

Capital Structure and Financial Performance of Listed Service Companies in Nigeria: Evidence from Panel Data Analysis

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Abstract

This study examined the relationship between capital structure choices and financial performance of listed service companies in Nigeria. Specifically, it assessed the associations of retained earnings, short-term liabilities, long-term liabilities, total liabilities and equity financing with Earnings per Share (EPS), controlling for firm size, profitability, asset turnover and liquidity. An ex-post facto design was adopted using balanced panel data from audited annual reports of 13 NGX-listed service companies over 2016–2025, yielding 130 firm-year observations. Data were analysed using descriptive statistics, Pearson correlation, Variance Inflation Factor (VIF), and panel diagnostic tests, including Breusch–Pagan LM, Hausman, Breusch–Pagan/Cook–Weisberg, Wooldridge and Pesaran cross-sectional dependence tests. Two-way fixed-effects models were estimated, with Driscoll–Kraay (DK) standard errors applied to address detected cross-sectional dependence. One-period lagged specifications were also estimated as a sensitivity test of temporal ordering. The findings indicate that retained earnings were positively and significantly associated with EPS across all contemporaneous specifications, whereas short-term liabilities, long-term debt and total liabilities were negatively and significantly associated with EPS. Equity financing was positively and significantly associated with EPS. The DK estimates preserved the signs and significance of the principal contemporaneous relationships, supporting their robustness to cross-sectional dependence. However, lagged results differed: lagged retained earnings became negative and significant, lagged long-term debt became positive and significant, while lagged total liabilities and equity were insignificant. The study concludes that financing composition matters for shareholder earnings, but the relationships are sensitive to temporal specification and should therefore be interpreted as conditional associations rather than definitive causal effects.

Keywords: Capital structure, financial performance, retained earnings, debt financing, Earnings per Share, listed service companies, Nigeria.

1. Introduction

Capital structure decisions have remained one of the most important strategic financial decisions undertaken by corporate managers because they determine the proportion of debt and equity employed in financing business operations and investment activities. An appropriate financing mix enables firms to minimise the weighted average cost of capital, maximise shareholders' wealth, improve financial flexibility, and sustain long-term competitiveness. Since the seminal propositions of Modigliani and Miller (1958), researchers have continued to investigate whether financing choices influence corporate performance under different institutional and economic environments. Although the irrelevance proposition assumes a perfect capital market, real-world economies are characterised by taxes, bankruptcy costs, agency conflicts, and information asymmetry, making financing decisions an essential determinant of organisational performance (Brealey et al., 2020). Consequently, firms

continually strive to determine an optimal capital structure capable of balancing risk and expected returns.

The Nigerian services sector has become one of the major contributors to national economic growth through activities in telecommunications, information technology, financial services, hospitality, transportation, education, healthcare, entertainment, and professional services. Over the last decade, the sector has consistently accounted for a substantial proportion of Nigeria's Gross Domestic Product (GDP), reflecting the country's gradual transition from an oil-dependent economy to a more diversified service-oriented economy (National Bureau of Statistics [NBS], 2024). Despite this significant contribution, many listed service companies continue to experience financing constraints arising from persistent macroeconomic instability, high lending rates, inflationary pressures, exchange rate depreciation, weak capital market development, and periodic economic shocks. These challenges have increased the complexity of financing decisions as managers attempt to balance debt financing with equity financing while maintaining profitability and market value.

Capital structure refers to the combination of debt and equity financing employed by a firm to finance its assets, operations, and investment activities (Brealey et al., 2020). Debt financing consists of short-term liabilities, long-term borrowings, and total debt obligations, whereas equity financing comprises shareholders' funds, including ordinary share capital, retained earnings, and reserves. The objective of an effective capital structure is to minimize the cost of capital, maximize firm value, and enhance shareholders' wealth by maintaining an appropriate balance between debt and equity financing. While moderate leverage enables firms to benefit from tax shields, financial leverage, and increased investment capacity, excessive dependence on debt may expose firms to financial distress, higher interest obligations, and increased default risk. Consequently, financing decisions remain critical determinants of corporate financial performance and long-term sustainability.

