# Moderating Role of Information Technology on the Relationship between Tax Compliance and Tax Revenue: An Empirical Study of Federal Inland Revenue Service

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***Abstract***

*This study investigated the moderating effect of information technology on the relationship between tax compliance and tax revenue in Nigeria by means of a causal study design on a population twenty six (26) Federal Inland Revenue Service (FIRS), field offices in south south geographical location of Nigeria. Questionnaire was distributed to three (3) management staff from each of the 26 FIRS field offices in south south Nigeria, given a total of 78 respondents that constitutes the respondents of the study. Data for analysis was collected through primary and secondary sources. Primary data was collected through questionnaire to respondents, while secondary data was collected from FIRS Planning, Research and Statistics Department, Central Bank of Nigeria (CBN) statistical bulletin, articles, magazines and other published studies for the period covering 2007-2019. A total of 78 copies of the questionnaire were produced and distributed, of which 73 copies (93.59%) were successfully retrieved. However, out of the 73 copies that were returned only 67 copies (85.90%) were valid and used for the analysis. The simple linear regression was used for analysis. The results proved that, information technology statistically and significantly significant moderates the relationship between tax compliance and tax revenue. The study therefore concludes*

*that,information technology positively and significantly moderates the relationship between tax compliance and tax revenue of Federal Inland Revenue Service, and recommends that federal Inland Revenue Service should encourage the use of ICT by procuring quality and relevant electronic gadget in all zonal/field offices especially in the south south to facilitate tax compliance and tax revenue generation.*

***Key words:*** *Federal inland revenue service, Information technology, Tax compliance, Tax revenue.*

## INTRODUCTION

The need for revenue generation is a major concern for countries all over world. This attention has resulted to the introduction of the voluntary compliance (self-assessment) tax regime (Okauru, 2011). According to Bird (2015), revenue collections in developing countries are generally being affected by high forms of evasion, coercion, and corruption. Developing countries fail to generate enough amount of revenue from taxes because some of these countries are faced with a number of institutional problems like corruption and political instability (Ajaz & Ahmad, 2010). Umar et al, (2017) evaluated the challenges of tax revenue generation in developing countries. The study identifies tax noncompliance as a key factor for the current underperformance of tax revenue in developing countries.

Tax compliance is the ability of tax payers to render accurate tax returns in line with the relevant laws, rules and regulations of the state for the purpose of tax assessment and payment (Badara, 2012). Similarly, tax compliance means the desire in doing the right thing at the right time. This involves the individual taxpayer’s belief that tax payment is the right thing to do but should not be based on fear of being punished for failure to comply (Wenzel, 2005). Brown and Mazur (2003) noted tax compliance as a multifaceted measure and theoretically defined it by considering three distinct types of compliance such as payment compliance (timely payment of all obligations), filing compliance (the timely filing of any required return), and reporting compliance (the accurate reporting of income and of tax liability).

Despite the various measures and reform taken by government and relevant stakeholders in Nigeria to enhance individual tax compliance, tax non-compliance still posed serious challenge to revenue generation which hinders management and efficient administration of the nation and states (Beale & Wyatt, 2017; Kira. 2017). Low tax compliance weakens the state’s ability to invest and develop. Fuest and Riedel (2009) reported that in 2005, only 15% of gross domestic product (GDP) in developing countries were derived from taxes, compared to 35% in developed countries. Low tax compliance in developing countries costs around $285 billion per year (Cobham, 2005). This is a worrisome phenomenon, however, in parts of the world today, Information and Communication

Technologies are major contributors to revolutionary changes in business, commerce and daily living.

Information and Communication Technology is defined as the convergence of audio-visual, telephone and computer networks through a link system. It is a combination of all these elements, capped by a vision on how technology can help an organization to reach its goals. According to Crede and Mansell (1998). Information technology is the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data, often in the context of a business or other enterprise. The term is commonly used as a synonym for computers and computer networks, but it also encompasses other information distribution technologies such as television and telephones. Several industries are associated with information technology, such as computer hardware, software, electronics, semiconductors, internet, telecom equipment, e-commerce and computer services.

A tax and revenue service is basically founded on financial data about individuals and government business (Diebold, 2010). Information technology could make it increasingly possible for eligible taxpayers to pay tax online anywhere and anytime. Information technology used in the tax system may be referred to as tax technology. Tax technology streamlines processes and makes them more efficient by enabling the flow of data. This result in far fewer hours and resources spent on tax processes. The proper administration of information technology to generating tax revenue will result in increase in revenue from taxes. In light of this, it would be a step towards development if tax registration is made as easy as possible by making it an online process. The simplification of the registration process and the actual completion of the whole process without stepping into a tax office will guarantee that more people, more income earners will be willing to subscribe to the tax system which in turn will lead to increased revenue.

