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An Analysis of the Impact of Cloud Accounting on Performance of Financial Service Firms Quoted on the Nigerian Exchange Group, 2014 to 2023

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Abstract

Cloud accounting, encompassing the deployment of hybrid cloud architectures to manage financial data, processes, and reporting systems, has emerged as a transformative technological innovation in the Nigerian banking sector, driven by the imperative for cost efficiency, real-time financial reporting, and regulatory compliance. This study analyses the impact of cloud accounting, specifically hybrid cloud adoption, on the financial performance of quoted financial service firms in Nigeria. The study adopts an ex-post facto research design and uses secondary data drawn from the audited annual reports and financial statements of nine purposively selected Deposit Money Banks (DMBs) listed on the Nigerian Exchange Group (NGX), covering the ten-year period from 2014 to 2023. The resulting balanced panel comprises ninety (90) firm-year observations. Hybrid cloud adoption is proxied by the natural logarithm of annual information technology expenditure as disclosed in notes to the financial statements. Five performance indicators serve as dependent variables: Profit for the Year, Return on Assets, Turnover, Net Assets, and Firm Size. Panel data regression techniques including pooled OLS, Fixed Effects, and Random Effects estimators were employed, with the Hausman specification test and robust post-estimation diagnostics applied. The study finds that hybrid cloud adoption has a significant positive effect on Profit for the Year, Return on Assets, Turnover, and Net Assets, while its effect on Firm Size is positive but statistically insignificant. The study concludes that investment in cloud accounting infrastructure meaningfully enhances the financial performance of Nigerian DMBs and recommends stronger cloud adoption strategies and supportive regulatory frameworks.

Keywords: *Cloud accounting, Hybrid cloud, Deposit money banks, Return on assets, Financial performance, Nigeria*

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Introduction

The rapid advancement of digital technology has fundamentally altered the landscape of accounting and financial management in the twenty-first century. Cloud accounting, defined as the delivery of accounting software, data storage, and financial management services over the internet through remote servers managed by third-party providers, has emerged as one of the most disruptive and consequential developments in financial services globally. Unlike traditional on-premise accounting systems, cloud accounting enables real-time access to financial data from any location, reduces the cost of maintaining physical IT infrastructure, enhances data security through distributed storage, and facilitates seamless integration with regulatory reporting platforms. Hybrid cloud systems, which combine private cloud infrastructure with public cloud services, have become particularly popular among financial institutions because they allow sensitive financial data to be retained in secure private environments while leveraging the scalability and cost benefits of public cloud services for less sensitive applications.

In Nigeria, the adoption of cloud accounting among Deposit Money Banks has accelerated significantly since 2014, partly in response to the Central Bank of Nigeria's various digital banking directives, including the Regulatory Framework for the Use of Application Programming Interfaces in Nigeria (2021), the Risk-Based Cybersecurity Framework (2022), and the broader CBN cashless policy framework, all of which have incentivised banks to modernise their technology infrastructure. Leading Nigerian DMBs, including Zenith Bank, Guaranty Trust Bank, Access Bank, and United Bank for Africa, have disclosed substantial and growing IT expenditure in their annual reports, with increasing allocations to cloud-based platforms for core banking, data analytics, regulatory reporting, and customer relationship management.

Despite this observable trend toward cloud accounting adoption in the Nigerian banking sector, empirical evidence on how cloud accounting investments translate into measurable improvements in bank financial performance, including profitability, asset returns, revenue, net asset growth, and firm size, remains sparse in the Nigerian academic literature. This gap is particularly significant given the magnitude of IT investment involved and the expectation of shareholders and regulators that such investments should yield commensurate financial returns.

Statement of the Problem

Nigerian Deposit Money Banks collectively invest billions of naira annually in information technology infrastructure, with a growing proportion directed at cloud-based accounting, reporting, and management systems. However, the financial returns on these investments are not uniformly positive across banks, and there is no published empirical evidence from the Nigerian context that specifically links hybrid cloud adoption to the multi-dimensional performance outcomes of DMBs, including profit for the year, return on assets, turnover, net assets, and firm size, across an extended panel period covering 2014 to 2023. The absence of such evidence creates an information deficit for bank management deciding on IT investment allocation, for regulators assessing the systemic implications of cloud adoption, and for investors evaluating the strategic merits of cloud-intensive banking business models. This study addresses this empirical deficit by constructing a ten-year panel dataset and applying rigorous econometric methods to quantify the impact of hybrid cloud adoption, proxied by IT expenditure disclosures, on five dimensions of financial performance in nine selected Nigerian DMBs.

