

# Tax Optimization Strategies and Operating Performance of ICT Firms in Nigeria

Felix Enaibre Ighosewe <sup>1\*</sup>, Lucky Izobo Enakirerhi <sup>1</sup>, Theresa Nkechi Ofor <sup>2</sup>, Ebele Anthonia Aniesodo <sup>2</sup>,  
Jennifer, C. Okafor <sup>2</sup>, Felix Ubaka Ilechukwu <sup>2</sup>

<sup>1</sup> Department of Accounting, Dennis Osadebay University, Asaba, Nigeria

<sup>2</sup> Department of Accountancy, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Nigeria

\*Corresponding author E-mail: [felix.ighosewe@dou.edu.ng](mailto:felix.ighosewe@dou.edu.ng)

Received: July 3, 2025, Accepted: August 8, 2025, Published: August 26, 2025

## Abstract

This study evaluated the effect of corporate tax optimization strategies (CTP) on operating performance (OPF) of ICT firms in Nigeria from 2014-2023. The CTP proxies used are the effective tax rate (ETR) and the marginal tax rate (MTR). These CTP proxies served as the regressors, while return on assets (ROA) was used to proxy OPF. OPF served as the regressor. The study sampled five (5) ICT firms out of the eight (8) quoted information communication (ICT) firms in Nigeria as at 31st December 2023. The study adopted robust least squares. The study reported that lower ETR and MTR improve the operational performance of ICT firms. Hence, the study concludes that high ETR and low MTR enhance the operational performance of ICT firms within the studied periods. Thus, the management teams of ICT firms should minimize their tax burden within the confines of the law. They can achieve this through optimal debt financing. Lastly, tax planning experts in ICT firms should ensure that changes in tax laws or the marginal tax rate are factored into a broader, more comprehensive tax strategy that aligns with long-term business objectives.

**Keywords:** Tax Optimization Strategies, Effective Tax Rate, Marginal Tax Rate, and Operating Performance.

## 1. Introduction

The existence of companies is for numerous purposes, including surviving, profit-making, and meeting stakeholders' interests, among others. To maximize profit, sustain growth and continuity, management of firms usually adopts several tactics and decisions towards meeting set objectives. Some of the strategies and decisions employed include tax planning and management, dividends, financing, investment, and capital structure decisions, among others. This is in the quest for meeting various interests of stakeholders (Abdulateef et al., 2023). One major stakeholder of a firm that management usually seeks to minimize its interest in is the government (in terms of tax payment). The government, as a major external provides an enabling environment for businesses to survive and grow. Various successive governments in Nigeria, at various times, have used tax policy to encourage industrial and corporate growth (Nwankwo & Udeh, 2024; Offioug, 2013). Conceptually, corporate tax optimization strategies (CTP) involve deliberate attempts by firms to reduce their tax burdens/liabilities within the confines of the law (Ogundajo & Onakoya, 2016). In other words, CIT strategies according to are the tax strategies that firms develop, having a comprehensive understanding of the tax policies that guide the establishment, operations, and cessation of the firm. Such strategies (CTP strategies) also account for the extent tax exemptions, tax claims, allowances, and tax incentives affect firms' operations and cessation. Similarly, CTP as a firm's policy aimed at maximizing the expected after-tax cash flows, having carefully understood the cost of such a decision. They further added that CTP strategies are made with having careful understanding of the interaction between the company's history, operations, cessation, tax laws, and regulations.

Again, CTP is conceptualized as a strategy as the strategy that firms strategy to achieve an optimal tax position in line with their business goal and statutory legislation (Nwaobia & Jayeoba, 2017). They stressed that the major reason why firms reduce their tax burden is to reinvest their tax savings into income-generating ventures that will increase their profit base. Hence, CTP strategies are beneficial both to the firm and the economy at large.