Adewoye and Olaoye (2009), stated that the future planning of information technology is built using the following; people, data processing, data communication, information system and retrieval and system planning. The goal of any tax authority is to establish a system of tax administration that allows for the collection of required taxes at minimum cost (Onuiri et al, 2015). A tax authority engages in many activities, such as processing returns and related information from taxpayers, entering tax return data into a database, matching returns against filing requirements, processing tax payments and matching them against assessments, and issuing assessments and refunds. One way to boost a tax authority's efficiency is by expanding its use of information and communication technology. Information technology can facilitate a broad range of services, including registering taxpayers, filing returns, processing payments, issuing assessments and checking against third-party information. E-filing systems increase the quality and quantity of information available to tax officers, enabling them to complete transactions faster and more accurately (The IRS, 2014).

Automation helps establish a good system for tracking case files, which is essential for effective auditing (Onuiri et al, 2015). The use of automated systems has been proven to be capable of introducing massive efficiencies to business processes at a minimal cost (Wasao, 2014), due to the bureaucratic structure of government which is costly to manage with little or no result, tax authorities as an agency of government are turning to e-government led solutions like electronic tax filing (e-filing) (Amabali, 2009), based on the arguments that it enhances the delivery of public services and fiscal profundity without incurring costly recurring overheads (Harrison & Nahashon, 2015). In Nigeria, Oseni (2015) concluded that there is no hiding place for tax evaders with the use of this modern technology since all potential taxpayers are captured by the system, but the use of ICT can be catastrophic if carelessly employed by both the tax payers and the tax administrators as scammers and hackers of the internet facilities can utilize the ignorance or the lax security of the system.

Some studies have also been carried out on information technology and tax revenue. For example, Adeyeye, (2019) studied the impact of technology innovation on tax administration in Nigeria, Mitja and Maja (2015) examined impact of information systems on taxation:, Stanley (2014) examined the impact of adoption of technology as a strategic tool in enhancing tax compliance in Kenya, and Ling and Nawawi (2010) carried out a survey on Integrating ICT Skills and tax software in tax education in Malaysia. Clearly noted, none of the above-mentioned studies attempted to make a linkage of the moderating role of information technology in the relationship between tax compliance and tax revenue ofFederal Inland Revenue Service, (FIRS). This is a gap in the existing literature, and to fill this gap, this present study espouses the change of focus geographically to Federal Inland Revenue Service, (FIRS) in South South of Nigeria, employing tax compliance as the predictor variable, proxied by voluntary disclosure, tax audit and tax amnesty, while petroleum profit tax, companies' income tax and value added tax are used to measure tax revenue, moderated by information technology under the lens ofthe theory of reasoned action (TRA)

## LITERATURE REVIEW AND HYPOTHESES

### Theoretical Underpinning

Taxation is a product of theorists and this study will be hinged on theory of reasoned action (TRA) to support information technology and revenue generation in Nigeria.

### Theory of Reasoned Action

The theory of reasoned action (TRA) explains an individual's decision, a voluntary behavior (Colman, 2015), to engage in a particular behavior based on the outcomes the individual expects will come as a result of performing the behavior. In other words, prospective tax payers will be willing to pay based on their perceived utilization of the proceeds from taxation. It could also be the perceived penalty that would be received on account of nonpayment of tax. The idea found within the theory of reasoned action is that of an individual's basic motivation to perform an action, which in this case is tax

compliance. Theory of reasoned action (TRA) says that a person's intention to perform a behavior is the main predictor of whether or not they actually perform that behavior.

According to the theory, intention to perform a certain behavior precedes the actual behavior (Azjen & Madden, 1986). The theory of reasoned action suggests that stronger intentions lead to increased effort to perform the behavior, which also increases the likelihood for the behavior to be performed. It is proposed therefore that tax morale may positively influence tax compliance. Similarly, conscientiousness, openness, agreeableness as personality dispositions will positively influence tax compliance where tax proceeds are judiciously utilized, but negative if otherwise.

**The Concept of Tax Compliance**

Tax compliance is the extent to which taxpayers meets their tax obligations by paying tax when due according to the relevant tax laws or regulations. It means prompt tax payments and producing and submitting tax information to the relevant tax authority based on the required formats. At times, taxpayers might refuse to oblige to the relevant tax laws willingly or unwillingly.The categories of these taxpayers are either tax resisters or tax protesters. Tax protesters fail in tax payment by evading through giving different interpretations to tax laws for the purpose of non-compliance mechanism while the tax resister fails in tax payment due to reliable reasons and information. Based on this, Palil and Mustapha (2011) defined tax compliance as a process of filing and submission of taxpayers' returns of all accurately declared income and the payment of the exact tax assessed based on the approved tax laws. Tax compliance is a major problem for many nations as it is very difficult at times to compel tax payers to comply with tax laws and to ensure voluntary payment of tax liabilities (James & Alley, 2004).

