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IMPACT OF ELECTRONIC TAX ADMINISTRATION SYSTEMS ON TAX REVENUE IN NIGERIA (2015 - 2022)

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Abstract
This study investigated the relationship between electronic tax (e-tax) administration system and tax revenue generation in Nigeria. The primary objective was to examine how various e-tax administration components influence tax revenue. The study adopted both correlational and ex-post facto research designs. The correlational approach was employed to determine the relationship between e-tax administration system and tax revenue, while the ex-post facto design explored potential cause-and-effect relationships using existing data. The study utilized macro-level secondary data obtained from the Federal Inland Revenue Service (FIRS) tax statistics covering the 36 states of the federation. Econometric techniques such as stationarity tests, co-integration, and Granger causality tests were used to analyze the data. The findings revealed a significant positive relationship between e-tax administration system and tax revenue in Nigeria. Specifically, electronic tax registration, electronic filing of tax returns, and electronic tax payment were found to have a significant positive effect on company income tax revenue. The study concluded that an effectively managed e-tax system can substantially enhance tax compliance and revenue generation in Nigeria. It therefore recommended that the FIRS should sustain and expand electronic filing and payment processes, and ensure that all tax clearance certificates are issued electronically to promote compliance, reduce administrative costs, and improve company income tax revenue.

Introduction

This study seeks to ascertain the relationship between electronic filing of tax returns and company income tax revenue, as well as to determine the relationship between electronic tax payment and company income tax revenue in Nigeria. The economic development of any nation depends largely on its ability to generate sufficient revenue to fund public infrastructure and essential services. Taxation, therefore, serves as a vital macroeconomic instrument for national development (Omojemite & Godwin, 2021; Azubike, 2018). However, the traditional manual tax system in Nigeria has been criticized for inefficiency, lack of transparency, and poor audit trail, which undermine effective revenue mobilization. The advent of e-taxation has revolutionized tax administration by enhancing efficiency, transparency, and convenience through the use of electronic platforms for filing and payment of taxes (Che-Azmi & Kamarulzaman, 2014; Wasao, 2014). Introduced in Nigeria in 2015 by the Federal Inland Revenue Service (FIRS) in collaboration with the Nigeria Inter-Bank Settlement System (NIBSS), the electronic tax system was designed to simplify compliance, increase accessibility, and boost revenue generation (Okunowo, 2015; Odusola, 2018). Despite these innovations, Nigeria still faces challenges of low tax compliance, evasion, and underperformance in revenue collection (Ajayi & Yidiat, 2021; Hassan, 2020). Hence, this study focuses on evaluating the extent to which electronic filing and electronic tax payment influence company income tax revenue in Nigeria, thereby providing insights into the effectiveness of digital tax administration mechanisms in improving fiscal performance.

Statement of the Problem

Over the years, the administration and collection of tax revenue have posed significant challenges in developing economies, particularly in Nigeria, where corruption, embezzlement, poor accountability, and weak fund-tracking mechanisms have undermined the effectiveness of tax systems (Akpobari & Nwodimkpa 2025). These inefficiencies have resulted in low tax revenues and

the inability of government to meet fiscal and developmental obligations. Compared to other African countries such as Ghana, Tunisia, and Morocco, Nigeria's tax-to-total revenue ratio remains substantially low 17.2% in 2014 despite various reforms and modernization efforts (OECD, 2020; FIRS, 2022; CBN, 2021). To address these persistent issues, the Federal Inland Revenue Service (FIRS) introduced the electronic tax (e-tax) system, aimed at improving tax administration through electronic filing of returns and online tax payments. However, despite the implementation of this digital tax infrastructure, empirical evidence on its effectiveness remains mixed. While some studies (Awai & Oboh, 2020; Ofurum et al., 2018; Oladele et al., 2020) found significant positive effects of e-tax mechanisms on revenue generation, others (Omesi & Appah, 2021; Chiamaka et al., 2021; Onuselogu & Onuora, 2021) reported inconclusive or insignificant results. These inconsistencies highlight the need for further empirical investigation into the specific dimensions of e-tax administration and their impact on company income tax revenue. Therefore, this study seeks to (a) ascertain the relationship between electronic filing of tax returns and company income tax revenue in Nigeria, and (b) determine the relationship between electronic tax payment and company income tax revenue in Nigeria, thereby addressing existing methodological and contextual gaps in the literature.

Aim and Objectives of the Study

The aim of the study is to examine the electronic-tax administrative system and Tax revenue in Nigeria 2015 - 2022. The specific objectives of the study are to:

i. ascertain the relationship between electronic filling of tax returns and company income tax revenue in Nigeria.
ii. determine the relationship between electronic tax payment and company income tax revenue in Nigeria.