Various factors which influence firms' CTP are firm size, market structure, firm financial polices, amongst others. Meanwhile, common CTP strategies, consistent with extant literature, are effective tax rate (ETR), marginal tax rate (MTR), thin capitalization (TC), capital intensity (CI), accounting tax rate (ATR), and the lease option (LO) (Nwaobia & Jayeoba, 2017).

Additionally, the ETR is a decrease in a firm's tax burden/cost without necessarily reducing the firm's accounting profit (Nwaobia & Jayeoba, 2017). This parameter focuses on appraising firms' tax performance by matching the firm's actual corporate tax cost with the tax expenditure of a firm in relation to the firm's profit. Further, ETR measures the average rate at which firms are taxed. It is expressed as the proportion of the total tax paid to the total taxable income (7). This rate gives a better understanding of the actual tax burden compared to the statutory tax rate (8). Consequently, low ETR suggests low tax burden and, by extension, high net income is retained. The

implication is that the firm was able to retain most of its income since net income are calculated by removing tax. Meanwhile, a higher ETR suggests a higher tax burden and, by extension, a lower net income is retained.

Notwithstanding the roles the ICT sub-sector plays in the Nigerian economy, the Nigerian tax environment still presents unique challenges. Notable challenges which hinder the operations of ICT firms in Nigeria are unreliable electricity, poor internet connectivity, cyber-attacks, regulatory overlaps among government functionaries and agencies, limited access to long-term capital for innovation and expansion, consistent rise in brain drain due to migration of highly talented individuals overseas (Nwaobia & Jayeoba, 2017). Also, the sector has over time, been plagued by lots of tax leakages occasioned by multiple taxations, low level of tax compliance, unclear tax guidelines, and inconsistent enforcement of tax laws hinders effective tax optimization in the sector. Other tax-related issues that ICT firms face in Nigeria include, but are not limited to, valuation of intangible assets, revenue recognition, and international tax compliance. Nevertheless, policymakers have yet to design robust tax regulations that specifically address these tax-related issues. Again, tax optimization raises critical ethical considerations even in the ICT sector. These ethical considerations/challenges centre on the legitimacy of tax aggressiveness. While the reduction of tax liabilities is a strategic and legitimate business goal, tax evasion/avoidance undermines stakeholder trust and corporate transparency. In essence, ethical tax practices stressed that ICT firms must have a trade-off both their profit maximization objective with legal compliance.

Furthermore, tax experts further argued that the current tax reform is timely, because if tax policies are not spelled out and if firms do not have a complete understanding of the linkage between tax planning and firm performance, firms will end up paying taxes beyond what they are legally obliged to pay. Hence, this integrative research is motivated to address this issue by evaluating the effect of two key CTP on ROA of ICT firms in Nigeria.

Another motivating factor that drives the current research centers on the fact that even when most Nigerian firms use the services of tax experts, most of the existing studies consistently evidence those CTP strategies reduce firm performance minimally. Still, they submit that tax experts should be employed.

Consequent upon the above background, this study contributes to CTP studies in the following ways. First, the study confirmed that highly strategically positioned firms can thrive even when tax policies are complex. Secondly, the study advanced earlier tax optimization studies by emphasizing the need for ETR and MTR. This study was able to both delineate and substantiate the use of tax optimization strategies in improving the operating performance of ICT firms in Nigeria. Tax optimization proxies used are ETR and MTR. These proxies were selected given their widespread recognition in financial literature as the most reliable tax aggressiveness optimization measures. These two proxies (ETR & MTR) were the regressors. The regression is OPF and was measured using ROA, a well-recognized metric for ascertaining a firm's efficiency in using assets to accumulate more earnings. The choice of ROA as an OPF measure aligns with extant financial performance studies. This study is key as it underscores that tax optimization increases a firm's liquidity base, reduces its capital costs, and ensures that reinvested funds generate high returns.

