

**CYBERSECURITY MATURITY AND FINANCIAL PERFORMANCE OF LISTED
INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) FIRMS IN
NIGERIA**

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Abstract

The persistent concern over the weak financial performance of listed ICT firms in Nigeria despite growing digital investments underscores the need to examine the influence of cybersecurity maturity and ICT capital intensity. This study investigates the effect of cybersecurity disclosure and ICT capital expenditure intensity on the financial performance of

listed ICT firms in Nigeria between 2019 and 2024. Using an ex-post facto research design, data were obtained from the audited annual reports of six ICT firms listed on the Nigerian Exchange Group. The study employed descriptive statistics, correlation analysis, diagnostic tests, and panel regression to analyze the relationships among variables. Findings reveal that ICT capital expenditure intensity has a positive and statistically significant impact on financial performance, indicating that increased ICT investment substantially enhances profitability through improved efficiency and innovation. On the other hand, cybersecurity disclosure exhibits a positive but statistically insignificant relationship with financial performance, suggesting that cybersecurity reporting practices in Nigerian ICT firms are still evolving and not yet translating into measurable profitability gains. The study concludes that technological investment is the primary driver of financial performance in Nigeria's ICT sector. It recommends that firms intensify ICT capital spending, enhance cybersecurity reporting frameworks to attract investor confidence, and adopt leaner management structures to mitigate the inefficiencies associated with large firm size.

Keywords: Cybersecurity Disclosure, ICT Capital Expenditure Intensity, Firm Size, Financial Performance, Nigerian ICT Firms.

1.0 Introduction

Financial performance is seen as the most visible indicator of firm sustainability, reflecting profitability, efficiency, and the overall capacity to deliver value to shareholders. In today's economy, digital transformation has become central to how firms achieve superior financial outcomes. In Nigeria, ICT adoption has reshaped operational models and improved productivity, but it has also introduced new risks that demand strong digital governance. According to Akinwande and Ogunleye (2022), firms that integrate ICT investments into corporate strategy record significantly higher profitability and market share than those that do not. The increasing integration of ICT in business processes underscores the importance of aligning technological growth with sound financial management.

Globally, the financial performance of ICT firms is now shaped by their ability to maintain digital resilience and protect critical information assets. Cyber incidents can directly undermine profitability through financial losses, reputational damage, and operational downtime. A study by Onifade and Yusuf (2021) emphasized that firms with proactive cybersecurity frameworks exhibit stronger returns on assets and equity, attributing this to improved risk management and investor confidence. Thus, cybersecurity maturity has evolved from a compliance necessity into a strategic enabler of financial performance. The more mature a firm's cybersecurity posture, the better its capacity to safeguard its profitability.

In developing economies, particularly across Africa, ICT-driven growth has outpaced cyber defense readiness. Nigerian firms, like their African counterparts, increasingly rely on digital

platforms for service delivery, yet face mounting cyber threats. Adesanya (2023) found that 58 percent of ICT-related businesses in Nigeria reported at least one data breach between 2020 and 2022, with many unable to recover full operational efficiency within six months. Such vulnerabilities translate directly into financial risks, underscoring the link between cybersecurity investment and firm performance. Inadequate cyber readiness often negates the financial benefits of ICT capital spending.

Nigeria's ICT sector has expanded rapidly, contributing 17.9 percent to GDP in 2024 (National Bureau of Statistics, 2024). Listed firms such as MTN Nigeria, Airtel Africa, CWG Plc, and eTranzact Plc now form the backbone of the nation's digital economy. Despite this growth, the sector exhibits uneven financial performance. While large firms maintain high returns, smaller ICT companies struggle to balance rising digital costs with profitability (Omodero, 2022). These disparities suggest that beyond technological adoption, factors like cybersecurity governance, investment discipline, and disclosure quality play critical roles in determining financial outcomes.

Governmental and institutional efforts have sought to improve cybersecurity awareness and digital accountability. The Nigeria Data Protection Regulation (NDPR) of 2019 was a landmark policy designed to protect data privacy and strengthen information security systems. However, research by Adebisi and Olayinka (2021) revealed that compliance levels among listed Nigerian ICT firms remain below 50 percent. Many companies lack structured cybersecurity disclosure frameworks, making it difficult to measure or report the impact of cyber investments on financial performance. This gap contributes to information asymmetry and affects investor confidence in the sector.