According to Ibrahim (2016), and Onuoha and Dada (2016), various enforcement measures are available when voluntary compliance seems difficult. These include tax audit, tax penalty and even tax amnesty and sometime tax holidays (Anah & Nwaiwu, 2018). There are other tax enforcement tools such as tax audits, tax penalties, fines, detainment of assets, and disposal of tax default properties and compulsory use of tax clearance certificate for major transactions (Samuel, 2015). Thus, extant literature have suggested that nexus subsists between the aforementioned tax enforcement tools and tax compliance. This study adopts voluntary compliance, tax audit and tax amnesty as the dimensions of tax compliance

**Voluntary Compliance**

Voluntary tax compliance is the individual willingness to put in order and file tax returns devoid of any form of involvement from the government. This absorbs tax payment by the taxpayer devoid of any form of enforcement but through affirmative affinity of the taxpayer (Gangl et al, 2015). It is the state of affairs whereby the taxpayers reverence the tax laws while the tax authorities are perceived as service providers by assisting the taxpayers' in conformity with the tax laws. In meeting the terms with the tax laws, the

taxpayers at times engage in tax avoidance by means of paying a minor amount of tax liabilities by taking advantages of ambiguity in the tax laws.Voluntary compliance is facilitated by the trust and teamwork resulting between tax authority and taxpayer and it is the readiness of the taxpayer on his own to meet the terms with tax authority's directives and regulations. What's more, Voluntary Tax Compliance is a tax organism founded on taxpayers complying with the tax laws devoid of being obligated by the tax authority to do so. Under this arrangement taxpayers are estimated to disclose their income, compute their tax liability and file a tax return (Quadri, 2010).

**Tax Audit**

Jemaiyo and Mutai (2016) defined tax audit as an assessment of a person or organization's tax report by the appropriate tax authorities in order to establish compliance with relevant tax laws and regulations of the state.Onuoha and Dada (2016), described audit as a means of giving trustworthiness to an entity's financial information. The rationale of an audit is to supply a guarantee to the true and fair view of the financial statement. An audit is likewise perceived as an on-site verification activity, for examination or assessment of quality system to ensure compliance with requirements. Tax audit is a supplementary audit to the statutory audit and is implemented by tax officials from an appropriate tax authority.Tax audit is therefore a means of guaranteeing compliance with the tax laws. The principal intention of tax audit is to sustain the confidence in the integrity of the self-assessment system. It lends a hand to advance voluntary compliance by discovering and bringing to book those who do not pay the correct amount of tax.

**Tax Amnesty**

Tax amnesty is a course of action that consents to voluntary declaration of taxable assets and payment of such outstanding tax liabilities devoid of payment of penalties. Baer and Le Borgne (2008) declared that, tax amnesty can be perceived as a limited-time offer by the government to taxpayers to pay an amount of tax, to pardon their tax liability which comprises the interest and penalties for the preceding tax year. Amnesty is legal forgiveness from convinced infractions. Tax amnestytherefore,makes up waiver and elimination of penalties in back taxes to support defaulting taxpayers to pay what they owe within a specific window. The purpose of tax amnesty is to pardon or bargain the tax liabilities of persons and corporate taxpayers in line with laid down statutes. It is also projected to standardize the tax affairs of individuals who have failed to pay their tax obligations; advance the tax compliance culture and broaden the tax net.

**The Concept ofTax Revenue**

Tax revenue is money earned by the State from taxation. It is the main income for the state to fund public expenditure and other costs, tangibly expressing the common efforts of the community. According to Ogbonna and Appah (2012), the imposition of taxes for financing government activities and for the provision of a basis for apportioning the tax burden between members of the society is to enable government generate revenue to

finance its expenditure. Taxation is one of the means in which revenue is generated by the government to meet the desire of both government and citizens. Omesiand Nzor (2015) stated that taxation is the life wire of every country and its level of development at times depends on the income generated from tax.

Tax revenue is employed for financing the costs of public goods, a singular group of goods whose consumption by an individual does not diminish the consumption by others and, at the same time, for which it is expensive or impracticable to put off consumption (e.g. street lightening). The composition of tax revenue is the summation of the revenues of different kind of taxes, depending on what is taxed: the revenue of physical and juridical persons ("direct taxes"), wealth and assets as real estates and houses, the domestic economic transactions ("indirect taxes" - e.g. VAT), the international trade, characteristically through import duties. Taxes are mandatory payments, ruled by laws. Tax revenue is accumulated from the whole society with distinguishable concentration, enthused by thoughtfulness of fair dealing, good organization and usefulness (Valentino, 2003).

The primary goal of any tax authority is to raise revenue from the private sector and transfer it to the public sector for use in promoting government programs. Tax revenue is money earned by the State from taxation. It is the main income for the state to fund public expenditure and other costs, tangibly expressing the common efforts of the community. Tax revenue is used for financing the costs of public goods, a special group of goods whose consumption by one person does not decrease the consumption by others and, at the same time, for which it is costly or impossible to prevent consumption (e.g. street lightening).The composition of tax revenue is the sum of the revenues of different kind of taxes, depending on what is taxed: the revenue of physical and juridical persons ("direct taxes"), wealth and assets as real estates and houses, the domestic economic transactions ("indirect taxes" - e.g. VAT), the international trade, typically through import duties. Taxes are mandatory payments, ruled by laws. Tax revenue is collected from the whole society with differentiated intensity, inspired by considerations of justice, efficiency and effectiveness (Valentino, 2003). For this study, revenue generation has been operationalized into petroleum profit tax, companies' income tax and value added tax.