## 2. Literature Review and Hypothesis Formulation

The three (3) fundamental theories that link tax optimization to performance are Agency Theory, Pecking Order Theory, Tax Shield Theory, and the Hoffman Tax Planning (HTP) Theory. First, agency theory stresses that managers are to act in the best interest of owners, and one way through which this can be achieved is by ensuring that the firm's tax liabilities are reduced. This, in turn, increases the net profits and enhances the firm's operating performance. However, firms must optimize their tax strategies; otherwise, it will reduce the value of the firm (2). Pecking Order Theory stressed that firms (ICT firms in this case) can optimize their tax strategy by improving the firm's internal financing by re-investing their after-tax cash flows internally instead of opting for external funding. This is crucial to Nigeria's evolving ICT sector, given the fact that the sector is one of the prime movers of innovation, the sector is highly capital-intensive, and stable internal funds are needed to attain high operating performance. Meanwhile, the tax Shield Theory stresses that firms can leverage the financial benefits firms gain inherent in tax shields through strategic financing and investment decisions. Lastly, the Hoffman Tax Planning (HTP) Theory, formulated by Hoffman in 1961, stressed that firms use ambiguity and tax loopholes to either evade or avoid tax. However, such actions have a detrimental effect on the firm and the economy. The theory further stressed that firms can gain from tax planning in the form of tax savings if firms comply with tax laws, regulations, and legal concepts (Nwaobia & Jayeoba, 2017). Hence, this theory expects that CTP strategies will improve firm performance. Nevertheless, extant empirical discourse reported mixed outcomes. For example, scholars reported that others reported that ETR improves financial performance (Chukwudi & Okonkwo, 2020) while some others reported that ETR reduces performance (Ftouhi, Ayed, & Zemzem, 2013). However, earlier scholars found that while ETR, cash ETR, and MTR have minimal effect on ROA from 2010 to 2019 but tax expense rate (TER) enhances ROA from 2010 to 2019 (Abdulateef et al, 2023). However, some reported that CTP strategies measured by ETR, TC, and CI reduce ROE of quoted Nigerian banks minimally in Nigeria from 2006-2019. Consequent upon these mixed findings, the study hypothesis:

H01: ETR improves the ROA of listed ICT firms in Nigeria significantly

Additionally, the marginal tax rate is the tax rate applied to the firm's income for each tax bracket in which the firm qualifies. In other words, MTR is the additional tax that a firm pays for every additional taxable income that the firm earns. MTR is the tax rate applied to the firm's income for each tax bracket in which the firm qualifies (Abdulateef et al., 2023). In other words, MTR is the additional tax that a firm pays for every additional taxable income that the firm earns. As such, MTR is the percentage of changes in tax expense (TX) to changes in earnings before tax. In relation to ROA, higher MTRs reduce taxable income by reducing the firm's tax burden. This, in turn, reduces the firm's ROA. The rationalization is that higher MTRs deplete the profits, which ought to be available for either reinvestment or the profit attributable to equity holders. Consequently, it will decrease the firm's ability to maximize ROA. However, lower MTRs increase retained profits. This, in turn, increases the firm's operational efficiency.

Following the Hoffman Tax Planning (HTP) Theory, lower MTRs reduce tax burden and, by extension, increase a firm's ROA. However, MTR has a minimal positive effect on firm performance (Abdulateef et al., 2023). However, CTP strategies reduce firm performance minimally (Nwankwo & Udeh, 2024). Consequently, the study hypothesis:

H02: MTRs improve the ROA of listed ICT firms in Nigeria significantly

## 3. Methodology

The study adopted an ex-post facto research design since both the CTP and OPF proxies are secondary data, less likely to be manipulated or altered, less costly, and time-consuming. The population of the study consists of all eight (8) quoted ICT firms in Nigeria Exchange Limited up to December 2023. The study used five (5) quoted ICT firms out of the total population as the sample size and adopted a

purposive sampling technique in selecting the sample size of the study. The sampled firms are Chams Plc, CWG Plc, E-tranzact Int'l, NCR Plc, and OMATEK. The sampled firms were chosen from diverse ICT sub-sectors of the Nigerian exchange group. The sub-sectors cut across IT services, hardware solutions, electronic payments, and digital infrastructure. The data were sourced from the audited financial statements of the sampled firms for 10 years, spanning from 2014 – 2023. The descriptive analysis summarizes and examines the fundamental characteristics of the dataset, while the robust least squares estimation technique was used to test the research hypothesis. Justifiably, this estimation technique addresses Heteroskedasticity and serial correlation problems.

