue Services (FIRS) and Nigerian National Petroleum Corporation (NNPC) should work out modalities on how to sensitize oil companies and penalize corporate tax officials so as to maximize the expected positive impact of the of E-tax payment.

Keywords: Electronic tax system, Tax revenue efficiency, pre-post company's income tax, pre-post petroleum profit tax, pre-post capital gain tax and pre-post value added tax.

INTRODUCTION

Over the years, the Nigerian tax system has not been able to achieve these perceived administration, tax collection and revenue buoyancy objectives, also, facilitating voluntary compliance, providing adequate tax records for easy communication of information and efficiently minimizing cost of collection as a result of some setbacks and challenges, some of which include: lack of stewardship amongst taxpayers, multiplicity of taxes, complex tax payment system, lack of database, tax evasion and avoidance, corruption, and government instability, which have instigated noncompliance with relevant tax laws (Omesi & Maccarthy, 2021).

Consequently, in the last two decades, information and communication technology (ICT) has advanced at an unprecedented rate, to the point where numerous tasks previously performed manually by humans have been taken over by computerized systems (Chiamaka et al., 2021). Adoption of information and communication technology (ICT) has accelerated the growth of e-commerce and e-governance worldwide, in every aspect of life, including business, entertainment, education, communications, healthcare, defense, and taxation (Newman & Eghosa, 2019). Due to the use of computer systems and networks, the process and administration of taxation in various countries have adopted electronic tax administrations such as tax registration, filing tax returns, and payment of taxes (PricewaterhouseCoopers (PWC), 2013). In several cases, it has been

exposed that this has been one of the factors that contributed to higher tax receipts (Awai & Oboh, 2020; Ofurum et al., 2018; Umenweke & Ifediora, 2016). According to Chiamaka et al. (2021), Onubia et al., (2020); tax authorities skeletally adopt e-taxation as such tax revenue has not recorded significant improvement in Nigeria.

However, Nigeria's tax administration has been plagued by numerous loopholes, discrepancies, and complications in the filing and collection of taxes (Ofurum et al., 2018; Adegbie & Akinyemi, 2020; Onubia et al., 2020; Chiamaka et al., 2021). The majority of developed countries are more successful in their tax revenue drive as a result of their adoption of an electronic tax system (e-taxation), which enables taxpayers to pay tax, file returns, and receive an assessment from tax authorities without having to visit tax offices. This has been demonstrated in several instances to be one of the factors contributing to increased tax receipts (Awai & Oboh, 2020; Ofurum et al., 2018; Umenweke & Ifediora, 2016). According to Chiamaka et al. (2021), tax authorities adopt e-taxation on a skeletal basis because tax revenue has not increased significantly in Nigeria.

E-taxation is the process of collection and administration of tax procedures through an electronic medium. According to Che-Azmi and Kamarulzaman (2014), the e-tax payment system is one of the ways through which governments globally make use of information and communication technologies to enhance the provision of public services and the circulation of public administration information to society. Wasao (2014) describes the electronic tax system as an online system or channel where taxpayers are able to have access or permit access to the platform through the use of the internet, in order to have access to all the services provided by the tax authority, such as the registration for a tax identification number and electronic tax filing of tax returns.

The concept of an electronic tax system refers to a computerized tax administration system that is specially designed to handle tax administration starting from the registration of taxpayers to the processing of payments through the filing of tax returns. Therefore, the adoption of information technology in the enforcement of core tax processes such as online registration, online filing of tax returns, online payments, and general maintenance of databases brought about what is today called the electronic tax system. It involves a process where tax documents are submitted through the internet, usually without the need to submit any paper returns. The system encompasses the use of internet technology, the worldwide Web and software for a wide range of tax administration and compliance purposes (Muturi & Kiarie, 2015).

According to Worlu and Emeka (2012), government revenue refers to the revenue of the government finance by means of participating in the distribution of social products, which is the financial resources for ensuring the government's ability to function. The contents of government revenue have been changed several times. Now it includes the following main items: Value-added tax, business tax, consumption tax, land value-added tax, tax on city maintenance and construction, resources tax, tax on use of urban land, enterprise income tax, personal income tax, tariff, stamp tax on security transactions, tax on purchase of motor vehicles, tax on agriculture and animal husbandry, tax on occupancy of cultivated land, and so on. Special revenues, including revenues from the fee on sewage treatment, fee on urban water resources, fee for the compensation of mineral resources, extra-charges for education, etc. Other revenues, including revenue from interest, revenue from the repayment of capital construction loans, revenue from capital construction projects, and donations and grants, Subsidies for the losses of the state-owned enterprises This is an item of negative revenue, consisting of subsidies to industrial, commercial, and grain purchasing and supply enterprises.

Statement of Problem

Poor contributions of tax revenues to total revenue collected in Nigeria is alarming (Okauru, 2017). African states such as Ghana, Tunisia, Morocco, and so on have tax incomes that account for a significant portion of their total revenue, whereas Nigeria, the continent's behemoth, has a significantly lower tax-to-total revenue ratio when compared to these nations (Ofurum et al., 2018). According to the OECD (2014), tax revenue accounted for 73% of Ghana's total revenue;

31.3% of Tunisia's total revenue; and 28.5% of Morocco's total revenue. However, in 2014, the tax-to-total revenue ratio in Nigeria was 5.2 percent (Federal Inland Revenue Service, 2015; CBN, 2016). Obtainable archives display that this figure has remained below 13% since 2001, and tax revenues have not accounted for 50% of the collected revenue of the government since this period to date (Ofurum et al., 2018). These drop backs on Nigeria tax revenue over the years from results of many empirical reviews have been mostly attributed to involuntary compliance, inadequate tax records for easy communication of information, high minimizing cost of collection. Other factors setbacks and challenges are: lack of stewardship amongst taxpayers, multiplicity of taxes, complex tax payment system, lack of database, tax evasion and avoidance, corrupt officials, and government instability.

The E-tax was introduced with the chief aim of combating the above vices. Yet the receipts or income resulting from taxes have remained very low, and no physical growth has really taken place. Omesi & Appah (2021); Chiamaka et al. (2021); Oladele et al. (2020); Onuselogu and Onuora (2021). On the other hand, Awai and Oboh (2020) and Ofurum et al. (2018) and Oladele et al. (2020) resulted in significant results on electronic tax and revenue generation. Thus, it remains unclear the reasons why empirical evidence often shows inconsistent results. These conflicting results reveal that the electronic taxation system and revenue generation are still inconclusive.