**Petroleum Profit Tax**

Petroleum profit tax is a tax applicable to upstream operations in the oil industry (Odusola, 2006). Petroleum profit tax payments are made either in cash or in kind, depending on the operating contract of the company. he importance of petroleum to the Profitability of oil and gas firms in Nigeria gave rise to the enactment of a different law regulating the taxation of incomes from petroleum operations.The Petroleum Profit Tax is regulated by the Petroleum Profit Tax Act of 1959 as amended by the Petroleum Profit Tax Act of 2007. Petroleum profit tax involves the charging of tax on the incomes accruing from petroleum operations (Nwezeaku, 2005). The importance of petroleum to

the Profitability of oil and gas firms in Nigeria gave rise to the enactment of a different law regulating the taxation of incomes from petroleum operations (Nwezeaku, 2005). The petroleum profit tax is charged, assessed and payable upon the profits of each accounting period of any industries engaged in petroleum operations during any such accounting period, usually one year January to December (Anyanwu, 1993).

**Companies Income Tax**

The company's income tax Act (CITA) 2007 as amended defines company in a broader sense. CITA, Section 105 and Petroleum Profit Tax Act (PPTA), CAP LFN, 2004, define a company as: "any company or corporation (other than corporation sole) established by or under any law in force in Nigeria or elsewhere". Company Income Tax is imposed on the income of all companies operating in the country except those specifically exempted under the company income tax Act.On the tax chargeable, section 9 (1) of the Companies Income Tax Act 2007 provides that Subject to the provisions of this Act, the tax shall for each year of assessment be payable at the rate specified in sub-section (1) of section 40 of this Act upon the profits of any company accruing in, derived from, brought into, or received in, Nigeria in respect of-

i. Any trade or business for whatever period of time such trade or business may have been carried on;
ii. rent or any premium arising from a right granted to any other person for the use or occupation of any property; and where any payment on account of such a rent as mentioned in this paragraph is made before the expiration of the period to which it relates and is included for the purposes of this paragraph in the profits of a company, then so much of the payment as relates to any period beginning with the date on which the payment is made shall be treated for these purposes as accruing to the company proportionately from day to day over the last mentioned period or over the five years beginning with that date, whichever is the earlier;
iii. Dividends, interests, royalties, discounts, charges or annuities;
iv. Any source of annual profits or gains not falling within the preceding categories;
v. Any amount deemed to be income or profit under a provision of this Act or with respect to any benefit arising from a pension or provident fund, of the Personal Income Tax Act;
vi. Fees, dues and allowances (wherever paid) for services rendered;
vii. any amount of profits or gains arising from acquisition and disposal of short-term money instruments like Federal Government securities, treasury bills, treasury or savings certificates, debenture certificates or treasury bills, treasury or savings certificates, debenture certificates or treasury bonds.

**Value Added Tax**

Value added tax (VAT) is a spending tax and is borne by the final consumer of VAT able goods and services (Kiabel & Nwikpasi, 2009). Value added tax is a tax levied at each stage supplies changes hands (Jones, 2003). Each time goods are passed from one stage to the other, intermediary value is added to it and this value that is being taxed and borne

by the final consumer. Adesola (2000) labelled value added tax as a consumer tax and its' charged prior to the sales of goods, and is habitually distinct as the totality of wages and profit. VAT has turned out to be a genuine spring of revenue in several developing countries in Sub-Saharan Africa; it has been familiarized in numerous countries (Whenkroff, 2003).

Simply called the Goods and Services Tax (GST), it is levied on the value added that results from each exchange. It is an indirect tax collected from someone other than the person who actually bears the cost of the tax (Ochei, 2010). VAT is a consumption tax levied at each stage of the consumption chain and borne by the final consumer of the product or service. Each person is required to charge and collect VAT at a flat rate of 5% on all invoiced amounts, on all goods and services not exempted from paying VAT, under the Value Added. With the passage of the Finance Bill into law recently, that brought several developments to the Nigerian tax regime with the amendment of various tax legislations. One of the most populous innovations brought by the Act is the increase in the value added tax rate from 5% to 7.5%.