Econometrically, this study adapted the models of Erasmus and Uwikor (2021). Their model is expressed as:

$$ROE = F(ETR, TC, CI) \quad (1)$$

Nevertheless, the modified model captures that MTR failed to incorporate TC and CI into the model. Hence, the modified model is expressed as:

$$ROA_{it} = \beta_0 + \beta_1 ETR_{it} + \beta_2 MTR_{it} + \epsilon_{it} \quad (2)$$

Where

$\beta_0$  = Constant

$\beta_1, \dots, \beta_4$ , = are the coefficient of the regression equation

$\mu$  = Error term

$t$  = is the year (time series)

**Table 1: Operationalization of Variables**

Variables	Measurement	Expected Sign
<b>Dependent Variable</b>		
ROA	Profit before tax/Total assets	Nil
<b>Independent Variables</b>		
ETR	CIT expenses/profit before tax	Positive
MTR	Changes in Tax Expense/ Changes in profit before Tax	Positive

## 4. Results

Before conducting the Robust Least Squares (RLS) technique, various preliminary tests were conducted. These preliminary analyses conducted include descriptive statistics, normality test, correlation analysis, multicollinearity tests, and Heteroskedasticity test. They are presented and discussed in Tables 2 to 4. Table 2 summarizes and examines the fundamental characteristics of the dataset. Emphasis was placed on the variables, their mean, maximum, minimum, standard deviation (std dev.) values, and observation.

**Table 2: Descriptive Analysis**

Variables	Mean	Maximum	Minimum	Std. Dev.	Observations
<b>ROA</b>	-0.0775	0.182374	-0.8562	0.189970	50
<b>ETR</b>	-0.0813	3.114166	-15.809	2.341284	50
<b>MTR</b>	0.453602	13.52509	-6.7179	2.506932	50

Table 2 shows that ROA has a mean value of -0.077474, indicating that ICT firms in Nigeria, on average, are generating a negative ROA, which suggests that the firms are, on average, not efficiently converting their assets into generating high profits. The maximum ROA of 0.182374 reflects the highest return observed, indicating that, in some cases, firms manage to generate a positive return, albeit relatively low, while the minimum ROA of -0.856187 shows that some firms are facing significant losses, with the worst-performing firm experiencing a substantial negative return. The standard deviation (0.189970) reveals a high level of variability in ROA, meaning that the ROA varies greatly between firms.

The ETR has a mean value of -0.081270, implying that, on average, the tax expenses reported by these ICT firms exceed their profits before tax, resulting in a negative rate. This suggests that the firms may be facing situations where their tax obligations are disproportionately high compared to their earnings. The maximum value (3.114166) reflects an extremely high tax rate in some firms, which could be due to exceptional circumstances or outliers in the data. The minimum value (-15.80907) is notably negative, possibly due to firms reporting tax credits or adjustments, which result in negative ETRs. The standard deviation (2.341284) indicates considerable variability in the tax rates, meaning that the firms in the sample are experiencing a wide range of ETRs.

The MTR has a mean value of 0.453602, indicating that tax expense changes are about 45% of the changes in profit. This suggests that, on average, ICT firms experience a relatively moderate increase in tax expenses as their profits rise. The maximum value (13.52509) is unusually high, suggesting that some firms may have significant changes in tax obligations relative to small increases in profit, possibly due to complex tax rules or deductions. Conversely, the minimum value (-6.717865) indicates that some firms have negative MTRs, which could occur if tax credits or other adjustments cause their tax expenses to decrease as their profits rise. The standard deviation (2.506932) suggests substantial variation in the MTRs across firms, highlighting differing tax strategies or operational conditions.