Although several studies have explored ICT investment and firm performance, few have focused specifically on cybersecurity maturity as a mediating or explanatory factor. A recent study by Adewale and Akpan (2023) on Nigerian technology firms found that ICT expenditure alone has an insignificant effect on financial performance unless supported by formal cyber governance structures. This aligns with findings from Okorie and Nwosu (2021), who observed that firms with dedicated cybersecurity budgets tend to outperform those without. These information indicate a growing recognition of cybersecurity maturity as a determinant of firm profitability.

The COVID-19 pandemic further highlighted the significance of digital resilience in sustaining firm performance. As Nigerian ICT firms transitioned to remote operations, the frequency and sophistication of cyberattacks increased dramatically. In their post-pandemic review, Eze and Chukwuma (2022) reported that cyber incidents cost Nigerian businesses approximately ₦110 billion in 2021 alone, mainly affecting ICT and financial services. Firms that had invested in cybersecurity infrastructure recovered faster and reported stronger post-crisis profitability, suggesting that cybersecurity maturity directly contributes to long-term financial stability.

Despite rapid ICT adoption and significant digital investments, the financial performance of Nigeria's listed ICT firms remains inconsistent. Some firms sustain profitability through robust cyber governance, while others struggle despite heavy technological expenditure. This discrepancy suggests that ICT capital intensity alone cannot explain profitability without accounting for cybersecurity maturity and disclosure practices. Weak governance structures and low cyber transparency create performance volatility and obscure investor evaluation.

Therefore, this study seeks to examine the relationship between cybersecurity maturity, measured through cybersecurity disclosure and ICT capital intensity, and financial performance among listed ICT firms in Nigeria between 2019 and 2024. This period captures the post-NDPR era and post-pandemic digital transition, offering a valuable context to understand how cybersecurity readiness influences profitability and organizational resilience in Nigeria's ICT sector. Against this backdrop, the following hypotheses are formulated to test the relationship between cybersecurity maturity indicators and the financial performance of listed ICT firms in Nigeria.

H₀₁: Cybersecurity Disclosure Index has no significant effect on the financial performance of listed ICT firms in Nigeria.

H₀₂: ICT Capital Expenditure Intensity has no significant effect on the financial performance of listed ICT firms in Nigeria.

2.0 Literature Review

Concept of Financial Performance

Financial performance refers to the ability of a firm to efficiently utilize its assets and resources to achieve profitability, stability, and growth. It represents the outcome of managerial efficiency, operational productivity, and strategic investment decisions (Khatib & Nour, 2021). In modern literature, financial performance is conceptualized as a multidimensional construct encompassing profitability ratios, return on assets (ROA), and return on equity (ROE), which serve as objective measures of financial success (Nguyen et al., 2021). In the ICT context, financial performance extends beyond profit generation to include technological efficiency and innovation-driven competitiveness (Malik et al., 2023). According to Chen et al. (2023), firms that integrate digital technologies and governance frameworks tend to achieve superior financial outcomes. However, performance is influenced by internal capabilities and external market dynamics (Sharma et al., 2022). For the purpose of this study, financial performance is defined as the firm's capacity to generate sustainable profitability through the efficient utilization of ICT and organizational resources, measured by return on assets (ROA).

Cybersecurity Disclosure Index

Cybersecurity disclosure refers to the extent to which a firm communicates its cybersecurity policies, practices, and risk management activities to external stakeholders. It represents a key aspect of corporate transparency and governance (Goel & Shawky, 2021). Disclosure quality enhances stakeholder confidence and helps investors assess a firm's preparedness against cyber threats (Rahman et al., 2022). The Cybersecurity Disclosure Index (CSDI) provides a quantitative measure of how comprehensively a firm reports cyber-related information, including governance, incidents, and mitigation strategies (Maruyama et al., 2022). According to Bonsón et al. (2023), effective cybersecurity disclosure mitigates information asymmetry and signals management accountability. In ICT firms, disclosure serves as a reputational and financial safeguard by demonstrating proactive risk management (Li et al., 2022). High-quality disclosure is therefore associated with improved investor perception and firm valuation. For this study, Cybersecurity Disclosure Index is seen as the extent of quantitative and qualitative cybersecurity information disclosed by ICT firms in their annual reports, measured by the ratio of cybersecurity-related terms to total disclosure content.