**The Concept of Information Technology**

Information technology is a body of tools, with the convergence of communication and computer(Odunfunwa, 2008). Information technology is a series of machine, which can execute sequences of instructions(Goldberg, 2008). Information technology is a powerful collection of elements which include computer hardware, software, telecommunication networks, workstations, robotics and smart chips, which is also at the root of information systems (Yekin i& Lawal, 2012). Information communication technology also refers to the combination of manufacturing and services industries that capture, transit and display data and information electronically. Diebold (2010) views information technology as technologies that provide easy access to information through telecommunications. Kamau (2014) declared that information communication technology continues to influence the way we work, play and also interact with others. The phrase "information technologies" is used to encompass a range of new technologies and their applications, including all aspects of the use of computers, micro-electronic devices, and satellite communication technology. The sequence of instructions is programmed, made particularly flexible and not rigid and can be changed depending on the information being processed.Information technology has played a major role in data-oriented business for a long time, which extracts and process information in order to achieve their goals.Indeed, ICT also affects how tax systems are designed and administered especially in developing countries.

**Empirical Review**

Francis (2019) examined the influence of tax amnesty program on tax compliance in Nigeria moderating the effect of political trust. The survey research design was employed to understand the taxpayer's perception of the Voluntary Assets and Income Declaration Scheme (VAIDS). Data was obtained via questionnaires to taxpayers across the most

commercial states in Nigeria. The data obtained were analyzed using the frequency table, the Cronbach alpha test, and the binary logistic regression technique. The survey showed that the compliance rate was about 22%. The study showed that the primary driver of tax compliance in Nigeria is unannounced ad hoc tax audit; this implies that tax compliance will increase when taxpayers are aware there is an unannounced ad hoc tax audit. It is evident from this study that the low tax compliance was as a result of the moderating effect of political trust of the taxpayers as indicated by the amnesty trust and trust showed a negative relationship with tax compliance in Nigeria.

Adeyeye, (2019) studied the impact of technology innovation on tax administration in Nigeria. Primary Data were collected through the use of structured questionnaire administered on 219 staffers of Federal Inland Revenue Service to elicit their responses. Descriptive statistics, Analysis of Variance (ANOVA) and Regression Model were used for the data analysis. The R value depicts that the use of information technology accounted for (76.3%) improvement in tax administration in Nigeria. Returns filed electronically have much lower error rates than paper returns and substantially cut the need to impose penalties and other punitive measures to foster compliance. The more efficient handling provided by electronic returns allows tax officers to issue assessments and refunds more quickly, and taxpayers knows immediately if their returns have been accepted by the tax authorities. E-filing lowers the cost of handling returns, allowing administrative resources to be reallocated to other tasks such as auditing, customer services and tracking non-compliance. The benefits of e-filing and e-payment systems extend to other electronic processes in the tax authority. E-filing and e-payment allow for better, safer data storage that can be used to implement a risk management system for auditing and enforcement.

Jean (2018) examined the effects of tax audit on revenue collection in Rwanda. The study is limited to the 110 respondent of Headquarter of the Rwanda Revenue Authority (RRA) in Kigali. The study adopted a descriptive approach. Both Primary and secondary data was used and then analyzed through SPSS version 21. Data analysis involved statistical computations for averages, percentages, and correlation and regression analysis. Ordinary least squares (OLS) regression method of analysis was adopted to determine the inferential statistics. It was revealed that tax audit actually has an effect to revenue collection, according to the t–tests there is significance in the correlation between tax collected before the audit and after the audit.

Nwaiwu and Macgregor (2018) examined the webometric indices of tax audit and tax revenue generation research in Nigeria, intended to improve the economic and social situation by supporting infrastructure and increasing the quality of public goods provided by the government, the situation in the country still remains fragile, and the country remains among the poor in the world. The core objective of this investigation is to empirically analyze the effect of webometric indices of tax audit and tax revenue generation in Nigeria. They concluded that tax audit has the potency to make significant contribution to tax revenue generation and recommends that in order to increase

government tax revenue; there should be regular tax audit practice by tax authorities in Nigeria. Tax administrators should not concentrate only on desk tax audit but also on field tax audit and back duty tax audit so as to be able to block all leakages and increase tax compliance.

Dogan and Turker (2018) examined an empirical analysis of the impact of tax amnesties on tax compliance between1980-2014 in Turkey. They use the vector auto regression analysis instead of the structural vector auto regression since we aim to eliminate the potential problems that may emerge in the structural vector auto regression. We assign tax revenue as the dependent variable and tax amnesties and real gross domestic product per capita as the independent variables. The impulse response and variance decomposition result indicates that tax amnesties lose influence over tax revenue in the long run whereas the impact of gross domestic product shows an increasing trend. Being too weak to create the expected impact, the reaction of tax revenue to the shocks in tax amnesties is positive but floating in some periods. Thus, we may conclude tax amnesties affect tax revenue negatively in general.