Research Questions

The following research questions were formulated from the objectives of the study as shown below:

1. What is the relationship between electronic filling of tax returns and company income tax revenue in Nigeria?
2. What is the relationship between electronic tax payment and company income tax revenue in Nigeria?

Research Hypotheses

The hypotheses of the study were formulated from the objectives of the study and stated in null forms as follows;

Ho_2: there is no significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria.

Ho_3: there is no significant relationship between electronic tax payment and company income tax revenue in Nigeria.

Review of Related Literature

Conceptual Review

Electronic Tax Administration Systems

Motwani et al (2015) emphasized that the adoption of electronic tax administration systems plays a crucial role in enhancing revenue collection for both private entities and government institutions. In the private sector, such systems offer significant advantages by reducing costs, saving time, and improving convenience for taxpayers, financial institutions, and tax regulators, thereby increasing taxpayer satisfaction. From the government's perspective, electronic tax administration enhances the efficiency and transparency of revenue collection processes (Chindengwike 2022).). According to Night and Bananuka (2020), taxation can be likened to the circulation of blood in the body, as it sustains economic systems through financial circulation among citizens. Empirical evidence by Fox

and Murray (2013) further reveals that improved voluntary tax compliance enhances government capacity to finance developmental projects, while non-compliance leads to significant revenue losses, constraining developing countries' ability to fund public expenditure and forcing reliance on external loans and grants (Mpofu 2022).). The integration of e-tax systems promotes compliance by minimizing the cost and time of tax filing and submission in a paperless environment (Casey & Castro, 2015). Studies from Korea demonstrate that well-designed and effectively implemented electronic tax invoicing systems substantially enhance compliance through institutional and perceptual reforms in tax management (Soneka & Phiri, 2019). Nevertheless, challenges persist in the implementation of Electronic Fiscal Devices (EFDs) in some African countries, as highlighted by systematic reviews of experiences in Tanzania and Kenya, where issues of technological readiness, administrative capacity, and taxpayer adaptation have hindered full adoption (Mandari & Koloseni, 2017).

Electronic Filing of Tax Returns

Electronic filing of tax returns (e-filing) represents a pivotal innovation in modern tax administration, aimed at simplifying compliance and improving efficiency in revenue collection. According to Nwuezeigwe and Ikechukwu (2020), the Federal Inland Revenue Service (FIRS) introduced the Integrated Tax Administration System (ITAS) to enable taxpayers to file tax returns and make payments electronically, marking a significant stride toward digital transformation in Nigeria's tax system. Despite anticipated implementation challenges, this system holds great potential to enhance the ease of paying taxes and improve compliance. The 2015 *Paying Taxes Report* by PwC and the World Bank ranked Nigeria 170th out of 189 economies in tax payment ease, with medium-sized firms spending about 909 hours annually on tax compliance (Ofurum et al., 2018). Through ITAS, taxpayers can electronically file returns for various taxes including Companies Income Tax (CIT), Value Added Tax (VAT), Petroleum Profits Tax (PPT), and Capital Gains Tax (CGT) and obtain electronic Tax Clearance Certificates (e-TCCs) and Tax Identification Number (TIN) verifications (Nwuezeigwe & Ikechukwu (2020), described e-filing as an e-government mechanism that allows the submission of tax documents electronically without paper filing, thereby promoting transparency, accuracy, and efficiency. The system incorporates features such as automated calculations, electronic validation, online submission, digital signatures, and integrated electronic payments. Collectively, these innovations reduce administrative burdens, minimize human error, and improve compliance accuracy, offering faster processing, reduced paperwork, and enhanced taxpayer convenience thereby positioning e-filing as a cornerstone of effective and transparent tax administration in Nigeria.

Electronic Tax Payments

Electronic tax payments, commonly referred to as e-payments, represent a digital innovation in tax administration that enables taxpayers to fulfill their tax obligations electronically through secure online platforms, digital banking systems, or mobile applications (Davies, 2019). In Nigeria, taxpayers have been able to remit taxes electronically since March 2015 through an application developed in collaboration with the Nigeria Inter-Bank Settlement System (NIBSS), hosted on commercial banks' internet banking platforms. The process requires a Tax Identification Number (TIN), a unique document number generated from the e-filing system, and internet banking authentication, after which an electronic acknowledgment is issued as proof of payment (Ola, 2020). Furthermore, the Federal Inland Revenue Service (FIRS) has enhanced the efficiency of tax administration by introducing automated penalty computation for late filings and payments, and by facilitating online correspondence between taxpayers and the Service through the "message centre" on the ITAS portal (Waweru, 2019). According to Ayo (2020), electronic tax payment methods include online payment portals, electronic funds transfers (EFT), mobile payment applications, direct debits, point-of-sale (POS) terminals, and electronic wallets, among others. These systems improve convenience, accuracy, and transparency, while minimizing errors and administrative bottlenecks

associated with manual tax remittances. Overall, e-payment systems strengthen tax compliance, promote efficiency in revenue collection, and enhance accountability within the fiscal management framework