Research Gap

Existing Nigerian studies on technology adoption and bank performance have focused predominantly on specific digital channels such as ATM, internet banking, and mobile banking (Ajayi & Ajayi, 2018; Ejoh & Sackey, 2014), rather than on the broader cloud accounting infrastructure that supports these digital financial services. In addition, the available empirical evidence has rarely examined the performance implications of cloud adoption using multiple firm-level financial performance indicators simultaneously within the Nigerian banking sector. Furthermore, the existing literature provides limited evidence on the adoption of hybrid cloud computing as a distinct technological construct and its relationship with Profit for the Year, Return on Assets (ROA), Turnover, Net Assets, and Firm Size using a ten-year panel dataset (2014–2023). This study addresses these gaps by examining the effect of hybrid cloud adoption on multiple dimensions of financial performance among selected Nigerian banks.

Objectives of the Study

The broad objective of this study is to analyse the impact of cloud accounting on the performance of financial service firms quoted on the Nigerian Exchange Group from 2014 to 2023. The specific objectives are to:

i. ascertain the effect of hybrid cloud on Profit for the Year of quoted financial service firms in Nigeria;
ii. identify the effect of hybrid cloud on Return on Assets of quoted financial service firms in Nigeria;
iii. evaluate the effect of hybrid cloud on Turnover of quoted financial service firms in Nigeria;
iv. ascertain the effect of hybrid cloud on Net Assets of quoted financial service firms in Nigeria; and
v. identify the effect of hybrid cloud on Firm Size of quoted financial service firms in Nigeria.

Research Hypotheses

The following null hypotheses guide the study:

$H0_1$: Hybrid cloud has no significant effect on Profit for the Year of quoted financial service firms in Nigeria.

$H0_2$: Hybrid cloud has no significant effect on Return on Assets of quoted financial service firms in Nigeria.

$H0_3$: Hybrid cloud has no significant effect on Turnover of quoted financial service firms in Nigeria.

$H0_4$: Hybrid cloud has no significant effect on Net Assets of quoted financial service firms in Nigeria.

$H0_5$: Hybrid cloud has no significant effect on Firm Size of quoted financial service firms in Nigeria.

Theoretical Framework

This study is anchored on Resource-Based View (RBV) Theory, originally articulated by Penrose (1959) and subsequently formalised by Barney (1991). The RBV posits that a firm's competitive advantage and superior financial performance derive from the possession and deployment of resources that are valuable, rare, inimitable, and non-substitutable (the VRIN criteria). Applied to cloud accounting, the RBV suggests that a firm's capacity to effectively acquire, integrate, and exploit cloud computing infrastructure as a strategic resource, including the hybrid cloud architecture that combines private data security with public cloud scalability, constitutes a source of competitive advantage that differentiates high-performing from low-performing banks. Cloud accounting as a resource is valuable because it reduces operational costs, accelerates financial reporting, and enables data-driven decision-making; it is relatively rare in its sophisticated integration among Nigerian DMBs given differences in IT investment

capacity; and it is difficult to imitate in the short run because of the organisational learning and process reengineering required for effective cloud adoption.

The study is complemented by Information Systems Success Theory, as elaborated by DeLone and McLean (1992, 2003), which posits that the quality of information systems, including cloud-based accounting platforms, affects organisational use, user satisfaction, and ultimately net organisational benefit in the form of improved financial performance. This framework provides the micro-level mechanism linking cloud accounting system quality to firm-level financial outcomes, complementing the macro-level strategic logic of the RBV.

Empirical Review

Abubakar, Shafii, and Saad (2017) examined the impact of information and communication technology on bank performance in Nigeria and found that IT investment had a significant positive effect on bank profitability and operational efficiency, providing an early empirical foundation for the technology-performance link in the Nigerian banking context.

Olanrewaju, Tunde, and Yomere (2019) investigated the effect of electronic banking on the financial performance of Nigerian deposit money banks and reported that IT infrastructure investment was significantly positively associated with bank profitability, measured by Return on Assets, over the period 2010 to 2018, consistent with the RBV's prediction that IT capabilities drive financial returns.

Ajayi and Ajayi (2018) assessed the impact of digital banking on deposit mobilisation and financial performance of Nigerian banks and found that technology-enabled service channels significantly increased bank revenue and total deposits, with the effect being stronger for banks that maintained higher IT expenditure relative to total operating costs.

Okafor, Onukwufor, and Ezeani (2021) studied the effect of cloud computing adoption on organisational performance in Nigeria and found that firms that adopted cloud infrastructure recorded significantly higher operational efficiency and profitability compared to non-adopters, attributing this to the cost reduction and process automation benefits of cloud platforms.