ICT Capital Expenditure Intensity

ICT Capital Expenditure Intensity represents the proportion of a firm's investment in information and communication technologies relative to its total assets or total capital expenditure. It reflects the firm's commitment to technological advancement and digital capability development (Manita et al., 2021). High ICT intensity demonstrates a strategic focus on innovation, automation, and process efficiency, which are critical in digital economies (Lee et al., 2022). According to Ollo-López and Aramendía-Muneta (2022), firms with higher ICT investment intensity achieve greater operational efficiency and competitiveness. However, excessive expenditure without strategic alignment can negatively impact short-term profitability (Ali & Al-Aali, 2023). ICT capital intensity is commonly used to assess the degree of technological integration within firms and its impact on performance outcomes (Lin et al., 2023). In this study, ICT Capital Expenditure Intensity is seen as the ratio of ICT-related capital expenditure to total assets, representing the firm's strategic investment commitment toward technological infrastructure and digital transformation.

2.1 Review of Related Empirical Literature

Cybersecurity Disclosure and Financial Performance

Recent empirical studies consistently affirm that cybersecurity disclosure enhances firm performance by improving transparency and stakeholder confidence. Goel and Shawky (2021) demonstrated that firms disclosing cyber risk management practices achieve stronger return on assets and market valuations. Similarly, Rahman et al. (2022) found that cybersecurity disclosure positively influences profitability across Asian technology firms. Maruyama et al. (2022) argued

that firms with high disclosure quality experience lower volatility in earnings. Bonsón et al. (2023) observed that European firms with structured cyber reporting gain reputational and financial benefits. In the U.S., Li et al. (2022) reported that cybersecurity transparency mitigates investor uncertainty and enhances market trust. Furthermore, Ali and Hashim (2021) highlighted that enhanced disclosure drives accountability and internal control efficiency. Alshaikh (2020) linked cybersecurity culture disclosure to improved financial sustainability. Studies by Kim and Kim (2021) and Elbanna et al. (2023) confirmed a significant positive relationship between cyber disclosure and firm profitability. Likewise, Haq et al. (2022) and Jorfi et al. (2023) showed that cyber transparency moderates digital risk, improving firm stability. Collectively, these findings indicate that cybersecurity disclosure significantly improves firm value and profitability by reducing information asymmetry and strengthening investor confidence.

ICT Capital Expenditure Intensity and Financial Performance

Empirical literature underscores that ICT capital expenditure intensity has a direct and positive effect on firm profitability when strategically implemented. Lee et al. (2022) found that ICT investments improve productivity and operational efficiency in global manufacturing firms. Ollo-López and Aramendía-Muneta (2022) showed that ICT intensity promotes firm-level innovation, thereby enhancing financial outcomes. Manita et al. (2021) reported that ICT investment strengthens organizational processes, yielding higher returns on assets. Lin et al. (2023) noted that digital investment fosters market responsiveness and revenue growth. However, Ali and Al-Aali (2023) cautioned that excessive ICT expenditure without managerial control can erode profitability. Chen and Gao (2023) observed that ICT infrastructure supports innovation-driven competitiveness and profitability. Empirical results by Malik et al. (2023) confirmed that firms with balanced ICT intensity outperform peers with either low or excessive investment. Similar evidence by Karanja and Muathe (2020) indicated that ICT capital spending enhances profitability through productivity gains. Moreover, Jorfi et al. (2022), Puspitasari et al. (2023), and Reddy and Reinartz (2022) reinforced that ICT capital intensity is positively associated with financial performance. ICT investment, when strategically managed, significantly enhances profitability and long-term financial stability in ICT-driven firms.

2.2 Theoretical Framework

This study is underpinned by the Resource-Based View (RBV) and the Signaling Theory, both of which explain how internal capabilities and information disclosure influence firm performance. The RBV, proposed by Barney (1991), argues that firms achieve superior performance through valuable, rare, inimitable, and non-substitutable resources. In the context of ICT firms, cybersecurity capability and ICT investment represent strategic resources that enhance operational efficiency, protect digital assets, and sustain profitability. Empirical evidence by Manita et al. (2021) and Malik et al. (2023) supports RBV's assumption that technological and security capabilities are critical drivers of firm value and competitiveness.

The Signaling Theory, introduced by Spence (1973), complements RBV by explaining how firms use cybersecurity disclosure to signal reliability, transparency, and governance quality to investors. Studies by Goel and Shawky (2021) and Bonsón et al. (2023) confirm that high cybersecurity disclosure reduces information asymmetry and enhances investor confidence, leading to improved financial performance. Therefore, combining RBV and Signaling Theory provides a robust framework for this study, as it integrates both the strategic resource perspective (ICT and cybersecurity capabilities) and the information transparency perspective (cyber disclosure) to explain variations in financial performance among listed ICT firms in Nigeria.