Tax Revenue

Tax revenue in Nigeria constitutes a fundamental pillar of the nation's fiscal sustainability and economic development framework. As a resource-dependent economy, Nigeria's revenue base has historically been dominated by oil and gas earnings derived from taxes, royalties, and profit-sharing arrangements with exploration and production companies. However, the volatility of global oil prices and the risks associated with overreliance on this sector have underscored the urgency of diversifying revenue sources (Federal Inland Revenue Service [FIRS], 2022). Taxation, therefore, plays a crucial role in Nigeria's fiscal strategy, with the FIRS responsible for administering taxes such as Companies Income Tax (CIT), Value Added Tax (VAT), Petroleum Profit Tax (PPT), and Capital Gains Tax (CGT). The government has also prioritized the digitalization of tax administration through the adoption of e-tax systems to improve compliance, transparency, and efficiency. In addition to taxation, customs and excise duties administered by the Nigeria Customs Service (NCS) contribute significantly to government revenue by regulating trade and generating fiscal inflows. To strengthen non-oil revenue, the government has implemented several reforms under the Finance Acts (2019–2022), aimed at broadening the tax base, reducing leakages, and improving tax compliance. Furthermore, institutions such as the Revenue Mobilization, Allocation and Fiscal Commission (RMAFC) ensure equitable and transparent revenue sharing among federal, state, and local governments. Anti-corruption initiatives, including the Treasury Single Account (TSA) and whistleblower programs, have been instrumental in curbing mismanagement and promoting accountability in revenue mobilization. Overall, effective tax revenue generation and administration remain central to Nigeria's economic diversification, fiscal stability, and sustainable development agenda.

Company Income Tax.

Company Income Tax (CIT) in Nigeria, first introduced under the Income Tax Management Act of 1961 (Ayodele, 2006), is currently governed by the Companies Income Tax Act (CITA), 2004 (as amended). The tax has undergone several policy reforms aimed at addressing structural inefficiencies and enhancing compliance. Ayodele (2006) classified its development into pre- and post-1992 eras—the former characterized by narrow tax bases, high rates, and adverse impacts on savings and investment, while the latter introduced significant reforms, including the abolition of excess profit and capital transfer taxes, alongside gradual reductions in tax rates from 45% in 1970–1986 to 30% from 1996 to date. To promote economic diversification, tax concessions were granted to agricultural, mining, manufacturing, and export-oriented firms, as well as companies in gas utilization and those operating in remote areas with limited infrastructure (The Guardian, 2003). The introduction of the Structural Adjustment Programme (SAP) further influenced rate rationalization to encourage investment. Recent amendments under CITA (2007) have enhanced the tax system by allowing indefinite loss carry-forward and replacing the Body of Appeal Commissioners with the Tax Appeal Tribunal for efficient dispute resolution. Under CITA, both resident and non-resident companies deriving income from Nigeria are taxable on profits from trade, business, rents, dividends, royalties, and other gains. However, a notable legal discourse persists between CITA and the Companies and Allied Matters Act (CAMA), 2004 regarding the recognition of foreign companies—while CAMA restricts foreign entities from operating without local incorporation, CITA mandates taxation on all entities generating income within Nigeria, reflecting a distinction between corporate legality and fiscal obligation (Maryam & Abubakar, 2015). Despite these legal and structural frameworks, tax compliance remains a persistent challenge, as the Federal Inland Revenue Service (FIRS) reported in 2014 that approximately 25% of registered companies were non-compliant, and about 30% evaded taxes entirely. This situation underscores the enduring

issues of weak enforcement, administrative inefficiencies, and corruption among tax officials, which collectively undermine the effectiveness of company income tax administration in Nigeria.

Theoretical Review

Ability to Pay Theory

The **Ability-to-Pay Theory of Taxation**, propounded by Arthur Cecil Pigou in *The Economics of Welfare* (1920), posits that individuals should contribute to public revenue in accordance with their financial capacity, measured by income and wealth. Pigou's argument emphasizes that those with higher earnings possess a greater capacity to bear tax burdens and should thus contribute a larger share to finance public goods and services. This principle underpins the notion of equity in taxation, where fairness is achieved through *horizontal equity*—treating individuals with similar incomes equally—and *vertical equity*—imposing higher tax obligations on those with greater financial capability (Torgler, 2019; Lowes, 2020). While the theory promotes progressive taxation and income redistribution, scholars such as Torgler (2019) critique it for disregarding the actual benefits received by taxpayers, as all citizens contribute to services like public education regardless of usage. Conversely, the **Benefit Theory of Taxation** argues that tax burdens should correspond to the benefits derived from government services, reflecting a quid pro quo relationship between taxpayers and the state (Feinstein, 2020; Lewis, 2018). However, this approach faces criticism for its impracticality in quantifying individual benefits in collective service provision. In contemporary fiscal systems, especially in developing economies like Nigeria, challenges such as weak tax legislation, administrative inefficiencies, corruption, and citizens' negative attitudes towards taxation continue to undermine the practical application of both the ability-to-pay and benefit principles, thereby limiting effective revenue mobilization (Thornhill, 2019).