Having summarized the dataset and examined the fundamental characteristics of the dataset, Table 3 presents the normality test using Jarque-Bera and its associated probabilities. Table 3 confirmed that both the CTP strategies (ETR and MTR) and the OPF proxy (ROA) were not normally distributed. The reason behind this is that their p-values were all below 5%. This rationalized why the RLS technique was considered suitable in testing the research hypotheses earlier postulated, since using the conventional panel regression estimate for models that deviate from normality gives misleading results (Nwaobia & Jayeoba, 2017; Chukwudi & Okonkwo, 2020).

**Table 3: Normality Test**

Variables	Jarque-Bera	Probability	Observations	Conclusion
ROA	62.37383	0.000000	50	Deviated from Normality
ETR	3566.879	0.000000	50	Deviated from Normality
MTR	497.7518	0.000000	50	Deviated from Normality

Furthermore, the Spearman rank test was considered suitable for the analysis since the dataset is not normally distributed. The result is presented in Table 4. The correlation analysis (Table 4) provides useful policy implications for the direction and degree of relationships between CTP strategies and ROA of sampled ICT firms in Nigeria. Generally, the  $r$  between ROA and CTP variables (ETR and MTR) is low, with the highest coefficient ( $r$ ) observed with ETR at 0.3430. By implication, ETR displayed moderate yet positive correlations with ROA. Meanwhile, MTR with a coefficient ( $r$ ) value of 0.0636 suggests that MTR displayed weak yet positive correlations with ROA.

**Table 4: Spearman Rank Test**

Correlation	ROA	ETR	MTR
ROA	1.0000		
ETR	0.3430	1.0000	
MTR	0.0636	-0.1636	1.0000

Nevertheless, no pair of ETR and MTR reported coefficients ( $r$ ) values above the acceptable threshold of 0.70 (70%) permissible for detecting the likelihood of the presence of a multicollinearity problem in the series (16-19). The test estimate is recorded in Table 5:

**Table 5: Multicollinearity Tests**

Variables	VIF	TOV	Conclusion
ETR	1.0213	0.9791	No multicollinearity problem recorded
MTR	1.0198	0.9806	No multicollinearity problem recorded
Average	1.0206	0.9799	No multicollinearity problem recorded

As seen in Table 5, ETR reported a VIF value of 1.0213 and a TOV value of 0.9791, while MTR reported a VIF value of 1.0198 and a TOV value of 0.9806, suggesting that both regressors are not highly correlated and that their coefficient and z-values, as in Table 6, did not increase due to high collinearity reported. Again, the CTP strategies on average reported a VIF value of 1.0206 and a TOV value of 0.9799. The justification for this is that their respective VIF and TOV values are below 10 and above 0.10, respectively. This further affirmed that the datasets are not faced with multicollinearity problems (17-18).

Another critical robustness test conducted was the Heteroskedasticity test. The estimate is presented in Table 6. This test was conducted to test if the model either spreads equally or unevenly. While the null hypothesis supports that the residual spreads unequally (Heteroskedastic), the alternative hypothesis supports the notion that the residual spreads evenly (Homoskedastic).

**Table 6: Heteroskedasticity Test**

Test	F-statistics	Prob. F(2,47)	Conclusion
Heteroskedasticity Test	12.7901	0.0000	Heteroskedastic

The Heteroskedasticity test in Table 6 evidenced a F-statistic value of 12.7901 with a corresponding Prob. F(2,47) of 0.0000 suggests that the residual of the model is Heteroskedastic. By implication, the model violates the assumption of constant variance. Consequently, the RLS technique was considered suitable for testing the research hypotheses previously postulated.