The inconclusive findings have made the electronic tax payment system debate open to future research. It was observed from these previous empirical reviews that there exists an empirical gap in terms of dimensions, methodology, and time used. Following the above-listed gaps created by the prior studies, this study will fill the gap by introducing a clearer dimension of (pre-post company's income tax, pre-post petroleum profit tax, pre-post capital gain tax, and pre-post value-added tax. The methodology gap was shifted from regression or relationship studies to t-pair test analysis of the difference in the pre and post revenue. This study will also supplement previous research by updating data to 2021.Therefore, the main aim of this article is to empirically investigate the electronic taxation system and revenue generation effectiveness in Nigeria.

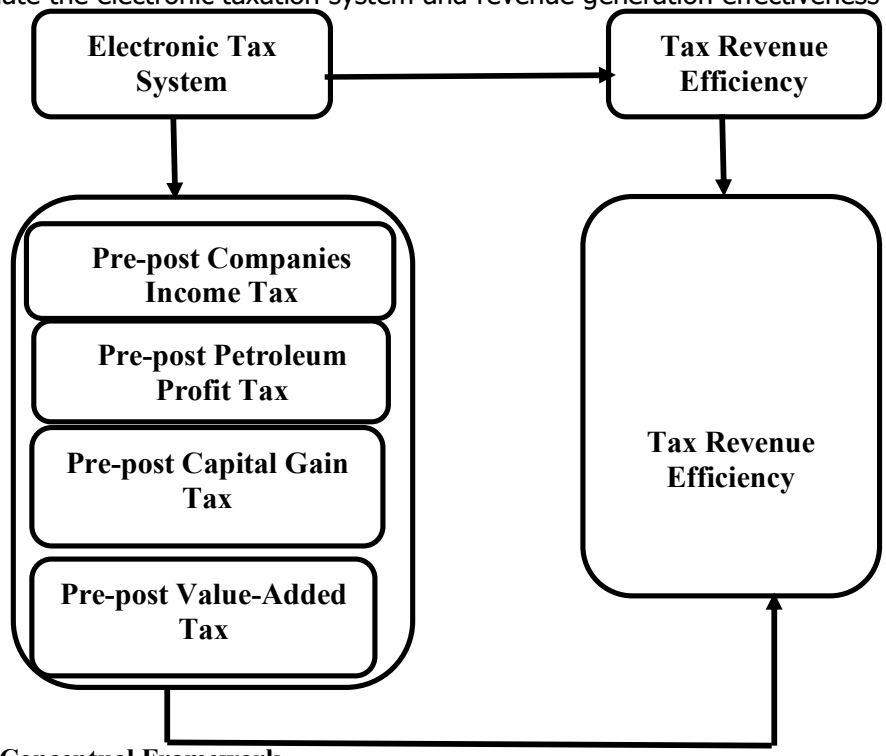

Fig: 1.1Conceptual Framework

Source: Omesi & Appah (2021); Chiamaka et al. (2021); Ofurum et al. (2018) and Oladele et al. (2020) and researcher's conceptual desk, 2021.

Aims and Objectives of the Study

The main aim of this study is to examine electronic tax system and tax revenue efficiency in Nigeria 2008 -2021. Specifically, the study attended to the following objectives:

1. To examine the difference between pre-post company's income tax and tax revenue efficiency in Nigeria.
2. To determine the difference between pre-post petroleum profit tax and tax revenue efficiency in Nigeria.
3. To evaluate the difference between member pre-post capital gain tax and tax revenue efficiency in Nigeria.
4. To determine the difference between pre-post value-added tax and tax revenue efficiency in Nigeria.

Research Hypotheses

In line with the specific objectives, the following research questions were raised for the study.

Ho_1: There is no significant difference between pre-post company's income tax and tax revenue efficiency in Nigeria.

Ho_2: There is no significant difference between pre-post petroleum profit tax and tax revenue efficiency in Nigeria.

Ho_3: There is no significant difference between member pre-post capital gain tax and tax revenue efficiency in Nigeria.

Ho_4: There is no significant difference between pre-post value-added tax and tax revenue efficiency in Nigeria.

Conceptual Review

Electronic Tax System

The E-tax payment system was introduced in 1986 in the U.S.A. In Australia, electronic tax payment was introduced in 1987. In 1993, Canada started the usage of electronic tax payment. Other developed countries in the world, such as Malaysia and the Netherlands, introduced electronic payment of tax to their taxpayers in 2009. In Africa, Uganda introduced an electronic tax payment system in 2009, while Egypt started in March 2013, so as to maintain close proximity with the international trade in automated payments systems for government (Omesi & Appah, 2021).

According to Adebayo and Idowu (2020), electronic-taxation is an electronic self-service platform that enables taxpayers to file their tax returns and conduct other tax services on-line at their convenience, irrespective of their locations, once the internet is available. Awai and Oboh (2020), stated that it covers tax registration, payment, assessment, monitoring, tax audit, investigation, taxpayer file management, and return filing. Wasao (2014), stated that electronic taxation refers to those online structures where a taxpayer is able to access, using the internet, all the services offered by a tax authority, such as the registration for a personal identification number, filing of returns, application for a compliance certificate, etc. Awai and Oboh (2020), Ofurum et al. (2018) noted that an electronic tax payment system has been demonstrated to be a major instrument in fighting the challenges of any tax system as it provides information, education, and support to taxpayers and facilitates tax compliance and administration. It is agreed that the objective of e-taxation is to improve revenue generation in the system. Revenue generation has remained a key concern for several nations, including Nigeria. In various countries, Nnubia et al. (2020) noted that the introduction of the electronic taxation payment system will bring about an increase in tax revenues, which will in turn bring about an increase in revenues collected as a whole, as noticed in various countries of the world after the introduction of the e-tax payment system.

The system operates in three different languages, which makes it possible for tax agents to perform operations in the language of their choice and facilitate correspondence with taxpayers. The types of taxes supported by ITAS include income tax, VAT, sales tax, licenses and permits

(alcohol, etc.), pay as you earn, excise duty, driving licenses and other motor vehicle registrations, general income, property taxes, withholding taxes, and others. With this reform, the government aims at capturing more companies and individuals into the tax net so as to increase revenue derived from taxes and also curb leakages in the Nigerian tax system (Omesi & Appah, 2021).