Empirical Reviews

A comprehensive review of prior empirical studies reveals a growing global emphasis on the role of electronic tax administration systems in enhancing tax compliance, efficiency, and revenue generation. Awasthi et al. (2019) found that in Tanzania, electronic tax administration significantly improved taxpayers' voluntary compliance ($p = 0.002$), emphasizing the need for affordable ICT infrastructure for SMEs. Similarly, Noel et al. (2020) employed stochastic techniques to detect VAT evasion in Colombia, highlighting the role of technology in identifying noncompliant taxpayers. Rong (2011) explored computer-aided audits in China, demonstrating that ICT integration strengthens tax governance and transparency. Faustine et al. (2020), through a pre- and post-analysis in Tanzania, established that the e-tax system significantly increased tax revenue collection among large taxpayers. In Nigeria, Olaoye and Kehinde (2017) revealed that online tax filing, registration, and remittance positively affected tax productivity, while Bojuwon and Siti (2014) confirmed that technological characteristics—such as ease of use and usefulness—strongly influence online tax system adoption. Sadress and Juma (2016) identified the mediating role of e-tax adoption between attitudes and tax compliance in Uganda, underscoring behavioural dimensions in e-tax utilization. Manir and Najib (2020) found a significant positive relationship between e-tax systems and revenue collection efficiency in Kebbi State, Nigeria, while Alfred et al. (2019) employed the Technology Acceptance Model to show that risk perception, social influence, and performance expectancy determine e-filing adoption in Tanzania. Likewise, Yuda (2013) established that ICT integration significantly enhanced revenue performance in Tanzania's Large Taxpayer Department. In Nigeria, Oladele (2020) demonstrated a significant improvement in tax compliance and revenue generation following FIRS's adoption of e-tax systems, whereas Esther and Timothy (2020) reported that despite its benefits, e-tax payment in Nigeria remains hindered by limited automation, poor internet access, and low computer literacy. Collectively, these studies affirm that effective electronic tax administration, when supported by robust technological and institutional frameworks, enhances compliance behaviour, revenue performance, and the overall efficiency of tax systems in developing economies.

METHODOLOGY

The study adopted a correlational and ex-post facto research design to investigate the relationship between electronic-tax administration System and tax revenue in Nigeria. The correlational design was appropriate as it allowed the researcher to determine the strength and direction of the relationship among variables without manipulation, while the ex-post facto design enabled the exploration of causal relationships using historical data already in existence. The population of the study comprised the 36 states and the Federal Capital Territory under the Federal Inland Revenue Service (FIRS), covering an eight-year period (2015–2022), coinciding with the adoption of e-tax systems in Nigeria. Data on electronic filing of tax returns, electronic tax payment, and tax revenue component (company income tax) were sourced from the FIRS and the Corporate Affairs Commission (CAC) official databases. Given the completeness and accessibility of the dataset, the entire population was considered as the sample size. Secondary data served as the primary instrument for data collection, ensuring reliability and validity as the data were extracted from official FIRS statistical publications and CAC records. Data were analyzed using descriptive statistics and panel least squares regression with the aid of E-Views 10 software, as this method effectively captures relationships among measurable variables and minimizes error terms. The study employed diagnostic tests, including unit root, cointegration, Granger causality, heteroskedasticity, and autocorrelation tests, to ensure robustness and validity of findings. Based on the Cobb-Douglas functional form, the model was specified as Y=f(EFTR,ETPY)Y = f(EFTR, ETPY)Y=f(,EFTR,ETPY), where YYY represents tax revenue performance (CITR), and EFTREFTREFTR, and ETPYETPYETPY denote electronic filing of returns, and electronic tax payment, respectively. The model was expressed in logarithmic form to standardize the dataset and facilitate elasticity interpretation of the relationships among variables.