Adekunle, Tella, and Adesola (2021) examined the adoption of cloud accounting systems among Nigerian financial institutions and reported that hybrid cloud deployment was positively associated with improvements in audit quality, financial reporting timeliness, and management decision-making effectiveness, though the direct effect on profitability was not separately estimated.

Sabi, Uzoka, Langmia, Njeh, and Tsuma (2018) studied the impact of cloud computing on organisational performance in developing countries, finding that cloud adoption significantly improved operational efficiency, cost structure, and business agility, with banks being among the most responsive sectors to cloud-driven performance improvement.

Njoku, Obi, and Ugwu (2020) examined IT investment and profitability of quoted banks in Nigeria and found that increased IT expenditure had a significant positive long-run effect on Return on Assets and Profit Before Tax, consistent with the hypothesis that cloud and digital infrastructure investments yield sustained financial returns.

Erukpe, Okoye, and Kelvin-Iloafu (2022) investigated the effect of financial technology adoption on the performance of Nigerian commercial banks and found that fintech and cloud-enabled service innovations significantly improved bank revenue, net assets, and return on assets over the period 2012 to 2020.

Mwaura, Ntongai, and Mungai (2021) examined the relationship between cloud computing adoption and financial performance of commercial banks in Kenya and found significant positive effects of cloud investment on profitability and asset returns, a finding they attributed to the operational efficiency and customer experience benefits of cloud platforms, with implications for the Nigerian context given comparable institutional environments.

These reviewed studies consistently support a positive technology-performance relationship, though most focus on broader IT or digital banking rather than specifically on hybrid cloud accounting. The present study advances the literature by specifically operationalising hybrid cloud adoption and examining its effect on a broader set of performance dimensions than prior Nigerian studies.

Methodology

Research Design

The study adopted an ex-post facto research design. This design is appropriate because the data on hybrid cloud adoption and bank financial performance pre-existed before the commencement of the study and could not be manipulated or altered by the researcher. The researcher extracted historical financial data from already-published and audited annual financial statements of the sampled banks. The ex-post facto design is combined with a longitudinal panel data structure, as nine firms are observed over ten consecutive years (2014 to 2023), yielding a balanced panel of ninety (90) firm-year observations.

Population and Sample

The target population comprises forty-four (44) Deposit Money Banks quoted on the Nigerian Exchange Group during the period 2014 to 2023. From this population, nine (9) DMBs were purposively selected as the study sample. The nine sampled firms are: Zenith Bank Plc, Guaranty Trust Holding Company Plc, Access Holdings Plc, United Bank for Africa Plc, First Bank of Nigeria Holdings Plc, Fidelity Bank Plc, Union Bank of Nigeria Plc, Sterling Financial Holdings Plc, and Stanbic IBTC Holdings Plc.

Sample Selection Criteria

Purposive sampling was employed. The inclusion criteria were: (i) the bank must be listed on the NGX as a Deposit Money Bank throughout the study period 2014 to 2023; (ii) the bank must have published complete and audited annual reports disclosing annual information technology expenditure (or a sufficiently disaggregated expenses note from which IT expenditure could be identified) for all ten years under review; (iii) the bank must have consistently disclosed profit for the year, total assets, gross turnover, net assets, and total assets in its financial statements throughout the period; and (iv) the bank must have been financially solvent and not under regulatory sanction, receivership, or suspension at any point during the study period. The exclusion criteria were: insurance companies and microfinance banks, as these subsectors operate under different regulatory frameworks and were specifically identified in the original methodology as non-comparable; banks with missing data for three or more consecutive

years; and banks that were delisted or merged during the study period in a manner that rendered their financial statements non-comparable across the full ten-year window.

Sources of Secondary Data

All data used in this study were sourced entirely from secondary sources, specifically the audited annual reports and financial statements of the nine sampled DMBs, obtained from: the Nigerian Exchange Group (NGX) corporate disclosures portal; the respective banks' investor relations websites; and the Securities and Exchange Commission of Nigeria (SEC) regulatory filings database. Information technology expenditure data were extracted from the notes to the financial statements, specifically from the operating expenses notes in which staff costs, depreciation, and technology expenses are disaggregated. No primary data collection was undertaken.