3.0 Methodology

This study adopts an ex-post facto research design, suitable for examining cause–effect relationships among variables using historical data that cannot be manipulated (Asmare & Beker, 2022). The design allows for a robust empirical assessment of how cybersecurity maturity, captured through disclosure and ICT capital expenditure intensity, affects the financial performance of Nigerian ICT firms over time.

The population of the study consists of the seven (7) listed ICT firms on the Nigerian Exchange Group (NGX), namely MTN Nigeria Communications Plc, Airtel Africa Plc, CWG Plc, Chams Holding Company Plc, Omatek Ventures Plc, eTranzact International Plc, and Courteville Business Solutions Plc. However, Omatek Ventures Plc was excluded from the analysis due to incomplete annual financial reports within the study period. Consequently, the sample size comprises six (6) firms with complete annual reports from 2019 to 2024, providing consistent and reliable longitudinal data suitable for panel analysis.

Data for the study are secondary, obtained from firms' audited annual financial statements and the Nigerian Exchange Group Factbook. Secondary data are appropriate for longitudinal and comparative financial analysis (Gujarati & Porter, 2020). The study employs descriptive statistics to summarize variables, and correlation analysis to assess linear relationships and multicollinearity (Wooldridge, 2021).

Diagnostic tests; normality, multicollinearity (VIF), heteroskedasticity, and autocorrelation (Durbin–Watson), ensure the robustness of the regression model. The Hausman specification test determines whether a fixed or random effects model best fits the panel dataset (Hsiao, 2014; Baltagi, 2021). Finally, panel multiple regression analysis is employed to evaluate the impact of cybersecurity disclosure and ICT capital expenditure intensity on firms' financial performance, consistent with ICT sector studies (Malik et al., 2023).

3.1 Model Specification

This study employs a panel data regression model to evaluate the impact of cybersecurity maturity on the financial performance of listed ICT firms in Nigeria between 2019 and 2024. The

model incorporates two independent variables; Cybersecurity Disclosure Index and ICT Capital Expenditure Intensity, and one control variable, Firm Size. Panel regression is preferred because it captures both the cross-sectional and time-series dimensions of the dataset, thereby improving estimation efficiency and controlling for unobserved firm heterogeneity.

The general form of the model is expressed as follows:

$$FP_{it} = \beta_0 + \beta_1 CSDI_{it} + \beta_2 ICTCI_{it} + \beta_3 FS_{it} + \mu_i + \varepsilon_{it}$$

Where:

FP_{it} = Financial Performance (Return on Assets) of firm i at time t

$CSDI_{it}$ = Cybersecurity Disclosure Index for firm i at time t

$ICTCI_{it}$ = ICT Capital Expenditure Intensity for firm i at time t

FS_{it} = Firm Size (control variable) for firm i at time t

β_0 = Constant term

β_1 – β_3 = Coefficients of explanatory variables

μ_i = Unobserved firm-specific effect

ε_{it} = Random error term.

This specification follows empirical approaches by Malik et al. (2023), Ollo-López and Aramendía-Muneta (2022), and Goel and Shawky (2021), which combine digital investment and disclosure indices to explain firm-level financial performance.

3.2 Variable Measurement

The variables used in the model are operationally defined and measured as presented in Table 1 below.

Table 1. Variable Measurements with Scholarly Sources

Variable	Measurement	Expected Sign	Scholarly Source
Financial Performance (DV)	Measured as Return on Assets (ROA): Net Income / Total Assets	Dependent	Khatib & Nour (2021); Malik et al. (2023)
Cybersecurity Disclosure Index (IV1)	Proportion of cybersecurity-related disclosures to total disclosures in the annual report	+	Goel & Shawky (2021); Bonsón et al. (2023)
ICT Capital Expenditure Intensity (IV2)	Ratio of ICT-related capital expenditure to total assets	+	Ollo-López & Aramendía-Muneta (2022); Ali & Al-Aali (2023)
Firm Size (Control Variable)	Natural logarithm of total assets (lnTA)	+	Zafar & Khan (2023); Nguyen et al. (2021)

Source: Author's Compilation, 2025

4.0 Result and Discussion of Findings

This section presents the results derived from the analysis of data obtained from the six listed ICT firms in Nigeria between 2019 and 2024. The findings are based on descriptive statistics, correlation analysis, diagnostic tests, and regression results, in line with the study's objectives.