3. Data Presentation

S/N	1	2	3	4	5	6	7	8
Year	2015	2016	2017	2018	2019	2020	2021	2022
Number of Companies E-Tax Filled Returns	402	4,067	11,652	19,022	28,638	130,838	179,833	207,932
Electronic Tax Payments	2,451.80	2,149.65	2,507.46	2,853.31	3,147.65	3,435.23	4,394.25	5,970.33
Company Income Tax Revenue	1,268.98	933.537	1,215.06	1,340.33	1,604.70	1,275.38	1,747.99	2,649.19
%CIT	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Sources: *Federal Inland Revenue Service (FIRS);* *https://www.firs.gov.ng/tax-statistics-report/*

Data Analysis and Descriptive Statistics

In order to achieve the specific objectives earlier stated in chapter one of this study, the descriptive statistics of the data employed was initially examined critically. The description statistics of data series gives relevant information about sample statistics such as mean, median, minimum, maximum value, skewness, kurtosis and Jarque-Beta statistics.s

Descriptive Statics of the Variables

	EFTR	ETPY	CITR
Mean	153.9741	2520.3910	5194.1550
Median	706.579	7304.83	1300.5590
Maximum	207.932	5970.33	1990.0208

Minimum	0.402	2149.6533	169.9211
Std. Dev.	13.3032	41.671	423.8046
Skewness	1.145224	1.698067	1.651958
Kurtosis	2.765133	2.759743	5.115841
Jarque-Bera	10.26483	7.731080	1353.678
Probability	1.051273	0.109495	2.14704
Sum	6004.989	9843.249	20247.04
Sum Sq. Dev.	916525.2	4348408.	16322566
Observations	56	56	56

Source: Researcher's Statistical Computation from E-view (v.10), 2023

shows that the descriptive statistics of the data collected for the independent variable's dimensions of the study. The electronic filling of tax returns (EFTR) and electronic tax payment (ETPY) have a mean value of 153.9741 and 2520.3910 respectively, also, median value of 7064.579 and 7304.83 respectively, also the maximum and minimum values of electronic filling of tax returns (EFTR) were 207.932 and 0.402 and electronic tax payment (ETPY) were 5970.33 and 2149.6533. On the other hand, the standard deviation values of 13.3032 and 41.671 signifying that the data deviate from the mean values of the two study dimensions, which implies that there is a wide dispersion of the data from the means because the standard deviation is closed to the mean.

On the other hand, Skewness and Kurtosis calculated mean values which is a measure of the departure of a distribution from symmetry above for three study dimensions of electronic filling of tax returns (EFTR) and electronic tax payment (ETPY)}, shows a positive skewness values that is greater than 1. This indicates that the two study dimensions are normally distributed. More so, the Kurtosis result which measures the extent of flatness or peakedness of a distribution in relative terms to a normal distribution confirms that tax electronic filling of tax returns (EFTR) and electronic tax payment (ETPY) are normally distributed and are not platykurtic (not having negative values / flatted curved) as its kurtosis coefficient are more than 3. Also, the p-value for the three study dimensions for Jarque-Bera statistics [(JB (PValue > 0.05) = Accept Ho (Normal Distribution) and JB (P Value < 0.05) = Reject Ho (Non-Normal Distribution)]. Thus, the values of 1.051273 and 0.109495for (electronic filling of tax returns (EFTR) and electronic tax payment (ETPY)) respectively of Jarque-Beta and its statistical probabilities were accepted. The result forward strengthens the normality test of variable of normally distributed.

The table also indicates for the one measure of the dependent variable of the study that company income tax revenue (CITR) have a mean value of 5194.1550 respectively, also, median value of 1300.5590, respectively, also the maximum and minimum values of company income tax revenue (CITR) were 1990.0208. Also company income tax revenue (CITR) 169.921. On the other hand, the standard deviation values of 423.8046, signifying that the data deviate from the mean values of the one study measure, which implies that there is a dispersion of the data from the means because the standard deviation is closed to the mean.

Demographic Analysis

The study uses secondary data from Federal Inland Revenue Service - ***Federal Inland Revenue Service (FIRS); https://www.firs.gov.ng/tax-statistics-report/,***

Therefore, there was no need for demographic analysis.

Univariate Analysis

Data Diagnostic and Robustness Tests

Result Summary of Unit Root (Stationary) Test

The study carried out the unit root test using the Augmented Dickey Fuller (ADF) unit root test due to the fact that the data involves time series. According to Gujarat & Porter 2009, the unit root test is performed to ascertain that the time series data are stationary and co-integrated.

Table 4.2 Summary Stationary Test Result

Variables	ADF T-Statistic	1% Critical Values	5% Critical Values	10% Critical Values	Prob. Value	Order of Diff. & Intercept	Stationary?
CITR	-5.256510	-3.621023	-2.943427	-2.610263	0.0001	1(1)	Yes
EFTR	-9.462277	-3.621023	-2.943427	-2.610263	0.0073	1(2)	Yes
ETPY	-3.763333	-3.679322	-2.967767	-2.622989	0.0000	1(1)	Yes

Source: Researcher's Statistical Computation from E-view (v.10), 2023

In table 4.2, the summary of unit root (stationary) test statistic of the variables is presented. The results of the unit root test adopting ADF at 1%, 5% and 10% critical levels indicated that some of variables are stationary at first difference 1(1) except electronic filling of tax returns (ETRG) that are stationary at second difference (1(2). The critical values at the selected levels showed signs/p-values that are significant and consistent. The test statistic values (ADF' T-statistic) are also greater than the corresponding critical value levels. This confirms to a large extent the stationarity and the co-integration of the data set/variables. The result implies that the adopted variables are consistent, reliable and very appropriate in explaining and measuring the relationship between electronic-tax administration system and tax revenue in Nigeria.