Key features of Integrated Tax Administration System (ITAS)

As established earlier, the aim of the ITAS project is to automate all core processes around registration, payment, assessment, debt and credit management, and returns filling. Although a few of the tax payers in Nigeria are already using the system, the FIRS is still working towards full implementation of the platform across the country. According to PWC Nigeria (2015), the basic features of the e-filling system include the following:

The system consists of an online portal through which taxpayers submit returns for different taxes such as corporate income tax, capital gains tax, value-added tax, petroleum profit tax, etc. Once the taxpayer registers, an e-tax filling account will then be created based on the type of tax the company or individual is liable to pay. A taxpayer will, however, only be able to file returns based on the tax they registered for.

Under the manual system, a tax clearance certificate (TCC) is usually issued by the board to the taxpayers whenever the board feels that tax assessed on the profits or income of a taxable person has been fully paid or no tax is due on such profit. With the introduction of ITAS, taxpayers can now apply for a TCC online, which will be generated by the system and will be just as tenable as the hard copy handed out. The system allows for TCC validation so that a TCC can be verified by third parties online using the TCC number when doing business. It also provides temporal TCC where there is an unresolved dispute concerning taxes so that the taxpayer does not suffer unduly from the delay. A full TCC can be obtained after the dispute is settled.

Validation of Tax Identification Number (TIN): This feature is particularly useful for verifying the tax identification number for withholding tax purposes, among other things. The process ensures accountability as well as validation of tax transactions with the taxpayer.

Online correspondence with FIRS: The portal has a message center feature that allows for communication between the tax payer and FIRS. The tax account manager in the FIRS will be responsible for correspondence with the taxpayer, and the FIRS can also issue assessments that taxpayers can object to using the message center.

Electronic Tax Registration: This involves the acquisition of a tax identification number (TIN) by the taxpayers. The taxpayer must complete the relevant form that requires documentation of substantiating status and true identity for each individual in order to obtain an individual taxpayer's identification number (Chiamaka et al., 2021). This documentation is to be mailed with the form to the address on the form. According to Umenweke and Ifediora (2016), in line with this, the individual taxpayer identification number is issued after the documents and the information furnished are validated by the relevant tax authority.

Electronic Filing of Tax Returns: This requires taxpayers to have an email address, log on to the website of the tax office and download the relevant form. The following information must be filled in on the platform, such as the taxpayer's name, address, identification number, exemption, income, tax credit/deduction, other taxes and payments, amount owed, and so on. After filling out the tax return form, the taxpayer signs the tax return form using a self-selected identification number and files it with the tax office. Upon submission of the filled return form, the returned and entire electronic record are transmitted to the tax office for processing where a free file is being utilized. An email is sent to the taxpayer as soon as the tax return is received. Subsequently, the tax return is assessed, with the taxpayer's tax calculated within 48 hours. Where errors are detected, an error message is sent to the transmitter to correct and re-transmit the return to the tax office (Chiamaka et al., 2021; Umenweke and Ifediora, 2016).

Electronic tax payment: Upon being notified of tax due by email, the taxpayers have two options through which payments can be made: by debit or credit card, through which payment is made through a payment processing company. The payment of the tax due can also be made by direct debit of the taxpayer's account. This involves the automatic withdrawal of the amount owed from the taxpayer's account from his bank with additional fees (Chiamaka et al., 2021; Umenweke and Ifediora, 2016).

Dimensions of the Independent Variable
Company Income Tax.

Company Income Tax first appeared in the public eye in 1961 (Ayodele, 2006) and is currently governed by the Company Income Tax Act of 2004. This is a tax on the profit of Nigerian companies, including those that are not resident in Nigeria but carry on business in Nigeria. The rate of company income tax is currently 30% of the total profits of the taxpayer as defined by the Company Income Tax (Amendment) Act No. 56 (2007). This Act, though originally introduced by the Income Tax Management Act of 1961, is the law that governs the administration of company income tax in Nigeria. Section 105 of CITA, 2007 defines a company as "any company or corporation (other than a corporation sole) established by or under any law in force in Nigeria or elsewhere." What this implies is that, for tax purposes, CITA, 2007 recognises companies registered in Nigeria as well as those registered elsewhere. In other words, both Nigerian and foreign companies are brought into the tax net for as long as they carry on business in Nigeria. But this position of CITA, 2007 defers in context to the provision of section 54(1) of the Companies and Allied Matters Act Cap. Revenue generation under the Company Income Tax depends again on the level of compliance among taxpayers. It is only natural that every taxpayer would want to pay very little or nothing as tax, especially in Nigeria where individuals and corporate bodies evade taxes with impunity. Though CITA is there to regulate the administration of corporate taxation in Nigeria, its mere existence will certainly not guarantee compliance unless it is strictly enforced. On September 3, 2014, the Federal Inland Revenue Service (FIRS), through the Daily Trust Newspaper, reported that about 25% of the registered companies in Nigeria were not paying taxes and about 30% of Nigerian companies evade taxes. So one of the biggest problems with the FIRS is its inability to strictly enforce the provisions of CITA and ensure that every "person" pays taxes. There is also the issue of corrupt tax officials who make themselves readily available to negotiate tax liabilities with taxpayers who offer them some sort of gratification and end up paying very little tax into the coffers of the government.

Petroleum Profit Tax (PPT)

This is the most important tax in Nigeria in view of its huge revenue contribution to the country. Petroleum operations, according to the Petroleum Profit Tax Act 2007 as amended, deal with petroleum exploration, development, production, as well as the sale of crude oil. The Act defines petroleum operations as "the winning or obtaining oil in Nigeria by or on behalf of a company for its account by any drilling, mining, extracting, or other like operations or processes, not including refining at a refinery, in the course of a business carried on by the company engaged in such operations, and all operations incidental thereto and any sale of or any disposal of chargeable oil by or on behalf of the company". According to Adekanola (2007), the administration of Petroleum Profit Tax in Nigeria is the exclusive preserve of the federal government through the Federal Inland Revenue Service (FIRS) as provided for in the tax laws, which, according to Adekanola (2007), vested it with the powers to assess and collect taxes from corporate bodies in the country. The tax rate for oil companies under the Petroleum Profit Tax is 67.5% for the first five (5) years of operation and 85% afterwards (Onyemaechi, 2012) for joint ventures and 50% for production sharing contracts (PSC).