Niway and Wondwossen (2017) investigate the determinants of voluntary tax compliance behavior in self-assessment system in Ethiopia. The researchers argued that taxpayer's voluntary compliance with the tax system is influenced by economic, institutional, social, individual and demographic variables. The researchers employed a crosssectional survey method of research design, using the target population of five cities of Southern Nation, Nationalities and Peoples` Regional State (SNNPRS), Ethiopia. A sample of 377 Category "A" taxpayers were randomly taken from the selected cities. Both primary and secondary data were collected. In order to analyze and present the results of this study, Pearson correlation matrix and logistic regression model were employed. Their result revealed that tax knowledge, simplicity of tax returns and administration, perception on fairness and equity, perception on government spending, probability of auditing, and the influence of referral group were determinant factors that influence voluntary compliance behavior of tax payers in self assessment system.

Based on the review of literature, the following conceptual frame work was developed:

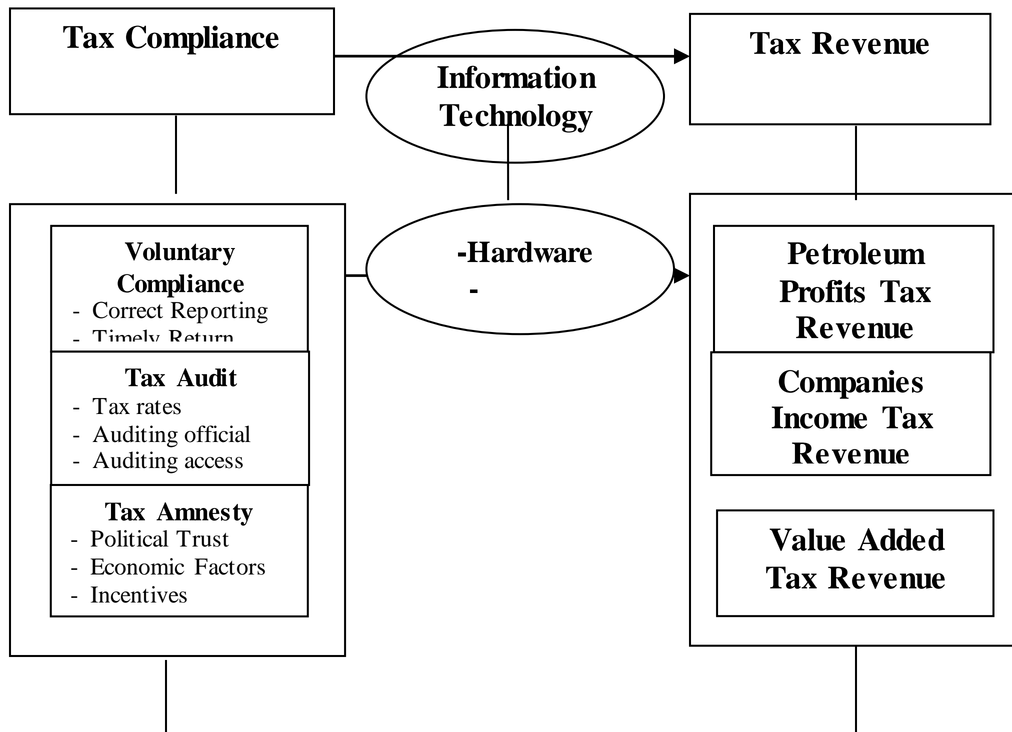


**Figure1:** Conceptual Framework on the role of Information Technology on the relationship between Tax Compliance and Tax Revenue.

**Sources:** Predictor variable; Kastlunger *et al,* (2013) Onuoha and Dada, (2016).
Criterion Variable; Kiabel, (2014).

In line with the objectives of this study, the following hypothesis formulated in the null form was tested;

$Ho_1$: Information technology does not significantly moderate the effect of tax compliance and revenue in Federal Inland Revenue Service of Nigeria.

## RESEARCH METHODOLOGY

This study adopteda causal study design and the population of the study is twenty six (26) Federal Inland Revenue Service (FIRS), field offices in south south geographical location of Nigeria. (FIRS 2020). For sample size, the study took a census since the population was small. Census is a statistical method that studies all the units or members of a population. Questionnaire was distributed to three (3) management staff from each of the 26 FIRS field offices in south south Nigeria, given a total of 78 respondents that constitutes the respondents of the study. Data for analysis was collected through primary and secondary sources. Primary data was collected through questionnaire to respondents

from the twenty six (26) Federal Inland Revenue Service field offices in South South Nigeria while secondary data was collected from FIRS Planning, Research and Statistics Department, Central Bank of Nigeria (CBN) statistical bulletin, articles, magazines and other published studies for the period covering 2007-2019. A total of seventy eight (78) copies of questionnaire were distributed to management staff of the twenty six (26) field offices of FIRS in South SouthNigeria. The total number of questionnaire distributed was based on the sample of twenty six (26) field offices. Questions in the questionnaire were given the options of 5 point likert scale of rating (Strongly Agree), (Agree), (Undecided), (Disagree) and (Strongly Disagree).