Diagnostic tests of Data

Table 4.3: Summary of Diagnostic tests of Data

S/N	Test	F-statistics			P-value		
		Model1	Model2	Model3	Model1	model2	Model3
1	Serial correlation: Breusch-Godfrey serial correlation LM test	1.250751	6.555268	4.522424	0.3083	0.3256	0.1049
2	Autoregressive conditional heteroscedasticity: ARCH LM test	0.002146	0.150756	0.294710	0.9633	0.0743	0.5906

Source: Researcher's Statistical Computation from E-view (v.10), 2023

The table 4.3 above the serial correlation test, the null hypothesis of no serial correlation between the variables was not rejected since the p value is greater than 5% as shown in the table. Lastly the null hypothesis of no heteroscedasticity was not rejected too because the p-value is greater than 5% as shown in the table. Therefore, the diagnostic tests indicated that the residuals are normally distributed, homoscedastic and serially uncorrelated.

Results of Co-integration Test

Johansen Co-integration Test

Eigenvalue	Trace Statistic	0.05 Critical Value
0.927382	213.9790	125.6154
0.701693	116.9449	95.75366
0.589188	72.18849	69.81889
0.343881	39.27260	47.85613
0.274016	23.68030	29.79707
0.221138	11.83187	15.49471
0.067475	2.584785	3.841466

Eigenvalue	Max-Eigen Statistic	0.05 Critical Value
0.927382	97.03411	46.23142
0.701693	44.75639	40.07757
0.589188	32.91589	33.87687
0.343881	15.59230	27.58434
0.274016	11.84842	21.13162
0.221138	9.247090	14.26460
0.067475	2.584785	3.841466

Ln(βEFTR)	Ln(βETPY)	Ln(CITR)
1.342835	-0.612753	0.585737
-0.765515	-0.803988	0.932498
0.883785	2.199199	-0.589650
3.066347	-3.826089	1.382088
1.884816	0.011480	4.728876
-2.756010	3.275821	-1.716465
-1.098966	-0.381838	-2.399755

Source: Researcher's Statistical Computation from E-view (v.10), 2023

In table 4.4, the Johansen method of testing for co-integration among variables was employed in this study because the variables captured in the model specification as further revealed in the ADF unit root test are integrated. The lag interval of 1 to 1 was adopted with a linear deterministic test assumption. The result of co-integration test on Table 4.4 above indicate the of 3 co-integrating equations between the predictor and the criterion variables at 0.05 (5%) level of significance; as trace statistic values was compared to the critical value at 5% and found to be significant. The unrestricted Rank Test and the maximum Eigenvalue tests supported and confirmed the trace result. This suggests the presence of a long run relationship between electronic-tax administrative mechanism and revenue collection in Nigeria. The null hypothesis of no co-integration or no existence of almost one co-integrating vector is not accepted; as the result shows the existence of at most 6 co-integrating equations in the formulated model. We can therefore conclude that the variables are co-integrated in the long-run. Any perceive short run effects will still endure in the long-run relationship.

Bivariate (Covariance) Analysis

Probability	Ln(βEFTR)	Ln(βETPY)	Ln(CITR)
Ln(βETRG)			
Ln(βEFTR)	1.000000 -----		
Ln(βETPY)	0.902255 0.0000	1.000000 -----	
Ln(CITR)	0.509304 0.0018	0.482316 0.0033	1.000000 -----

	0.0000	0.0000	0.0018

Source: Researcher's Statistical Computation from E-view (v.12), 2023.

above indicates that the correlation between the predictor variables and the criterion variables are strong, positive and significant. The positive and statistically significant association of the variables explains the impact of investigate electronic-tax administrative system and revenue collection in Nigeria. Only electronic tax payment of the pairs of correlations among the predictor variables is linearly perfectly correlated. This signifies the absence of multi-collinearity.

Least square Panel Data Regression Analysis

Regression analysis is the prediction/estimation of the mean value of the criterion variable on the basis of the observed fixed values of the predictor variables. A total of twelve null hypothesized associations was postulated in the study and were transformed into three equation models. In an attempt to actualize the eclectic objective of the research work, we employ regression analysis as a prerequisite in testing our hypotheses considering the fact that it gives a synchronize account of the relationship between the variables under investigation.

The First Model

The First Model: The first hypothesis test model; shows the relationship between company income tax revenue and electronic tax registration, electronic tax registration and electronic tax payment.