PPT is a tax on the income of companies engaged in upstream petroleum operations *in lieu* of CIT. The PPT rates vary as follows:

- 50% for petroleum operations under production sharing contracts (PSC) with the Nigerian National Petroleum Corporation (NNPC).
- 65.75% for non-PSC operations, including joint ventures (JVs), in the first five years during which the company has not fully amortised all pre-production capitalised expenditure.
- 85% for non-PSC operations after the first five years.
- upstream gas profits are taxed at 30%.

Following the enactment of the Petroleum Industry Act 2021, holders of a Petroleum Prospecting Licence and Petroleum Mining Lease will be subject to both Companies Income Tax (CIT) at 30%, and Hydrocarbon Tax (HCT). HCT rates are as follows:

- Converted/renewed Onshore and Shallow Offshore (PML)- 30%; or
- Onshore and Shallow Onshore (Prospecting Petroleum Licence & Marginal Fields) - 15%
- Deep offshore are exempt from HCT

This means that the highest headline tax rate for companies in the upstream oil and gas industry will be 60%. Current Oil Mining Licence and Oil Prospecting Licence holders will continue to be taxed in line with the Petroleum Profits Tax Act (PPTA) unless a conversion contract is executed in line with the provisions of the Petroleum Industry Act 2021.

The passage of the PIB will, no doubt, have a tremendous impact on the revenue generation strength of the country. This is a fact that cannot be overstated, because Nigeria is already suffering as a result of her failure to pass this bill into law. Sebastine and Mike (2018) quoted Publish What You Pay, PWYP, as saying that "Nigeria is losing N3 trillion annually for failing to put in place proper legislation for the oil and gas industry."

Value Added Tax (VAT):

Value Added Tax (VAT) is an indirect tax levied on all merchandise and amenities manufactured or rendered in a country, except for supplies and facilities that are VAT relieved. Value-added tax (VAT) refers to an ingestion charge imposed at every phase of the absorption sequence and suffered by the ultimate end user of the product or service (Oraka et al. 2017).

Section 34 of the Finance Act of 2020 increased the VAT rate from 5% to 7.5%, which is one of the major changes in the Nigerian VAT administration. President Buhari signed the Finance Bill into law on 13 January 2020, and the Finance Act 2020 became effective on 1 February 2020. However, Table A1 in Appendix A shows that VAT is not applicable in countries such as Bermuda, Cayman Islands, Gibraltar, Greenland, Guernsey, Channel Islands, Hong Kong SAR, Kuwait, Libya, Macau SAR, Oman, Qatar, Turks and Caicos Islands, and the United States (Pricewater House Cooper, 2020).

The new judgement on VAT

The Federal High Court in Port Harcourt on Monday 9 August 2021 ruled that the Rivers State Government (and not the FIRS) is entitled to collect VAT in the state. This is on the premise that only the state is constitutionally entitled to impose taxes in its territory of the nature of consumption or sales tax (Primetimes news, 2021).

What does the Constitution say?

Sections 3&4 of the Constitution empower the National Assembly to legislate on matters contained in the Exclusive Legislative List and certain items under the Concurrent Legislative List. The 2nd Schedule to the Constitution, items 7 & 8 of Part II (Concurrent Legislative List) provide that the National Assembly in exercise of its power to impose tax or duty on persons other than companies, may prescribe that such tax or duty be collected or administered by the state (Pricewater House Cooper, 2021).

What it means

If the judgement is enforced or upheld on appeal, it will apply to other states and not just Rivers State. This means each state would administer VAT within their territory. By implication, FIRS will administer VAT within the FCT and non-import foreign VAT while the Nigeria Customs Service will continue to collect import VAT on international trade (Pricewater House Cooper, 2021).

Implications

Ironically, the biggest losers will be the states except Lagos. A few states like Kano, Rivers, Oyo, Kaduna, Delta and Katsina may experience minimal impact, while at least 30 states which account for less than 20% of VAT collection will suffer significant revenue decline. The federal government may in fact be better off given that FCT generates the second highest VAT (after Lagos) in addition to import and non-import foreign VAT (Pricewater House Cooper, 2021).

Currently, section 40 of VAT Act requires that the VAT pool be shared 15% to the FG; 50% to states; and 35% to LGs (net of 4% cost of collection by the FIRS). 20% of the pool is shared based on derivation. In 2020 for instance, total VAT collection was about N1.53 Tr with import VAT being N348 Bn (or 22.7%) while foreign non-import VAT was N420 Bn (or 27.4%) and local VAT amounted to N763 Bn (or 49.8%). Federal government is likely to retain more than the 15% it currently shares, while states and LGs will have less to share especially if we consider VAT on FG contracts included in Local VAT which will also be due to the FG (Pricewater House Cooper, 2021).

A previous Supreme Court judgement had ruled that VAT covered the field (of consumption tax) and therefore a state cannot impose a consumption tax in addition to VAT. This means any state intending to impose VAT will have to repeal its existing consumption tax. This judgement may also have implications for taxes collectible by Local Governments which are currently administered by States as well as the amendment via Finance Act 2020 which introduced Electronic Money Transfer levy in place of stamp duties, among others. In addition, complications may arise for businesses including SMEs who may have to deal with multiple tax authorities for VAT purposes and consequently a decline in Nigeria's ease of paying taxes and doing business ranking (Primetimes news, 2021).

Capital Gain Tax

Capital gain tax is an expense on benefit acknowledges on the offer of capital resource at a cost higher than the price tag. Jones (2003) characterized capital gain tax as an assessment on capital gains, the salary acknowledged on the offer of a non-stock resource that was more prominent than the sum acknowledged on the deal. The most widely recognized capital additions are acknowledged from the offer of government bonds valuable metals, and property. The rate varies with countries. Most countries subject individuals and companies to capital gains-taxes on their annual capital profit. In Nigeria, the amount charged is 10% of the profits from the sale of the qualifying assets (Ogbonna & Ebimobowei, 2012).

The calculation of the capital gains charge is carried out by subtracting the sum received or receivable from the cost of acquisition to the person realizing the chargeable gain plus the expense incurred on the enhancement of expenditures incidental to the realization of the asset. Capital gain tax can have a direct effect on the operating profit of firms as it reduces the net operating profit on which the shareholder return is based. Capital gain tax, which is levied on gains from the sale of capital assets but is not usually considered income from operations, can increase or decrease a firm's net income (capital gain loss) in a given year (Maryam & Abubakar, 2017).