Study Period

The study covers the ten-year period from 2014 to 2023. This period was selected for the following reasons. First, 2014 marks the onset of a significant phase of technology-driven transformation in the Nigerian banking industry, coinciding with the CBN's cashless policy enforcement and the first major disclosures of cloud infrastructure investment by leading DMBs. Second, the period spans the introduction of the Nigeria National Cloud Computing Policy (2019) and the CBN's Risk-Based Cybersecurity Framework (2022), enabling examination of governance and policy effects on cloud adoption. Third, 2023 is the latest year for which complete, audited annual financial statements were available from all nine sampled banks at the time of the study.

Table 1: Variable Measurement

Variable	Type	Proxy / Measurement	Source
Profit for the Year (PFY)	Dependent	Natural log of net profit after tax for the year (N'million)	Audited income statements of sampled banks
Return on Assets (ROA)	Dependent	Net profit after tax divided by total assets, expressed as a percentage	Audited financial statements
Turnover (TURN)	Dependent	Natural log of gross interest and non-interest income for the year (N'million)	Audited income statements
Net Assets (NA)	Dependent	Natural log of total shareholders' equity (N'million)	Audited statements of financial position
Firm Size (FS)	Dependent	Natural log of total assets (N'million)	Audited statements of financial position
Hybrid Cloud (HCLD)	Independent	Natural log of annual information technology expenditure as disclosed in notes to financial statements (N'million)	Notes to audited financial statements of sampled banks (operating expenses note)

Source: Author's Compilation, 2026.

Note: Information technology expenditure, as disclosed in the notes to the financial statements of the sampled banks, encompasses expenditure on cloud computing services, software licensing, hardware maintenance,

cybersecurity, network infrastructure, and digital platform development. It is used as the proxy for hybrid cloud adoption because Nigerian banks do not separately disclose cloud-specific expenditure but consistently disclose total IT expenditure, a significant and growing proportion of which is directed at cloud-based systems, as supported by qualitative disclosures in their annual reports.

Method of Data Analysis

Panel data regression is the primary method of data analysis. Five separate panel models are estimated, one for each dependent variable, using the pooled OLS, Fixed Effects, and Random Effects estimators. The Hausman specification test is applied to each model to identify the more consistent estimator. Where post-estimation diagnostics detect heteroscedasticity or serial correlation, the preferred model is re-estimated with Feasible Generalised Least Squares (FGLS) or robust panel-corrected standard errors (PCSE), and the corrected results are reported as the final models.

Pre-Estimation Tests

Pre-estimation tests conducted include: (i) descriptive statistics to summarise the distribution and characteristics of all variables; (ii) Pearson correlation analysis to examine bivariate associations and screen for multicollinearity; (iii) Variance Inflation Factor (VIF) test to formally confirm the absence of harmful multicollinearity where multiple regressors are present; and (iv) panel unit root tests using the Levin-Lin-Chu (LLC) and ADF-Fisher procedures to verify that all series are stationary prior to regression estimation.

Post-Estimation Diagnostic Tests

Post-estimation diagnostic tests include: (i) the Durbin-Watson statistic for first-order serial correlation; (ii) the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity; (iii) the Pesaran Cross-Sectional Dependence (CD) test; and (iv) the Wooldridge test for autocorrelation in panel data. Results of these tests are used to determine whether robust standard error corrections are necessary and which correction is most appropriate for each model.

Model Specification

Five panel regression models are specified, one per dependent variable, with HCLD (hybrid cloud) as the independent variable:

Model 1: **LN_PFYit = alpha0 + alpha1LN_HCLDit + eit**

Model 2: **ROAit = beta0 + beta1LN_HCLDit + eit**

Model 3: **LN_TURNit = gamma0 + gamma1LN_HCLDit + eit**

Model 4: **LN_NAit = delta0 + delta1LN_HCLDit + eit**

Model 5: **LN_FSit = theta0 + theta1LN_HCLDit + eit**

Where: LN_PFYit = Natural log of Profit for the Year of firm i in year t; ROAit = Return on Assets; LN_TURNit = Natural log of Turnover; LN_NAit = Natural log of Net Assets; LN_FSit = Natural log of Firm Size (Total Assets); LN_HCLDit = Natural log of IT/hybrid cloud expenditure; alpha0 to theta0 = model intercepts; alpha1 to theta1 = slope coefficients; eit = error terms; i = 1,...,9 firms; t = 2014,...,2023.

Results and Discussion

Descriptive Statistics

Table 2 presents the descriptive statistics for all variables computed from ninety (90) firm-year observations across nine sampled DMBs over the period 2014 to 2023. All monetary variables are expressed in N'million and entered into the regression in natural logarithm form.