The study adopted both descriptive and inferential statistics to analyze the primary and secondary data obtained for this study. Descriptive statistics of mean, standard deviation, bar chart and frequency distribution were used to analyze the data. Inferential statistics of linear regression was used to test the hypotheses in the study. Specifically, simple linear regression was used to ascertain the effects of the dimensions of tax compliance on the measures of petroleum tax revenue. The analysis of the primary and secondary data where performed with the aid of statistical package for social sciences (SPSS) version 22.0.

**Models Specification**

The model to be used to examine the hypotheses of the study is expressed as follows:

$PPT= B0 + B1 VC + B2 TA + B3 TAM + \varepsilon$ 1.1

$CIT = B0 + B1 VC + B2 TA + B3 TAM + \varepsilon$ 1.2

$VAT = B0 + B1 VC + B2 TA + B3 TAM + \varepsilon$ 1.3

Where;

PPT = Petroleum Profit Tax
CIT = Companies' Income Tax
VAT = Value Added Tax
VC = Voluntary Compliance
TA = Tax Audit
TAM = Tax Amnesty
TC = Tax Compliance
IT= Information Technology

**RESULTS**

A total of 78 copies of the questionnaire i.e. 100% were produced and distributed by the researcher to the target respondents in the organization. Out of the 78 copies produced and administered, 73 copies i.e. 93.59% were successfully retrieved that means 5 copies (6.41%) were not retrieved by the researcher. However, out of the 73 copies that were returned, 6 copies were not properly filled, rendering them invalid. Hence, only 67 copies of 85.90% were valid and used for the analysis. Using 85.90% of questionnaire for analysis is within the acceptable region.

**Multivariate Inferential Analysis**

The multivariate analysis here examines the moderating effect of information technology on petroleum profit tax, companies' income tax and value added tax in Federal Inland Revenue Service field offices in south south of Nigeria studied.It involves testing the hypothesis stated in preceding section, using inferential statistics and regression for the analysis and the interpretation of the results. The Decision Rule that guides the test of hypotheses is stated thus: critical value = 0.05. Thus, we reject null hypothesis and accept alternate hypothesis if probability value (p) < critical value (0.05). In contrast, we accept null hypothesis and reject alternate hypothesis if probability value (p) > critical value. Furthermore, Dunn (2001) cited in Ahmed (2019) categorization scheme was adopted to determine the strength and direction of the effects of the predictors on the criterion variables shown on Table 1.

**Analysis on the Moderating Effect of Information Technology on the relationship between Tax Compliance and Tax Revenue**

**Table 1: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .890[a] | .881 | .880 | 174415.232 | .881 | 1657.620 | 2 | 64 | .000 |
| 2 | .992[b] | .984 | .983 | 162614.273 | .103 | 10.626 | 1 | 63 | .002 |

a. Predictors: (Constant), Moderator, Tax Compliance

b. Predictors: (Constant), Moderator, Tax Compliance , Information Technology

Source: Field Survey, 2022.

From the SPSS output on Table 1, it can be seen that before the introduction of the moderating variable (Information Technology) in model 1, the regression coefficient is 0.890, and the coefficient of determination ($R^2$) is 0.881 and the Adjusted R Square is 0.880; indicating that approximately 88% of the variations in revenue generation are accounted for by tax compliance while the remaining 12% of the variations are traceable to external variables. However in model 2, with the introduction of Information Technology, the regression coefficient increased to 0.992, and the coefficient of determination ($R^{2)}$ and the Adjusted R Square also increased to 0.984 and 0.983 respectively. Specifically, the change in the coefficient of determination is 0.103; which means, Information Technology strengthens the effect of tax compliance on revenue generation by 10.3%. Furthermore, the change occasioned by the introduction of Information Technology is significant as the probability values are less than 0.05.

**Table 2: ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 100851825245548.920 | 2 | 50425912622774.460 | 1657.620 | .000[b] |
| | Residual | 1946923074741.697 | 64 | 30420673042.839 | | |
| | Total | 102798748320290.620 | 66 | | | |
| 2 | Regression | 101132814004821.550 | 3 | 33710938001607.184 | 1274.834 | .000[c] |
| | Residual | 1665934315469.077 | 63 | 26443401832.842 | | |
| | Total | 102798748320290.620 | 66 | | | |

a. Dependent Variable: Revenue Generation
b. Predictors: (Constant), Moderator, Tax Compliance
c. Predictors: (Constant), Moderator, Tax Compliance , Information Technology
Source: Field Survey, 2022.

Furthermore, the ANOVA Table i.e. Table 2 shows that the model statistically significantly predicts the outcome variable at $F(2, 64) = 1657.620$, $p < 0.05$, $R^2 = 0.881$ in model 1; and $F(3, 63) = 1274.834$, $p < 0.05$, $R^2 = 0.984$ in model 2. This means, Information Technology significantly moderates the effect of tax compliance on revenue generation.