Generating Revenue

Revenue generation is the main source of survival and challenge for all economy of the world including the developed and developing economies. That is the purpose why every nation is interested in the amount of revenue to be generated now and in the future since it is a determinant

of economic growth and development. In the course of trying to solve the challenge of revenue generation, taxation which includes personal income tax, value added tax, company income tax, have been the major sources of government revenue in the economies of the world (Adegbie & Akinyemi, 2020). Onubia et al (2020), described revenue generation as a process by which a business strategy how to market and sell its products or services, in order to generate income. Government revenue is money government received. It is the quantity of cash that an organization really gets during a specific time (Ofurum et al., 2018). Government revenue is derived from several sources, such as oil and non-oil revenues.

Revenue generation in the public sector is the processes of raising funds for the government. The main source of income generation for any government is through taxation. Samuel and Tyokoso (2014) explained that revenue generation is a traditional function of a good tax system. Hence, the introduction of electronic taxation system was to increase revenue generation as taxpayers are able to pay taxes from different locations and at various times (Okunowo, 2015). Electronic taxation system improves revenue generation efforts of the government because it brings about reliability, accuracy, accountability, stewardship by reducing corruption and building taxpayers' trust in the system. It provides a less costly way of collecting taxes. It reduces running and overhead cost. It allows taxpayers to spend little or nothing in remitting taxes and filing returns, unlike the manual tax system where taxpayers incur some cost by going into the tax office for payment, clarification, and compliances. The electronic taxation system was established essentially to improve convenience/ease in the payment of tax and ultimately incorporate an efficient and transparent system that optimises voluntary compliance and tax revenue generation (Awai & Oboh, 2020; Onubia et al, 2020; Adegbie & Akinyemi, 2020; Adebayo & Idowu, 2020).

According to Worlu and Emeka (2012), government revenue refers to the revenue of the government finance by means of participating in the distribution of social products, which is the financial resources for ensuring the government's ability to function. The contents of government revenue have been changed several times. Now it includes the following main items: Value-added tax, business tax, consumption tax, land value-added tax, tax on city maintenance and construction, resources tax, tax on use of urban land, enterprise income tax, personal income tax, tariff, stamp tax on security transactions, tax on purchase of motor vehicles, tax on agriculture and animal husbandry, tax on occupancy of cultivated land, and so on. Special revenues, including revenues from the fee on sewage treatment, fee on urban water resources, fee for the compensation of mineral resources, extra-charges for education, etc. Other revenues, including revenue from interest, revenue from the repayment of capital construction loans, revenue from capital construction projects, and donations and grants, Subsidies for the losses of the state-owned enterprises This is an item of negative revenue, consisting of subsidies to industrial, commercial, and grain purchasing and supply enterprises.

Theoretical

Diffusion of Innovation

Theory The study in hand assessed the influence of e-tax system on tax revenue collection. Since the e-tax system is an innovation newly introduced into an already prevailing system, hence the diffusion innovation theory. This theory was proposed by Everett Rogers in 1995 and later modified in 2003. The theory explains how, when and to what extent the new idea, technology or system propagates. Rogers (2003) asserts that diffusion is the process by which innovation is transferred over time among the users of the system. Innovation theory dictates the ways innovation can be spread through several stages, including understanding, persuasion, decision, implementation, and confirmation that led to the development (Rogers, 1995). In understanding; person (taxpayer) grasp of doing things in different ways unlike others' do and comprehend how to go about. In coaxing, the user depends on the environment, whether favourable or unfavourable in accepting the innovation. However, whenever a person uses innovation evaluates the results which might be derived from the innovation. For that case; the results of an innovation are determined by

testing whether the e-tax system has contributed towards tax revenue collection. The most prominent feature of the theory of innovation diffusion is that, to some people, the decision of doing things differently (innovation) depends greatly on the innovation-decisions of the other followers who benefited from the system (taxpayers).

Empirical Reviews

Noel et al. (2020) studied the design and deployment of a system to detect tax evasion. Taxes will be deemed avoidable expenditures unless the likelihood of detection is significant and the punishment is severe. A tax evasion strategy that increases taxpayers' economic gains would be motivated. To identify potential VAT evaders in Colombia, two categories of purposeful tax evasion processes are identified: unlawful acts, such as neglecting to file a tax return without legal basis, and stochastic strategies.

Rong (2011) investigated tax collection and administration using computer-aided audit. An audit of tax collection and management quality is critical to revealing flaws and promoting tax governance according to the law. A computer-aided audit of tax collection and management using the ORACLE platform is examined, with suggestions made to improve the process.

Faustine et al. (2020) studied the impact of E-tax on tax revenue collection among Tanzania's major taxpayers. The study used secondary data from 2006–2011 (pre-e-tax system) and 2012–2017 (post-e-tax system). A paired sample t-test was used to compare the pre- and post-e-tax mean values to see if the difference is zero or not. The data suggest that using the e-tax system increases tax collections. Increasing the number of large taxpayers also increases tax income.

Olaoye and Kehinde (2017) investigated the influence of IT on tax administration in southwest Nigeria. It looked into the impact of IT on tax productivity, as well as the link between IT and tax implementation and planning. A questionnaire was utilised to collect data, which was then evaluated using multiple regression and Pearson product moment correlation. The study found that information technology (OTF, OTR, and OTRE) impact tax productivity by 1.9, 7.3, and 31.5 percent ($p = 0.85$, 0.526, and 0.00). The association between OTF, OTR, and OTRE on Tax Implementation-TAXIMP is -5.9% ($p = 0.520$), 9.7% ($p = 0.290$), and 0.344 ($p = 0.000$), while on Tax Planning-TAXPLNN is -3.8% ($p=0.684$), 14% ($p=0.140$), and -0.0380.05.

Bojuwon and Siti (2014) investigated the impact of technology on online tax system utilisation among Nigerian self-employed taxpayers. The online tax system is a significant breakthrough in tax administration. Several reasons affected its execution. However, weak information and technology infrastructure has hampered its successful implementation in Nigeria. The impact of technical qualities (easy of use, usefulness, and personal inventiveness) on an online tax system is examined. A questionnaire was used to assess the elements' significance using structural equation modelling. The online tax system is statistically significant for all technical indicators. A good direct association between technical qualities and online tax system is also suggested. This study would help comprehend the interaction between technology and an online tax system. It will assist practitioners and academics understand the impact of technology on the online tax system.