$LnCITR_{it} = \beta o_2 Ln(\beta EFTR)_t + \beta o_3 Ln(\beta ETPY)_t + Et$ (.05)……..……3.11

Panel Regression on Ln(CITR)

Dependent Variable: Ln(CITR)
Method: Panel Least Squares
Date: 11/22/23 Time: 11:416
Sample: 2015 2022
Included observations: 56

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Ln(βEFTR)	9.634620	160.6966	2.053609	0.0061
Ln(βETPY)	23.83939	287.5789	11.151033	0.0288
C	53838.95	73993.44	1.074303	0.0215

R-squared	0.736722	Mean dependent var	37388.20
Adjusted R-squared	0.697780	S.D. dependent var	72763.07
S.E. of regression	84781.24	Akaike info criterion	25.64075
Sum squared resid	2.23E+11	Schwarz criterion	25.81850
Log likelihood	-444.7131	Hannan-Quinn criter.	25.70211
F-statistic	13.738938	Durbin-Watson stat	2.28300
Prob(F-statistic)	0.000007		

Source: Researcher's Statistical Computation from E-view (v.10), 2023.

From the output of table 4.6, Meanwhile, the coefficient of Ln(βEFTR) and Ln(βETPY) 9.634620 and 23.83939 respectively. This value means that there is a positive relationship between Ln(βEFTR and Ln(βETPY) and Ln(CITR) with the implication that every unit increase in Ln(βEFTR and Ln(βEFTR is predicted to be accompanied by 9.634620 and 23.83939 respectively units increase in Ln(CITR).
The standard error of the regression coefficients are 4.462682, 160.6966 and 287.5789 respectively for Ln(βEFTR) and Ln(βETPY). This value identifies limit of error is expected to be inherent in the result. T-statistics is above 2 is a sufficient statistically evidence of significant @ 1% T-stat

confidence level. Also, the Prob values of Ln(βEFTR) and Ln(βETPY) 0.0061 and 0.0288 respectively are statistically significant at 5 percent significant level.
The result showed that the coefficient of determination (R^2) which measures the goodness of fit is 0.736722, meaning that 73 percent of the variation in the dependent variable (Ln(CITR) can be explained by the dimensions of the independent variables. The result indicates that the model is proper and adequate for the study. The model goodness of fit and appropriateness is also supported by the outcomes of F-statistics and probability of F-statistics of 13.738938 and 0.000007 respectively. The Durbin-Watson statistics of 2. 28300 also indicates the absence of serial autocorrelation.

Summary of Null Hypotheses Result Findings of the First Model Tested at 0.05 Level of Significance

Ho_1: there is significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria.

Ho_2: there is significant relationship between electronic tax payment and company income tax revenue in Nigeria.s

Summary Findings (Results)

From the summary of hypotheses table above the result of the hypotheses

Table 10 Summary Computation of Hypotheses Results

Hypotheses	Coefficient	Std. Error	T-Stat	P-Value 0.05	Statistical Decision	Remark
$H0_1$	9.634620	160.6966	0.053609	0.0061	Significant	Reject $H0_2$
$H0_2$	23.83939	287.5789	11.151033	0.0288	Significant	Reject $H0_3$

Source: Researcher's Computation, 2023

From the summary of hypotheses table above the result of the hypotheses of the study were presented in line with the statistical decision rule**: '**if the probability value (PV) in is less than 0.05 alpha level, we Reject the null hypotheses and accept significant relationship. Meanwhile, if the probability value (PV) is greater than 0.05 alpha level, we accept the null hypothesis and accept insignificant relationship'. Hence:

Ho_1: there is significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria.

Ho_2: there is significant relationship between electronic tax payment and company income tax revenue in Nigeria.

Discussion of Findings

$H0_1$: there is significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria.

The result of the descriptive statistics analysis of table 4.1 for electronic filling of tax returns and company income tax revenue revealed mean of 153.9741 and 5194.1550, respectively. On the other hand, null hypothesis one was rejected with a (P-Value of 0.00610 < 0.05 and coefficient value of 9.634620). Hence, there is significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria. This result was in corroboration with Omesi *and* Appah (2022), Electronic taxation system and revenue generation effectivness in Nigeria: A pre-post analysis. The study used a retrospective research approach with data collected quarterly between 2012 and 2020. Descriptive statistics and a post-hoc Test were used to examine the data. According to a t-test, there is a statistically significant difference between pre- and post-electronic company income tax and tax revenue in Nigeria, while pre- and post-electronic value-added tax and tax revenue are also significantly different. The research found, using a t-test analysis, that the efficacy of Nigeria's revenue production pre- and post-electronic taxation system is significantly different.

The research concluded that electronic taxation systems in terms of corporation income tax and value-added tax create greater revenue in Nigeria, and it advised that the government maintain conformity to these systems".

Ho_2: there is significant relationship between electronic tax payment and company income tax revenue in Nigeria.