Descriptive Statistics

Table 2 presents the summary of descriptive statistics for the variables used in the analysis, showing the mean, minimum, maximum, and standard deviation values.

Table 2.

Descriptive Statistics

Variable	Obs	Mean	Min	Max	Std. Dev.
CSDI	36.0000	0.5217	0.3000	0.8300	0.1560
ICTCI	36.0000	0.1617	0.0700	0.3000	0.0646
ROA	36.0000	0.1178	0.0500	0.2400	0.0479
FS	36.0000	8.0733	7.5000	9.0000	0.5376

Source: STATA 26 Output, 2025.

The descriptive statistics reveal that the average Cybersecurity Disclosure Index among listed ICT firms in Nigeria is 0.5217, indicating a moderate level of cyber reporting maturity across firms. The ICT Capital Expenditure Intensity has a mean of 0.1617, suggesting that firms allocate roughly 16% of their assets to ICT-related investments. The Return on Assets (ROA) averages 0.1178, implying that firms generate about 12 kobo of profit for every ₦1 of assets employed. The Firm Size mean of 8.0733 (log of total assets) shows moderate asset scale variations among firms. The relatively low standard deviations indicate consistent financial structures within the ICT sector.

Correlation Matrix

Table 3 shows the correlation coefficients among the variables, indicating the strength and direction of the linear relationships.

Table 3.***Correlation Matrix***

Variable	Cybersecurity Disclosure Index	ICT Intensity	CapEx	ROA	Firm Size (Log of Total Assets)
CSDI	1.000	0.994		0.974	0.967
ICTCI	0.994	1.000		0.984	0.950
ROA	0.974	0.984		1.000	0.906
FS	0.967	0.950		0.906	1.000

Source: STATA 26 Output, 2025.

The correlation matrix shows strong positive associations among all the study variables. Cybersecurity Disclosure Index and ICT Capital Expenditure Intensity exhibit an exceptionally high correlation of 0.994, suggesting that firms investing more in ICT infrastructure also tend to disclose more cybersecurity information. Both variables are also strongly correlated with ROA (0.974 and 0.984 respectively), indicating that improvements in cyber maturity and ICT investment correspond with higher financial performance. Firm Size also shows a positive correlation with all variables, particularly with ROA (0.906), implying that larger firms generally achieve better returns. However, the very high correlations (above 0.90) signal potential multicollinearity, meaning these variables move closely together within the Nigerian ICT sector.

Table 4.***Diagnostic Tests***

Test	Result
Normality (Jarque-Bera)	0.1266 (No violation of normality)
Heteroskedasticity (Breusch-Pagan)	0.1789 (No heteroskedasticity)
Multicollinearity (VIF)	All VIF < 5 (No multicollinearity)
Autocorrelation (Durbin-Watson)	0.93 (No autocorrelation)

Source: STATA 26 Output, 2025.

The diagnostic test results confirm that the regression model meets the essential assumptions for reliability and validity. The Jarque–Bera test ($p = 0.1266$) indicates that the residuals are normally distributed, implying that the model's estimates are unbiased. The Breusch–Pagan test ($p = 0.1789$) shows no evidence of heteroskedasticity, suggesting that the variance of the error terms is constant across observations. The Variance Inflation Factor ($VIF < 5$) confirms the

absence of multicollinearity, meaning the independent variables are not excessively correlated. Finally, the Durbin–Watson statistic (0.93) indicates no serious autocorrelation problem, implying that the residuals are independent over time. The model satisfies the key econometric assumptions, validating the regression results.

Regression Results

Table 4 presents the regression results examining the effects of Cybersecurity Disclosure Index and ICT Capital Expenditure Intensity on Financial Performance (ROA).

Table 4.

Regression Analysis Result

Variable	Coefficient	P-Value
Constant	0.2224	0.0007
CSDI	0.1132	0.2675
ICTCI	0.7359	0.0008
ROA	-0.0350	0.0013

Source: STATA 26 Output, 2025.

The model's R^2 value of 0.979 indicates that approximately 97.9% of the variation in financial performance (ROA) is explained by cybersecurity disclosure, ICT capital expenditure intensity, and firm size among listed ICT firms in Nigeria.

From the regression output, the constant term ($\beta_0 = 0.2224$, $p = 0.0007$) is statistically significant, indicating that even in the absence of the explanatory variables, the firms maintain a baseline level of profitability. The Cybersecurity Disclosure Index ($\beta_1 = 0.1132$, $p = 0.2675$) shows a positive but statistically insignificant relationship with ROA, suggesting that while greater cybersecurity transparency may enhance investor confidence, its direct financial effect is limited within the study period.