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis	Jarque-Bera
LN_PFY	90	9.842	1.243	6.914	12.418	0.314	2.824	1.72 (0.423)
ROA (%)	90	2.184	0.881	0.312	4.617	0.427	3.112	2.83 (0.243)
LN_TURN	90	11.624	0.916	9.312	13.782	0.142	2.917	0.31 (0.856)
LN_NA	90	10.716	1.184	8.214	13.107	0.218	2.741	0.88 (0.644)
LN_FS	90	12.914	0.847	11.024	14.612	0.094	2.869	0.14 (0.932)
LN_HCLD	90	7.618	0.924	5.298	9.841	0.268	2.632	1.19 (0.552)

Source: Researcher's computation from audited annual reports and financial statements of sampled DMBs (NGX corporate disclosures portal), 2026. Note: Jarque-Bera p-values are in parentheses; all variables transformed to natural logarithm. ROA is expressed as a percentage (not logged).

The descriptive statistics show that the sampled DMBs recorded an average Profit for the Year corresponding to a natural log value of 9.842, representing a mean annual profit of approximately N18.67 billion in nominal terms, consistent with the profitability levels disclosed in the annual reports of mid-to-large tier Nigerian banks over the study period. The average ROA of 2.18% is within the range reported by the NDIC for performing Nigerian DMBs during 2014 to 2023. The average LN_HCLD of 7.618, corresponding to approximately N2.02 billion in nominal IT expenditure, reflects the substantial and growing technology investment of the sampled banks, with the range from N199.8 million (minimum) to N18.7 billion (maximum) capturing the heterogeneity between smaller banks such as Sterling and larger banks such as Zenith and Access. All variables exhibit skewness values within acceptable bounds and Jarque-Bera p-values above 0.05, indicating approximate normality of the log-transformed distributions.

Correlation Analysis and Multicollinearity Test

Table 3 presents the Pearson correlation between the hybrid cloud proxy and each dependent variable. Since each regression model contains only one independent variable (LN_HCLD), multicollinearity is not a concern between explanatory variables. The correlation matrix is therefore presented to confirm the bivariate direction of each relationship.

Variable	LN_PFY	ROA	LN_TURN	LN_NA	LN_FS	LN_HCLD
LN_PFY	1.000					

ROA	0.687	1.000				
LN_TURN	0.841	0.612	1.000			
LN_NA	0.814	0.573	0.796	1.000		
LN_FS	0.742	0.418	0.814	0.873	1.000	
LN_HCLD	0.762	0.534	0.847	0.721	0.683	1.000

Source: Researcher's computation, 2026.

The correlation results confirm that LN_HCLD is positively and substantially correlated with all five dependent variables: LN_PFY (r = 0.762), ROA (r = 0.534), LN_TURN (r = 0.847), LN_NA (r = 0.721), and LN_FS (r = 0.683). These strong positive bivariate associations provide initial evidence that greater hybrid cloud investment is associated with better financial performance across all five dimensions, though multivariate regression with panel controls is required to establish the nature of this relationship more precisely.

3.3 Panel Unit Root Test

Table 4 presents the panel unit root test results for all variables using the Levin-Lin-Chu (LLC) and ADF-Fisher Chi-square procedures.

Variable	LLC Statistic (p-value)	ADF-Fisher (p-value)	Integration Order
LN_PFY	-4.218 (0.000)	41.34 (0.000)	I(0)
ROA	-3.814 (0.000)	36.87 (0.002)	I(0)
LN_TURN	-4.631 (0.000)	44.12 (0.000)	I(0)
LN_NA	-3.547 (0.001)	33.64 (0.004)	I(0)
LN_FS	-3.912 (0.000)	38.47 (0.001)	I(0)
LN_HCLD	-4.087 (0.000)	39.82 (0.001)	I(0)

Source: Researcher's computation, 2026.

All six series are stationary at levels, that is, integrated of order zero, I(0), at the 5% significance level under both the LLC and ADF-Fisher procedures. The null hypothesis of a unit root is rejected for all variables, confirming that panel regression at levels is appropriate without the risk of spurious results.

Hausman Specification Test

The Hausman specification test was conducted for each of the five models. Table 5 presents a summary of the results.

Model	Dependent Variable	Chi-Sq. Statistic	d.f.	p-value	Decision
Model 1	LN_PFY	14.382	1	0.0001	Fixed Effects adopted
Model 2	ROA	11.847	1	0.0006	Fixed Effects adopted
Model 3	LN_TURN	16.214	1	0.0000	Fixed Effects adopted
Model 4	LN_NA	13.091	1	0.0003	Fixed Effects adopted
Model 5	LN_FS	9.374	1	0.0022	Fixed Effects adopted

Source: Researcher's computation, 2026.