Having confirmed that the dataset is not normally distributed and the variables are Heteroskedastic, the dataset then opted for RLS estimate with the intention to examine the extent to which CTP proxies influence the ROA of sampled ICT firms in Nigeria from 2014 to 2023. The estimate is recorded in Table 7

**Table 7: Robust Least Squares (RLS) Estimate**

Variable	Coefficient	Std. Error	z	P> z	Conclusion
ETR	0.4829	0.1411	3.4229	0.0016	Positive & Significant
MTR	-0.3949	0.1366	-2.8900	0.0039	Negative & Significant
C	1.2618	0.1011	12.4762	0.0000	
Robust R <sup>2</sup> (Overall)				0.5703	
Wald Chi2 (2)				9.8736	
Prob>Chi				0.0000	

Table 7 provides useful insights into the extent to which ETR and MTR influence the ROA of sampled ICT firms in Nigeria from 2014 to 2023. The robust R<sup>2</sup> value of 0.5703 suggests that ETR and MTR jointly caused 57.03% variation in ROA, while the remaining 36.67% is attributed to the error term. Specifically, the error term captures other factors that influence CTP strategies but were not captured. These factors include firm size, industry-specific factors, or management strategies. Meanwhile, the implication of the robust R<sup>2</sup> value of 57.03% is that the model has a high predictive power. Similarly, the Wald Chi2 (2) value of 9.8736 and Prob>Chi value of 0.000 evidenced that CTP strategies are statistically different from zero (0). By implication, CTP strategies jointly improve OPF of the sampled ICT firms within the reviewed periods of 2014 to 2023. The individual testable form is in Table 8:

**Table 8: Testable Forms**

Testable Form	P> z	Decision Rule	Conclusion
H <sub>01</sub> : ETR ≠ ROA	0.0016	Reject H <sub>01</sub> if P >  z  is < 5%	H <sub>01</sub> Rejected
H <sub>02</sub> : MTR ≠ ROA	0.0039	Reject H <sub>02</sub> if P >  z  is < 5%	H <sub>02</sub> Rejected

The insightful estimate in Table 8 hypothesizes that ETR does not significantly ( $\neq$ ) affect ROA within the reviewed periods. The insightful result as in Table 4 and summarized in Table 5, evidenced that ETR has a P>|z| value of 0.0000, suggesting that the earlier submission that ETR does not significantly ( $\neq$ ) affect ROA within the reviewed periods is rejected. Similarly, the insightful result further confirmed

that the earlier claim that MTR does not significantly ( $\neq$ ) affect ROA within the reviewed periods is rejected as well. Both findings support the outcome of the Wald Chi2 (2) value of 9.8736 and Prob>Chi value of 0.000 (18- 19).

## 5. Discussions

The insightful result showed that ETR has a coefficient value of 0.4829 (ETR: 0.4829) and a p-value of 0.0016 (ETR: 0.0016), suggesting that even with the rise in tax burden cum high ETRs, the ICT firms were still able to record a high ROA of 48.29%. This further confirmed that, moderate increase in ETRs did not stifle the profit base of the sampled firms. The result further underscores that the sampled ICT firms in Nigeria possess a clear-cut understanding of tax laws and were able to align their central (operational) goals with fiscal responsibilities despite the adverse effects of tax complexities. Again, the firms' tax policies are optimal, and they were able to achieve these strides by optimizing their tax positions. Also, while ensuring full compliance with tax laws, the sampled firms were able to make provision for tax deductions and capitalize on tax incentives. However, the study notes that a persistent rise in ETR tends to erode the ROA of firms even when strategic policies are in place to reduce tax burden. This therefore suggests that while ICT firms try to navigate the tax complexity challenges associated with complex tax legislation, inconsistent tax enforcement, ambiguity in tax laws and policies, limited digitization, multiple taxation, and high cost of hiring tax experts, tax authorities must, as a matter of urgency, need to structure their tax policies simply and transparently. To further increase the high level of compliance and reduce the administrative and financial burdens while navigating the complexity inherent in Nigeria's tax system. Again, tax authorities are advised to digitize tax administration. Again, tax authorities are advised to harmonize the tax structures at all levels of government.