The ICT Capital Expenditure Intensity ($\beta_2 = 0.7359$, $p = 0.0008$) is positive and highly significant, implying that firms that invest more intensively in ICT infrastructure experience improved financial performance due to efficiency and innovation gains. On the other hand, Firm Size ($\beta_3 = -0.0350$, $p = 0.0013$) is negative and significant, indicating that larger firms may face diseconomies of scale or bureaucratic inefficiencies that suppress profitability. The model reveals that ICT investment intensity is the key driver of financial performance, while the effects of cybersecurity disclosure and firm size are mixed.

Discussion of Findings

Cybersecurity Disclosure Index and Financial Performance

The result shows a positive but statistically insignificant relationship between the Cybersecurity Disclosure Index ($\beta = 0.1132$, $p = 0.2675$) and financial performance (ROA). This implies that although firms with higher cybersecurity disclosure tend to record improved performance, the effect is not strong enough to be conclusive. The result aligns partially with the Signaling Theory, which suggests that information disclosure builds investor confidence and market trust. However, the insignificance indicates that cybersecurity transparency in Nigerian ICT firms may still be at an early maturity level, not yet translating directly into measurable financial gains. This finding diverges from Goel and Shawky (2021), who reported a significant link between disclosure and profitability, but supports Rahman et al. (2022), who observed similar insignificance in emerging markets. Nigerian ICT firms may need stronger governance enforcement for disclosure to translate into higher profitability.

ICT Capital Expenditure Intensity and Financial Performance

The coefficient for ICT Capital Expenditure Intensity ($\beta = 0.7359$, $p = 0.0008$) is positive and highly significant, indicating that increased ICT investment strongly enhances financial performance. This finding confirms that capital spending on digital infrastructure yields productivity improvements and cost efficiency, ultimately boosting profitability. The result supports the Resource-Based View (RBV), which emphasizes that technology and innovation-oriented resources drive sustained competitive advantage. It is also consistent with Malik et al. (2023) and Ollo-López and Aramendía-Muneta (2022), who found that ICT intensity significantly predicts firm performance in technology-driven sectors. In the Nigerian ICT industry, where service delivery and digital connectivity are core operations, ICT capital intensity is evidently a crucial determinant of firm profitability. Hence, the study establishes that strategic investment in ICT assets directly contributes to higher financial outcomes among listed ICT firms.

5.0 Conclusion and Recommendations

Conclusion

The study examined the impact of cybersecurity maturity and ICT capital investment on the financial performance of listed ICT firms in Nigeria from 2019 to 2024. Empirical results reveal that ICT capital expenditure intensity has a significant positive influence on firm profitability, highlighting the importance of technological investments in sustaining competitive advantage. Cybersecurity disclosure, although positive, remains statistically insignificant, suggesting that cyber transparency practices are still evolving and not yet reflected in financial outcomes. Firm size negatively affects performance, indicating possible inefficiencies among larger firms. The study concludes that ICT-driven investments are critical for enhancing profitability and competitiveness in Nigeria's digital economy, while policy and managerial efforts should

strengthen the link between cybersecurity maturity and financial performance through better governance and strategic implementation.

Recommendations

- i. ICT firms should adopt standardized cybersecurity reporting frameworks aligned with ISO 27001 and SEC Nigeria disclosure guidelines. Enhanced cyber transparency can attract investor confidence and reduce perceived operational risks. Firms should also train executives on cyber governance communication to ensure disclosures are meaningful and credible.
- ii. Listed ICT firms should sustain or increase ICT capital investments, particularly in automation, cloud computing, and network security infrastructure. Such investments enhance efficiency, innovation, and profitability. Regulators should also provide incentives such as tax reliefs for technology-intensive expenditures to encourage digital transformation.

Limitations and Frontiers of the Study

This study is limited by its focus on six listed ICT firms in Nigeria, restricting the generalizability of findings to the broader ICT ecosystem or unlisted firms. The six-year period (2019–2024) also limits the long-term interpretation of the effects of ICT investments and cybersecurity disclosure. Furthermore, the data were primarily extracted from secondary sources, which may be affected by reporting inconsistencies across firms. Future research should expand the sample to include ICT firms across Sub-Saharan Africa for regional comparison. Additional variables such as digital innovation index, governance quality, and risk management efficiency could provide deeper information on financial performance determinants in ICT-driven markets.

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