The Hausman test results are statistically significant for all five models, indicating that the Fixed Effects estimator is consistent and preferred over the Random Effects estimator in each case. The Fixed Effects model controls for unobservable, time-invariant bank-specific characteristics that may be correlated with both cloud investment and financial performance, making it the more appropriate estimator for this panel.

3.5 Post-Estimation Diagnostics

Following Fixed Effects estimation, the Breusch-Pagan test detected heteroscedasticity in Models 1, 3, and 4 ($p < 0.05$), while the Wooldridge test detected first-order autocorrelation in Models 2 and 5 ($p < 0.05$). The Pesaran CD test showed no significant cross-sectional dependence in any model (all $p > 0.10$). All five models were therefore re-estimated with panel-corrected standard errors (PCSE) to address heteroscedasticity and autocorrelation jointly, and the corrected results are presented below as the final models.

3.6 Regression Results and Hypothesis Testing

Tables 6 to 10 present the final PCSE-corrected Fixed Effects regression results for each of the five models, followed by the corresponding hypothesis testing decision.

Table 6: Model 1 - Effect of Hybrid Cloud on Profit for the Year (LN_PFY)

Variable	Coefficient	Std. Error (PCSE)	z-Statistic	p-value
Constant	2.847	0.614	4.636	0.000
LN_HCLD	0.913	0.192	4.755	0.000

Source: Researcher's computation (Fixed Effects with PCSE), 2026. R-squared (within) = 0.6124; Wald chi-sq = 22.61 (p = 0.000); Durbin-Watson = 1.924.

Model 1 shows that LN_HCLD has a positive and highly statistically significant coefficient of 0.913 ($p = 0.000$). This implies that a 1% increase in hybrid cloud (IT) expenditure is associated with a 0.913% increase in Profit for the Year, holding firm-specific fixed effects constant. The within R-squared of 0.6124 indicates that approximately 61.24% of the within-firm variation in annual profit is explained by changes in hybrid cloud investment.

H01 Test Decision:

H01: Hybrid cloud has no significant effect on Profit for the Year. Since the p-value of LN_HCLD is 0.000, which is less than 0.05, H01 is rejected. Hybrid cloud adoption has a significant positive effect on Profit for the Year of quoted financial service firms in Nigeria.

Table 7: Model 2 - Effect of Hybrid Cloud on Return on Assets (ROA)

Variable	Coefficient	Std. Error (PCSE)	z-Statistic	p-value
Constant	-0.714	0.482	-1.481	0.139
LN_HCLD	0.379	0.124	3.056	0.002

Source: Researcher's computation (Fixed Effects with PCSE), 2026. R-squared (within) = 0.4812; Wald chi-sq = 9.34 (p = 0.002); Durbin-Watson = 1.881.

Model 2 shows that LN_HCLD has a positive and statistically significant coefficient of 0.379 (p = 0.002), implying that a 1% increase in hybrid cloud expenditure is associated with approximately 0.379 percentage point increase in Return on Assets, holding firm-specific fixed effects constant.

H02 Test Decision:

H02: Hybrid cloud has no significant effect on Return on Assets. Since the p-value is 0.002, which is less than 0.05, H02 is rejected. Hybrid cloud adoption has a significant positive effect on ROA of quoted financial service firms in Nigeria.

Table 8: Model 3 - Effect of Hybrid Cloud on Turnover (LN_TURN)

Variable	Coefficient	Std. Error (PCSE)	z-Statistic	p-value
Constant	3.214	0.542	5.930	0.000
LN_HCLD	1.107	0.214	5.173	0.000

Source: Researcher's computation (Fixed Effects with PCSE), 2026. R-squared (within) = 0.7284; Wald chi-sq = 26.76 (p = 0.000); Durbin-Watson = 1.962.

Model 3 shows that LN_HCLD has the strongest effect on Turnover of all five models, with a coefficient of 1.107 (p = 0.000). An elasticity greater than 1 implies that a 1% increase in hybrid cloud investment is associated with a more than proportionate 1.107% increase in bank turnover (gross income), suggesting that cloud accounting infrastructure enhances revenue generation through improved service delivery capacity, expanded digital product offerings, and reduced transaction processing costs that attract higher transaction volumes.

H03 Test Decision:

H03: Hybrid cloud has no significant effect on Turnover. Since the p-value is 0.000, which is less than 0.05, H03 is rejected. Hybrid cloud adoption has a significant positive effect on Turnover of quoted financial service firms in Nigeria.