**Table 3: Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | T | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 500295.066 | 94751.400 | | 5.280 | .000 |
| | Tax Compliance | -7337.435 | 1484.627 | .099 | 4.942 | .000 |
| 2 | (Constant) | 228123.810 | 121553.819 | | 1.877 | .065 |
| | Tax Compliance | 9978.469 | 1603.857 | .135 | 6.222 | .000 |
| | Information Technology | 20791.581 | 6378.253 | .061 | 3.260 | .002 |

Source: Field Survey, 2022.

As shown on the Table 3 in model 2, the intercept $B_0$ is 228123.810 which is the predicted value of revenue generation without the contributions of tax compliance and

information technology i.e. when tax compliance and information technology were equal to zero. The slope $B_1$ is 9978.469 indicating that 1 unit increase in tax compliance will bring about 9978.469 units increase in revenue generation. Similarly, the slope $B_2$ is 20791.581 indicating that 1 unit increase in information technology will bring about 20791.581 units increase in revenue generation.

**Hypothesis One**

$Ho_1$: Information Technology does not significantly moderate the effect of tax compliance on revenue generation in Federal Inland Revenue Service of Nigeria.

The probability values are 0.000 and 0.002 < 0.05 which means information technology significantly moderates the relationship between tax compliance and tax revenue.
From Table 4.40 the regression model is built thus;

$$RG = B_0 + B_1TC + B_2IT + \varepsilon$$
$$= 228123.810 + 9978.469VC + 20791.581IT + 1603.857 + 6378.253$$

**DISCUSSSION OF FINDINGS**

Results of the analysis showed that the regression coefficient between tax compliance and revenue generation was 0.890 before the introduction of information technology. However, the introduction of technology changed the regression coefficient to 0.992; giving a difference of 0.103, i.e. 10.3%. . Again, result of the analysis is significant (i.e. $p = 0.002 < 0.05$). This means information technology statistically significantly moderates the effect of tax compliance and revenue generation. Therefore, we rejected the null hypothesis which states that information technology does not significantly moderate the effect of tax compliance on revenue generation, and accepted the alternate hypothesis.

Findings of our study align with the findings of Muita and Makanga (2010) who investigated the adoption of technology as a strategic tool for enhancing tax compliance in Kenya. The objective of the study was to evaluate the role Technology would play in Kenya to enhance tax compliance among large taxpayers. The study found that in the fast changing business world, technology has become part and parcel of any business growth. The use of automated systems has been proven to be capable of introducing massive efficiencies to business processes at a minimal cost (Wasao, 2014), due to the bureaucratic structure of government which is costly to manage with little or no result, tax authorities as an agency of government are turning to e-government led solutions like electronic tax filing (e-filing) (Amabali, 2009), based on the arguments that it enhances the delivery of public services and fiscal profundity without incurring costly recurring overheads (Harrison & Nahashon, 2015). The finding is further validated by the works of Kulatilaka and Venkatraman 2001; Sambamurthy et al. (2003), the extent to which IT enables firms to achieve profitability through its impact on revenue growth and cost savings remains unknown. Besides, the theoretical importance of exploring whether the

revenue growth pathway is more profitable than the cost reduction pathway, this is also an important issue for executives who need to prioritize among IT projects that have varying levels of revenue generation and cost reduction potential.

A growing literature on Information Technology adoption suggests that there are vast potential for using ICTs to accelerate the process of economic development, provide greater opportunities to participate in global trade and production, provide better access to information, assist achieve and maintain international competitiveness, enable environmentally friendly development. One unprecedented opportunity, that ICTs have opened to the society include access to global knowledge at an increasingly low cost. Even the most remote countries are now connected to knowledge and data banks, helping them bridge the vast knowledge gap. The rapid spread of the internet worldwide is an example of changing information accessibility in all countries. (Nathaniel 2014).
Technology as indicated by Adeyinka (1996) is the key to competitiveness and economic growth of our time. Progress in information and communication technologies no doubt have the greatest influence on the global economy. This made it possible to collect process and transmit information at breath-taking speed and declining cost, thereby increasing productivity, improving quality and efficiency. Technology has in recent times improved revenue generation, official activities in revenue offices are now carried out in convenience with just a click of the mouse of the computer sets, phones and other electronic devices which will bring about achieving needed target in revenue generation using the internet.

## CONCLUSIONS AND RECOMMENDATION

The study examined the moderating effect of information technologyon the relationship between tax compliance and tax revenue in Nigeria, with evidence from Federal Inland Revenue Service for the periods 2007-2019. Specifically, to ascertain the extent to which information technologymoderatesthe relationship between tax compliance and tax revenue. From the analyses, it was found that, there is a positive and statistically significant moderating effects of tax audit and the measures; indicating that the relationship between tax compliance and tax revenueis accounted for by information technology. Thus; the study concludes that information technology positively and significantlymoderates the relationship between tax compliance and tax revenue of Federal Inland Revenue Service, and recommends that federal Inland Revenue Service should encourage the use of ICT by procuring quality and relevant electronic gadget in all zonal/field offices especially in the south southto facilitate tax compliance and tax revenue generation.

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