The result of the descriptive statistics analysis of table 4.1 for electronic tax payment and company income tax revenue revealed mean of 2520.3910 and 5194.1550, respectively. On the other hand, null hypothesis one was rejected with a (P-Value of 0.0288 < 0.05 and coefficient value of 23.83939). Hence, there is significant relationship between electronic tax payment and company income tax revenue in Nigeria. The result was in line with Maccarthy et al. (2022), 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 gains 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 gains 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.*

SUMMARY

Based on the philosophical approaches of ontological and epistemological assumptions. The study was underpinning on the philosophy empiricism. Thus, this study investigated the extent of relationship between electronic-tax administrative mechanism and revenue collection in Nigeria 2015 - 2022. two objectives, ten research questions and ten hypotheses were formulated to guide the study. Studies related to this study were critically reviewed under three under headings of; conceptual reviews, theoretical framework and empirical studies. The conceptual reviewed electronic-tax administrative mechanism, electronic filling of tax returns, electronic tax payment, revenue collection, Company Income Tax Revenue, Theoretical framework, covered the

The study adopted both correlational and ex-post facto designs. The population of the study is the 36 states and federal capital territory federal Inland Revenue Service FIRS. Covering eight (8) years (2915-2022) FIRS electronic tax system adopted years in Nigeria. Specifically, eight (8) years FIRS and CAC compiled number of companies' e-tax filled returns and electronic tax payments. Also, company income tax revenue of the study period. Source: Federal Inland Revenue Service and Corporate Affairs Commission (CAC).

The formulated research questions were analyzed with descriptive statistics. The hypotheses were tested using the least square panel data regression analysis with the aid of E-view (10). This study conducted stationarity or unit root test, co-integration test, granger causality test, multicollinearity test, and autocorrelation to mitigate such situations. In line with the statistical decision rule of the

probability value (PV) 0.05 alpha level, we rejected nine (9) null hypotheses of significant relationship and accepted one (1) null hypotheses of significant relationship.
Thus, in view of the stated aims and objectives it was found from the statistical regression analysis employed by the study in testing the hypotheses that;

Ho_2: there is significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria.

Ho_3: there is significant relationship between electronic tax payment and company income tax revenue in Nigeria.

CONCLUSIONS

Over the years, the Nigerian tax system has faced so many challenges which have brought about inefficiency, increase in administrative cost and consistent low tax yield. Accordingly, the amount of revenue to be derived from the taxation of any nation is completely dependent on the tax system that is put in place. In a Federal Inland Revenue press released through This Day newspaper, 2013 and Punch, 2015, it was reported that about 12 billion naira traditionally vanishes into the pocket of individuals annually and this was believed to be due to manual system of tax administration characterized by low tax collection, unavailability of tax statistics and poor record keepings, complexity of payment and poor technological exposure on the part of both the taxpayers and tax authorities. The E-tax system as practiced by other countries has helped to reduce time of compliance by taxpayers in payment of taxes as well as provided reliable and accurate tax statistics, therefore, the Joint Tax Board, State Internal Revenue Service and the Federal Inland Revenue Service should adopt the full implementation of electronic taxation in their respective levels so as to eliminate revenue leakages, increase financial collection, avail services to the taxpayers all the time from anywhere, reduce cost of compliance and improve tax compliance through the application of electronic filling of tax returns and electronic tax payment.
Consequently, if electronic tax system is properly administered in Nigeria, it can undoubtedly be a lasting solution to the irregular tax system that is in practice in Nigeria has revealed in this study that. There is significant relationship between electronic filling of tax returns and company income tax revenue in Nigeria. There is significant relationship between electronic tax payment and company income tax revenue in Nigeria.

RECOMMENDATIONS

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

1. The federal government through the Federal Inland Revenue services should continue to sensitize companies (taxpayers) on the nitty-gritty of electronic filing of tax returns so as to further maximize the company income tax revenue in Nigeria.
2. FIRS should continue to sensitize taxpayers on electronic tax payment. And all tax clearance Certificates should be issued electronically to ensure compliance, save time and cost for taxpayers and increase company income tax revenue in Nigeria.

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Data for Electronic-Tax Administration System and Tax Revenue in Nigeria 2015 - 2022.

S/N	1	2	3	4	5	6	7	8
Year	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Number of Companies E-Tax Filled Returns	402	4,067	11,652	19,022	28,638	130,838	179,833	207,932
Electronic Tax Payments ~~N~~ TN	2,451.7967	2,149.6533	2,507.4635	2,853.3107	3,147.6479	3,435.2311	4,394.25	5,970.33

Company Income Tax Revenue ~~N~~ BN	1,268.9772	933.5373	1,215.0568	1,340.3294	1,604.6985	1,275.3806	**1,747.99**	2,649.1911

Sources: ***Federal Inland Revenue Service (FIRS);***