Sadress and Juma (2016) investigated the influence of adoption of an electronic tax system in promoting tax compliance. Closed-ended questions were utilised in the surveys. The study was cross-sectional and correlational. 214 SBE managers completed usable questionnaires, which were analysed using SPSS v22 and the MedGraph application (Excel version). The results show that adoption of the computerised tax system is a partial mediator in the relationship between attitude and tax compliance. The results also show that adoption of an electronic tax system and attitude towards it are linked to tax compliance. Unlike longitudinal studies, this research was cross-sectional. The study employed a quantitative response to analyse the respondent's emotional expression. The study was done in Uganda, but the findings may be applied to other underdeveloped nations with similar settings. Using data from SBEs in an African developing country, this study presents the first empirical evidence on the mediation impact of the deployment

of an electronic tax system in the link between attitude towards the electronic tax system and tax compliance.

Manir and Najib (2020) studied the impact of electronic taxation on revenue collection in Kebbi. This study looked at how the electronic tax system affected revenue collection in Kebbi State in 2019. A study of 312 revenue officers in Kebbi State was conducted using standardised questions. The study demonstrated a substantial beneficial association between the computerised tax system and revenue collection efficiency in Kebbi state. Specifically, the study found that online tax filing, registration, and remittance improved revenue collection efficiency in Kebbi State throughout the study period. Although online tax payment has improved revenue collection efficiency in Kebbi State, the study revealed. The report suggests that the electronic tax system be fully implemented in Kebbi State since it is more efficient than the manual tax system and more feasible in this age of information and communication technology.

METHODOLOGY

The study adopted quasi-experimental study designs, often described as nonrandomized, pre-post intervention studies. A quasi-experiment is an empirical interventional study used to estimate and establish a cause-and-effect relationship between an independent and dependent variable on target population without random assignment. The population and sample size of the study was the entire 36 states and the federal capital territory of Nigeria. Covering fourteen (14) years (2008-2021) of federal government of Nigeria indirect taxes and economic development index in Nigeria. Specifically, twenty-six (26) years of compiled federal government indirect taxes (pre-post company's income tax, pre-post petroleum profit tax, pre-post capital gain tax, and pre-post value-added tax) and also, total revenue regeneration within the period.The instrument of the study was secondary data, extracted from the central bank of Nigeria (CBN) Statistical Bulletins, national abstract of statistics (NAS), www.countryeconomy.com, national bureau for statistics and www.knoema.com, from the period of 2008-2021. The formulated research questions were analyzed with descriptive statistics. The hypotheses were tested using The paired sample *t*-test also called Pre-Post Test was applied as the method of data analysis. Paired sample *t*-test is a statistical method utilized to ascertain whether the mean difference between two groups of observations is zero. In a paired sample *t*-test Analyses, each subject is measured twice resulting in-*pairs* of observations. This method is appropriate because each variable was grouped into two observations (pre electronic taxation implementation and post electronic taxation implementation).

Data Analysis

Descriptive Statistics

In order to achieve the specific objectives and research questions earlier stated in chapter one of this study, descriptive statistics were analysed on the data to gives relevant information about statistics mean value, minimum value, maximum value, skewness and kurtosis.

	PRE CIT	PRE PPT	PRE CGT	PREV AT	PRE RGE	POST CIT	POST PPT	POST CGT	POST VAT	POST RGE
Valid N	7	7	7	7	7	7	7	7	7	7
Mean	701.23037	2663.70283	8.71946	531.47720	4032.9011	1340.8528	1725.0776	22.7109	944.4575	4716.4151
Minimum	275.300	2269.903	2.650	404.510	2717.674	933.54	1157.81	3.18	597.41	3307.46
Maximum	1173.491	3201.320	19.656	629.664	5007.653	1747.99	2467.58	99.40	1605.17	6402.71
Std. Deviation	310.498837	358.445637	5.446997	81.429004	978.415880	266.63295	479.47196	34.34132	350.76457	1077.90375

Skewness	2.213	1.238	2.480	4.441	2.192	2.520	2.326	1.432	2.705	3.192
Kurtosis	4.686	7.580	3.123	6.886	8.093	4.153	7.194	6.333	7.283	8.775

Table Descriptive Statistics

Source: Researcher's SPSS (v.23) commutated Result, 2022

Table 1 present the performance of the respective periods under pre-electronic taxation and post-electronic taxation. From the mean values it can be clearly observed that the revenues of post-electronic period [POSTCIT (1340.8528), POSTCGT (22.7109), POSTVAT (944.4575) and POSTREV (4716.4151)] increased almost twice of the pre-electronic period [PRECIT (701.23037), PRECGT (8.71946), PREVAT (531.47720) and PREREV (4032.9011)] if compared. Only POSTPPT mean value (1725.0776) is less than PREPPT (2663.70283). Also, the minimum and maximum values of the post electronic era where almost twice of the pre electronic era, indication that more tax revenue and receipts were received in the post electronic period. Though the minimum and maximum values POSTPPT and PREPPT show contradictory direction.

On the other hand, Skewness and Kurtosis calculated mean values, which is a measure of the departure of a distribution from symmetry above, for the variables of the study pre-post company's pre-post petroleum profit tax, pre-post capital gain tax, post value-added tax, revenue generation efficiency, show a positive skewness value that is greater than 1. This indicates that the four study dimensions are normally distributed. The Kurtosis result, which measures the extent of flatness or peakedness of a distribution in relative terms to a normal distribution, confirms that pre-post company's pre-post petroleum profit tax, pre-post capital gain tax, post value-added tax, tax revenue efficiency are normally distributed and are not platykurtic (not having negative values/flattened curved) as their kurtosis coefficient is more than 3.0. These results strongly indicated that the variables under study are normally distributed.