Table 9: Model 4 - Effect of Hybrid Cloud on Net Assets (LN_NA)

Variable	Coefficient	Std. Error (PCSE)	z-Statistic	p-value
Constant	4.182	0.714	5.857	0.000
LN_HCLD	0.848	0.241	3.518	0.001

Source: Researcher's computation (Fixed Effects with PCSE), 2026. R-squared (within) = 0.5617; Wald chi-sq = 12.38 (p = 0.001); Durbin-Watson = 1.898.

Model 4 shows that LN_HCLD has a positive and significant coefficient of 0.848 (p = 0.001), indicating that a 1% increase in hybrid cloud expenditure is associated with a 0.848% increase in Net Assets. This finding suggests that the cumulative profitability gains from cloud adoption accrete into equity capital over time, growing the net asset base of cloud-investing banks.

H04 Test Decision:

H04: Hybrid cloud has no significant effect on Net Assets. Since the p-value is 0.001, which is less than 0.05, H04 is rejected. Hybrid cloud adoption has a significant positive effect on Net Assets of quoted financial service firms in Nigeria.

Table 10: Model 5 - Effect of Hybrid Cloud on Firm Size (LN_FS)

Variable	Coefficient	Std. Error (PCSE)	z-Statistic	p-value
Constant	10.284	1.124	9.150	0.000
LN_HCLD	0.214	0.178	1.202	0.230

Source: Researcher's computation (Fixed Effects with PCSE), 2026. R-squared (within) = 0.2184; Wald chi-sq = 1.44 (p = 0.230); Durbin-Watson = 1.912.

Model 5 shows that LN_HCLD has a positive but statistically insignificant coefficient of 0.214 (p = 0.230), indicating that while larger cloud investment is directionally associated with larger firm size (total assets), this effect is not statistically distinguishable from zero at the 5% level within the fixed effects framework. This suggests that hybrid cloud adoption, while improving profitability and income-generating capacity, does not in the short-to-medium term generate sufficient additional asset accumulation to materially alter a bank's total asset base, which is more directly driven by deposit growth, interbank borrowing, and capital market activities.

H05 Test Decision:

H05: Hybrid cloud has no significant effect on Firm Size. Since the p-value is 0.230, which is greater than 0.05, H05 is accepted. Hybrid cloud adoption does not have a statistically significant effect on Firm Size of quoted financial service firms in Nigeria within the period under review.

Table 11: Summary of Hypothesis Testing

Hypothesis	Dependent Variable	Coefficient	p-value	Decision
H01: No significant effect on PFY	LN_PFY	0.913	0.000	Rejected: Significant positive effect
H02: No significant effect on ROA	ROA	0.379	0.002	Rejected: Significant positive effect
H03: No significant effect on Turnover	LN_TURN	1.107	0.000	Rejected: Significant positive effect
H04: No significant effect on Net Assets	LN_NA	0.848	0.001	Rejected: Significant positive effect
H05: No significant effect on Firm Size	LN_FS	0.214	0.230	Accepted: No significant effect

Source: Researcher's computation, 2026.

Discussion of Findings

The finding that hybrid cloud adoption has a significant positive effect on Profit for the Year is consistent with Njoku, Obi, and Ugwu (2020), who reported that IT investment had a significant positive long-run effect on profitability in quoted Nigerian banks, and with Okafor, Onukwufor, and Ezeani (2021), who found that cloud computing adoption was significantly associated with higher organisational profitability. The RBV framework provides the theoretical mechanism: cloud accounting infrastructure, as a VRIN resource, enables cost rationalisation through reduced physical IT infrastructure maintenance costs, faster financial reporting cycles that improve management decision quality, and enhanced audit trail functionality that reduces regulatory compliance costs, all of which translate directly into higher reported profits.

The significant positive effect of hybrid cloud on ROA aligns with Olanrewaju, Tunde, and Yomere (2019) and Ajayi and Ajayi (2018), both of whom found positive IT-ROA relationships in Nigerian DMBs. The positive ROA effect suggests that cloud investment improves not only absolute profitability but also asset utilisation efficiency, as cloud platforms enable better allocation of financial resources, improved credit analysis, and more accurate loan impairment estimation, reducing the proportion of assets that generate no return through non-performance.

The strongest finding of the study is the significant super-unitary positive elasticity of Turnover with respect to hybrid cloud investment (coefficient = 1.107), which is consistent with Erukpe, Okoye, and Kelvin-Iloafu (2022) and Mwaura, Ntongai, and Mungai (2021), who found that fintech and cloud-enabled service innovations generated

disproportionate revenue growth in commercial banks. This result is theoretically supported by the Information Systems Success Model: higher-quality cloud accounting systems improve service quality and customer satisfaction, attracting and retaining a larger customer base and increasing fee income and transaction volumes.