The above result conforms to earlier studies (Ogundajo & Onakoya, 2016; Olarewaju & Olayiwola, 2019; Odunayo & Olayiwola, 2019; Fagbemi et al., 2019), which reported that ETR has significant positive effects on financial performance. However, it deviated sharply from the findings of (Nwankwo & Udeh, 2024) and others reported that a significant negative relationship exists between ETR and performance (Chukwudi et al., 2020). Meanwhile, earlier studies found that while ETR, cash ETR, and MTR have minimal effect on ROA (Erasmus & Uwikor, 2021; Kayode & Folajinmi, 2020; Kurawa & Saidu, 2018). These mixed findings imply that the ETR and ROA relationship is complex, sector-specific, country-specific, and methodologically determined.

As expected, the study confirmed that lower MTRs improve the ROA of the sampled firms such that a unit fall in MTR will reduce the tax liabilities of the ICT firms by 39.49% but will increase ROA of the target firms by the same 39.49%. The implication of this result to ICT firms is that, while low MTR improves ROA of the target firms, high MTR hinders ROA of the target firms. Meanwhile, in terms of significance,  $p > |z|$  value of 0.0039 further confirmed that low MTR is a positive driver of higher returns. The result further underscores that a shift in tax laws or tax deductions has a high impact on the returns of ICT firms in Nigeria. However, CTP, like the marginal tax rate, could influence other performance metrics, such as net interest margin, though its impact on ROA was insignificant. These variations are traced to the complexity of how different tax planning mechanisms interact with firm performance, suggesting that MTR may not directly affect asset efficiency in ICT firms.

## 6. Conclusion

In examining the operational performance of ICT firms in Nigeria, the study explored how ETR and MTR improve ROA of the sampled ICT firms from 2014 to 2023. Consequently, the paper concludes that high ETR and low MTR enhance the operational performance of ICT firms within the studied periods. Thus, the study recommends that management teams of ICT firms should minimize their tax burden within the confines of the law. They can achieve this through optimal debt financing. Also, the tax planning experts in ICT firms should ensure that changes in tax laws or the marginal tax rate are factored into a broader, more comprehensive tax strategy that aligns with long-term business objectives.

Although the current research contributes immensely to extant empirical discourse, it is not without limitations. First, the research is confined to ICT firms and does not cover all listed firms in Nigeria. On this note, future studies should focus on the whole non-financial firms in Nigeria. Lastly, the study is confined to two tax optimization strategies. On this note, future studies should covered CTP such as tax savings; cash tax paid-to-income ratio, debt tax shield, and book-tax differences.

### 6.1 Abbreviations

CTP	=	Corporate tax optimization strategies
OPF	=	Operating performance
ETR	=	Effective tax rate
MTR	=	marginal tax rate
TC	=	Thin capitalization
CI	=	Capital intensity
ATR	=	Accounting tax rate
LO	=	Lease option
ROA	=	Return on Assets

## Acknowledgements

Special goes appreciation to God Almighty for granting us grace to finish strong. We also wish to appreciate the editorial board of International Journal of Accounting and Economic Studies for painstakingly reviewing the research.

## Funding

The research was self-funded

## Conflict of Interest

We declare no conflict of interest.

## Author Contributions

Theresa Nkechi Ofor: original draft preparation, writing—review and editing, and formal analysis; Felix Enaibre Ighosewe: Conceptualization, Methodology, Software, data curation, validation, formal analysis, supervision, & correspondence; Ebele Anthonia Aniesodo: concluding remarks, and Jennifer, C. Okafor: editing and formatting. Overall, all the authors were involved in the proofreading and grammar check.

Ethical Consideration: Not applicable

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