Table 2 Paired Sample Test of Mean Differences between Pre and Post Electronic Tax System

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRECIT – POSTCIT	-639.622400	214.750354	81.168004	-838.233352	-441.011448	-7.880	6	.000
Pair 2	PREPPT – POSTPPT	938.62523	1146.26096	437.62067	-960.85703	2026.69477	2.225	6	.068
Pair 3	PRECGT – POSTCGT	-13.991400	35.822030	13.539455	-47.121252	19.138452	-1.033	6	.341
Pair 4	PREVAT – POSTVAT	-412.980281	287.852655	108.798077	-679.199585	-146.760978	-3.796	6	.009
Pair 5	PREREV - POSTREV	683.514086	507.322056	191.749714	1152.708733	214.319439	3.565	6	.012

Source: Researcher's SPSS (v.23) commutated Result, 2022

The above paired-samples t-test was conducted to evaluate the impact difference between he pre and post electronic tax system. The results showed a significant increase in the post-electronic

era, as the (table 4.1) mean differences between the pre and post electronic tax system; PRECIT – POSTCIT (-639.622400), PRECGT - POSTCGT (-13.991400) and PREVAT - POSTVAT (-412.980281) were negative. Meanwhile the PREPPT - POSTPP (938.62523) mean difference was not significant and showed positive.

On the other hand, the pair 1 samples t-score is (6) -7.880 and P- value is 0.000. Hence, pair 1 (PRECIT – POSTCIT) is statistically significant, with a 95% confidence interval ranging from -838.233 to -441.011.

Also, the pair 2 samples t-score is (6) 2.225 and P- value is 0.068. Hence, pair 2 (PREPPT – POSTPPT) is statistically not significant, with a 95% confidence interval ranging from -960.86 to 2026.69.

Again, the pair 3 samples t-score is (6) -1.033 and P- value is 0.341. Hence, pair 3 (PRECGT – POSTCGT) is statistically not significant, with a 95% confidence interval ranging from -47.12 to 19.14.

More so, the pair 4 samples t-score is (6) -3.796 and P- value is 0.009. Hence, pair 4 (PREVAT – POSTVAT) is statistically significant, with a 95% confidence interval ranging from -679.19 to -146.76.

Finally, the pair 5 samples t-score is (6) -3.565 and P- value is 0.012. Hence, pair 5 (PREREV - POSTREV) is statistically significant, with a 95% confidence interval ranging from 1152.71 to -214.32.

Test of Hypotheses

Hypothesis one:

Ho_1: There is no significant difference between pre-post company's income tax and tax revenue efficiency in Nigeria.

Paired Samples Test

		Paired Differences					T-Cal	T- Cri	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Diff. Lower	Upper				
Pair 1	PRECIT - PRERGE	-3331.670686	737.076802	278.588845	-4013.353033	-2649.988339	-11.959	2.447	6	.000
Pair 2	POSTCIT - POSTRGE	-3375.56237	847.27669	320.24049	-4159.16261	-2591.96213	-10.541	2.447	6	.000

Source: Researcher's SPSS (v.23) commutated Result, 2022

The result in table 4.3 indicates that, the Mean difference between pre-post company's income tax and tax revenue efficiency in Nigeria was -3331.670686 and -3375.56237 respectively. It indicates that pre-electronic company's income tax and tax revenue efficiency had less Mean score than post-electronic company's income tax and tax revenue efficiency in Nigeria. Nevertheless, when the Mean difference was subjected to paired samples t-test analysis, it was found that the calculated t-values -11.959 and -1.091 is less than the corresponding critical t- value 2.447 with 6 degrees of freedom at 5% (0.05) level of significant under both Period for a two (2) tailed test sig (P-Values) 0.000;0.000 < 0.05. Thus, the null research hypothesis under Pre-Period and Post-Period condition was rejected. This means that there is significant difference between Pre-Post electronic company's income tax and tax revenue efficiency in Nigeria.

Hypothesis Two:

Ho_2: There is no significant difference between pre-post petroleum profit tax and tax revenue efficiency in Nigeria.

Paired Samples Test

		Paired Differences								
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T-Cal	T-Cri	Df	Sig. (2-tailed)
Pair 1	PREPPT - PRERGE	-1369.198229	756.345795	285.871840	-2068.701421	-669.695036	-4.790	2.447	6	.103
Pair 2	POSTPPT - POSTRGE	-2991.33757	757.45057	286.28941	-3691.86251	-2290.81263	-10.449	2.447	6	.062

Source: Researcher's SPSS (v.23) commutated Result, 2022

The result in table 4.3 indicates that, the Mean difference between pre-post petroleum profit tax and tax revenue efficiency in Nigeria was -1369.198229 and -2991.33757 respectively. It indicates that pre-electronic petroleum profit tax and tax revenue efficiency had less Mean score than post-electronic petroleum profit tax and tax revenue efficiency in Nigeria. Nevertheless, when the Mean difference was subjected to paired samples t-test analysis, it was found that the calculated t-values -4.790 and 10.449 is less than the corresponding critical t- value 2.447 with 6 degrees of freedom at 5% (0.05) level of significant under both Period for a two (2) tailed test sig (P-Values) 0.103;0.062 > 0.05. Thus, the null research hypothesis under Pre-Period and Post-Period condition was accepted. This means that there is not significant difference between Pre-Post electronic petroleum profit tax and tax revenue efficiency in Nigeria.

Hypothesis Three:

Ho_3: There is no significant difference between member pre-post capital gain tax and tax revenue efficiency in Nigeria.

Paired Samples Test

		Paired Differences								
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T-Cal	T-Cri	df	Sig. (2-tailed)
Pair 1	PRECGT – PREREV	-4024.181600	976.490474	369.078707	-4927.284663	-3121.078537	-10.903	2.447	6	.000
Pair 2	POSTCGT – POSTREV	-4693.70429	1096.44493	414.41723	-5707.74672	-3679.66185	-11.326	2.447	6	.000

Source: Researcher's SPSS (v.23) commutated Result, 2022

The result in table 4.3 indicates that, the mean difference between pre-post capital gain tax and tax revenue efficiency in Nigeria was -4024.181600 and -4693.70429 respectively. It indicates that pre-electronic capital gain tax and tax revenue efficiency had less Mean score than post-electronic capital gain tax and tax revenue efficiency in Nigeria. Nevertheless, when the Mean difference was subjected to paired samples t-test analysis, it was found that the calculated t-values -10.903 and -11.326 is less than the corresponding critical t- value 2.447 with 6 degrees of freedom at 5% (0.05) level of significant under both Period for a two (2) tailed test sig (P-Values) 0.000;0.000 <

0.05. Thus, the null research hypothesis under Pre-Period and Post-Period condition was rejected. This means that there is significant difference between Pre-Post electronic capital gain tax and tax revenue efficiency in Nigeria.