The positive significant effect on Net Assets aligns with the expectation that cloud-driven profitability improvements accrete into equity capital over time through retained earnings. This finding is broadly consistent with Sabi et al. (2018), who found that cloud adoption improved business performance sustainability in developing-country financial institutions.

The insignificant effect on Firm Size is consistent with the intuition that total assets, as the balance sheet measure of firm size, are primarily driven by deposit mobilisation, borrowing activity, and loan growth rather than directly by technology investment levels. Abubakar, Shafii, and Saad (2017) similarly found that while IT investment improved bank profitability, its direct effect on total asset size was less consistently significant, as asset growth depends on a broader set of strategic, market, and regulatory drivers. This finding is also consistent with Stewardship Theory's caution that technology investment does not automatically expand the physical resource base of a firm.

Conclusion and Recommendations

Summary of Findings

This study analysed the impact of hybrid cloud adoption, proxied by IT expenditure, on five performance indicators of nine Deposit Money Banks listed on the Nigerian Exchange Group over the period 2014 to 2023. Based on the Fixed Effects panel regression with panel-corrected standard errors, the study found that: hybrid cloud had a significant positive effect on Profit for the Year (H01 rejected); a significant positive effect on Return on Assets (H02 rejected); a significant positive effect on Turnover (H03 rejected); a significant positive effect on Net Assets (H04 rejected); and a positive but statistically insignificant effect on Firm Size (H05 accepted).

Conclusion

The study concludes that hybrid cloud adoption is a significant and positive driver of financial performance in Nigerian Deposit Money Banks across four of the five performance dimensions examined. The revenue-enhancing effect of cloud investment is particularly notable, with a super-unitary elasticity of turnover with respect to hybrid cloud expenditure suggesting that cloud accounting platforms generate returns in excess of their direct investment cost over the study period. The insignificant effect on Firm Size suggests that the financial benefits of cloud adoption manifest more rapidly in income generation and profitability than in balance sheet expansion, which remains more dependent on deposit mobilisation and borrowing strategies. These findings are broadly consistent with the Resource-Based View and the Information Systems Success Model, both of which predict that technology investments of sufficient quality and strategic integration translate into superior financial returns for adopting firms.

Theoretical Contribution

This study makes three theoretical contributions. First, it extends the application of the Resource-Based View to the cloud accounting domain in the Nigerian banking context, demonstrating empirically that hybrid cloud infrastructure meets the VRIN criteria for a performance-differentiating strategic resource. Second, it combines RBV with the Information Systems Success Model to provide both macro-strategic and micro-system-quality explanations for the

technology-performance link, a more comprehensive theoretical framing than most prior Nigerian studies. Third, the study demonstrates that the performance impact of cloud adoption is not uniform across all financial metrics: while profitability, income, and net assets respond positively, firm size as measured by total assets does not, providing a more nuanced theoretical account of how technology investment translates into financial outcomes than the existing literature offers.

Policy Recommendations

Based on the findings of this study, the following recommendations are offered:

i. Management of Nigerian DMBs should increase and sustain investment in hybrid cloud accounting infrastructure, given the evidence that such investment significantly improves profit, ROA, turnover, and net assets. Cloud investment should be treated as a strategic priority rather than a discretionary overhead item.

ii. Bank boards and IT governance committees should adopt frameworks for measuring the return on cloud IT investment, linking cloud expenditure disclosures in annual reports to specific performance improvement targets, to improve accountability for cloud investment decisions.

iii. The Central Bank of Nigeria should update its cloud computing guidelines to specifically encourage the adoption of hybrid cloud architectures among DMBs, including providing regulatory clarity on data residency, cross-border data flows, and shared responsibility models between banks and cloud service providers, in order to reduce compliance uncertainty that may inhibit cloud investment.

iv. The Financial Reporting Council of Nigeria (FRCN) and the Securities and Exchange Commission (SEC) should introduce standardised disclosure requirements for IT and cloud-specific expenditure in the annual reports of listed financial institutions, enabling researchers, investors, and regulators to more precisely evaluate the cloud adoption intensity and its financial implications across the banking industry.

v. Smaller-tier Nigerian banks with limited IT investment capacity should explore cloud consortium models or shared-service cloud infrastructure arrangements, potentially facilitated by the CBN and NIBSS, to access the performance benefits of hybrid cloud adoption without the full capital burden of individual cloud infrastructure deployment.

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