Hypothesis Four: Ho_4: There is no significant difference between pre-post value-added tax and tax revenue efficiency in Nigeria.

Paired Samples Test

		Paired Differences								
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T-Cal	T-Cri	Df	Sig. (2-tailed)
Pair 1	PREVAT - PREREV	-3501.42385	922.703240	348.749044	-4354.782022	-2648.065684	-10.040	2.447	6	.000
Pair 2	POSTVAT - POSTREV	-3771.95766	787.99537	297.83426	-4500.73183	-3043.18349	-12.665	2.447	6	.000

Source: Researcher's SPSS (v.23) commutated Result, 2022

The result in table 4.3 indicates that, the mean difference between pre-post value-added tax and tax revenue efficiency in Nigeria was -3501.42385 and -3771.95766 respectively. It indicates that pre-electronic value-added tax and tax revenue efficiency had less Mean score than post-electronic value-added tax and tax revenue efficiency in Nigeria. Nevertheless, when the Mean difference was subjected to paired samples t-test analysis, it was found that the calculated t-values -10.040 and -12.665 is less than the corresponding critical t- value 2.447 with 6 degrees of freedom at 5% (0.05) level of significant under both Period for a two (2) tailed test sig (P-Values) 0.000;0.000 < 0.05. Thus, the null research hypothesis under Pre-Period and Post-Period condition was rejected. This means that there is significant difference between Pre-Post electronic value-added tax and tax revenue efficiency in Nigeria.

CONCLUSION

Electronic tax is a solution to solving the objectives of efficient tax revenue generation in Nigeria. However, Nigeria is yet to reap the full benefit of electronic-based taxation system as the case in developed countries of the world, observed that tax revenue in Nigeria accounts for a small proportion of total government revenue over the years compared with the bulk of revenue needed for developmental purposes that is derived from oil. Chandler (2013) also observed that today's policymakers are still grappling with the questions of effective tax administration leading to adequate tax revenue.

Thus, the study concludes that, there is significant difference between Pre-Post electronic company's income tax and tax revenue efficiency in Nigeria. Meanwhile, there is not significant difference between Pre-Post electronic petroleum profit tax and tax revenue efficiency in Nigeria. On the other hand, there is significant difference between Pre-Post electronic capital gain tax and tax revenue efficiency in Nigeria. Also, there is significant difference between Pre-Post electronic value-added tax and tax revenue efficiency in Nigeria. Finally, tax rate has significantly influenced pre and post electronic tax system and revenue generation efficiency.

RECOMMENDATION

The findings of the study have important policy implications which led to making of the following recommendations below;

1. Government should ensure compliance to electronic tax payments system because electronic taxation system in term of company income tax generate more revenue in Nigeria.
2. Federal government through Federal Inland Revenue Services (FIRS) and Nigerian National Petroleum Corporation (NNPC) should work out modalities on how to sensitize oil companies and penalize corporate tax officials so as to maximize the expected positive impact of the of E-tax payment.
3. To ease accessibility by taxpayers, mobile version of electronic tax portal should be created. This will no doubt increase the adoption rate by tax payers as mobile phones are being increasingly used and more revenue from capital gain tax.
4. Federal Inland Revenue Services must ensure that the website is of good quality and accessible to all and sundry and that there should be a collaborative work between the government, Federal Inland Revenue Services and taxpayers in Nigeria. This will reveal the

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YEAR	CIT ₦B	PPT ₦B	CGT ₦B	VAT ₦B	REV
Pre-Electronic Tax					
2008	275.3004	2,321.3210	4.2074	404.5104	2,873.0843
2009	420.6730	2,269.9028	7.8460	468.40003	2,717.6743
2010	600.6840	2,662.4709	8.4560	562.9000	3,483.2180
2011	654.4482	3,070.5913	9.3045	492.0611	4,628.4757
2012	820.5655	3,201.3195	8.9166	545.9196	5,007.6528
2013	963.4508	2,666.3669	19.6559	629.6641	4,805.6420
2014	1,173.4907	2,453.9474	2.6498	616.8852	4,714.5603
Post E-Taxation					
2015	1,268.9772	1,289.9607	16.8020	597.4124	3,741.7574
2016	933.5373	1,157.8081	99.4034	650.3439	3,307.4614
2017	1,215.0568	1,520.4817	3.1803	770.3479	4,027,9452
2018	1,340,3294	2,467.5807	12.5947	859.0182	5,320.8914
2019	1,604.6985	2,114.2684	5.9770	945.4639	5,261.9163
2020	1,275.3806	1,516.9934	3.5186	1,183.4461	4,952.2245
2021	1,747.99	2,008.45	17.50	1605.17	6,402.7100

Source: Planning, Research and Statistics Department. FIRS tax statistics/report. And https://firs.gov.ng/tax-statistics-report/

TAX RATE

	CIT	PPT	CGT	VAT
2008	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2009	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2010	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2011	30%	50% PSC; non-PSC operation 85%;	10%	5%

		upstream 30%		
2012	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2013	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2014	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2015	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2016	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2017	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2018	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2015	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%

2016	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2017	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2018	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	5%
2019	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	7.5%
2020	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	7.5%
2021	30%	50% PSC; non-PSC operation 85%; upstream 30%	10%	7.5%

Paired T Test Table

Two Tailed Significance						
Degrees of freedom (n-1)	$\alpha = 0.20$	0.10	0.05	0.02	0.01	0.002
1	3.078	6.314	12.706	31.821	63.657	318.300
2	1.886	2.920	4.303	6.965	9.925	22.327
3	1.638	2.353	3.182	4.541	5.841	10.214
4	1.533	2.132	2.776	3.747	4.604	7.173
5	1.476	2.015	2.571	3.305	4.032	5.893
6	1.440	1.943	2.447	3.143	3.707	5.208
7	1.415	1.895	2.365	2.998	3.499	4.785
8	1.397	1.860	2.306	2.896	3.355	4.501
9	1.383	1.833	2.262	2.821	3.250	4.297
10	1.372	1.812	2.228	2.764	3.169	4.144
11	1.363	1.796	2.201	2.718	3.106	4.025
12	1.356	1.782	2.179	2.681	3.055	3.930
13	1.350	1.771	2.160	2.650	3.012	3.852
14	1.345	1.761	2.145	2.624	2.977	3.787
15	1.341	1.753	2.131	2.602	2.947	3.733