In this study, financial performance is conceptualized as the dependent variable and is proxied by Earnings per Share (EPS), which measures the amount of profit attributable to each ordinary share and serves as an important indicator of shareholders' wealth and corporate profitability reflects the firm's profitability from shareholders' perspective. The independent variable, capital structure choices, is represented by Retained Earnings (RE), Short-term Liabilities Ratio (STD), Long-term Liabilities Ratio (LTD), Total Liabilities Ratio (TLR), and Equity Ratio (EQ). Retained earnings measure the proportion of internally generated funds available for reinvestment and are expected to positively influence earnings because they provide a relatively inexpensive source of finance without increasing financial obligations or diluting ownership. The Short-Term Liabilities Ratio measures the proportion of current liabilities used to finance total assets; although moderate short-term borrowing may improve working capital management and operational efficiency, excessive reliance on short-term debt may increase refinancing risk and financing costs, thereby reducing financial performance. The Long-Term Liabilities Ratio captures the extent to which long-term liabilities finance corporate assets and is expected to improve earnings when borrowed funds are invested efficiently in productive assets; however, excessive long-term debt may increase interest burdens and financial distress costs. Similarly, the Total Liabilities Ratio reflects the firm's overall leverage position and captures the combined effect of debt financing on corporate performance. While an optimal level of total debt may enhance earnings through tax advantages and financial leverage, excessive indebtedness is expected to weaken profitability because of increasing financial risk. The Equity Ratio measures the proportion of total assets financed by shareholders' equity and is expected to positively influence financial performance by strengthening financial stability, reducing insolvency risk, and enhancing investors' confidence.

To isolate the specific effect of capital structure choices on financial performance, the study incorporates Firm Size (FS), Profitability (ROA), Asset Turnover (AT), and Liquidity (LIQ) as control variables. Larger firms are generally expected to enjoy economies of scale, stronger market reputation, and easier access to external financing. Profitability enhances firms' capacity to generate internal funds for investment, while Asset Turnover reflects the efficiency with which corporate assets are utilized to generate revenue. Liquidity measures the firm's ability to meet short-term financial obligations and maintain operational continuity. These control variables are included because they may independently influence earnings performance and, if omitted, could bias the estimated relationship between capital structure choices and financial performance. The conceptual framework therefore posits that financing decisions, through their debt and equity components, directly influence

the financial performance of Nigerian listed service companies, while firm-specific characteristics moderate the strength of these relationships.

The study is anchored on Pecking Order Theory, with Trade-off Theory and Agency Theory providing complementary explanations. Pecking Order Theory (Donaldson, 1961; Myers & Majluf, 1984) proposes a financing hierarchy in which firms prefer retained earnings, followed by debt and, lastly, equity, owing to information asymmetry and the costs of external financing. It therefore provides the primary basis for explaining the relationship between retained earnings and EPS.

Trade-off Theory (Kraus & Litzenberger, 1973) explains overall debt financing (TDR) through the balance between the tax and financing benefits of debt and its financial-distress costs. Thus, debt may enhance performance when its benefits exceed its costs, but a positive debt coefficient alone does not establish an optimal leverage level. Agency Theory (Jensen & Meckling, 1976) complements the analysis by explaining how debt and equity financing can affect performance through managerial discipline, monitoring, and agency costs.

Accordingly, the theories perform distinct explanatory roles: Pecking Order Theory anchors RE/internal financing, Trade-off Theory explains TDR/overall leverage, and Agency Theory provides complementary insight into the governance implications of debt and equity financing. The study does not require every empirical finding to confirm all three theories; rather, each result is interpreted in relation to the theoretical proposition most directly applicable to the financing dimension examined.

The conceptual framework of this study assumes that capital structure choices are associated with the financial performance of listed service companies in Nigeria. Capital structure is represented by internally generated financing through retained earnings, debt financing according to maturity, overall leverage, and equity financing. Financial performance is measured by Earnings per Share (EPS), while firm size, operating profitability, asset turnover, and liquidity are included as control variables.

Retained earnings represent internally generated financing and are examined primarily from the perspective of Pecking Order Theory. Short-term and long-term debt represent the maturity structure of debt financing, while Total Liabilities Ratio represents overall leverage and is examined principally through the Trade-off Theory perspective. Equity ratio represents the proportion of assets financed by shareholders' funds and is considered within the broader financing hierarchy and agency-cost perspectives.

Although these variables represent conceptually distinct dimensions of financing, the measures are constructed from closely related balance-sheet components. Total debt incorporates short-term and long-term liabilities, while debt and shareholders' equity jointly finance the firm's asset base. Consequently, the conceptual framework distinguishes the five financing dimensions, but the empirical analysis does not assume that all five ratios are statistically independent.

The conceptual framework (depicted in Figure 1) therefore proposes the following general relationship:

Capital Structure Choices → Financial Performance (EPS)

with the following dimensions:

Retained Earnings (RE) → EPS

Short-term Liabilities Ratio (STD) → EPS

Long-term Liabilities Ratio (LTD) → EPS

Total Liabilities Ratio (TLR) → EPS

Equity Ratio (EQ) → EPS; and:

Firm Size (FS) → EPS

Operating Profitability (ROA) → EPS

Asset Turnover (AT) → EPS

Liquidity (LIQ) → EPS.

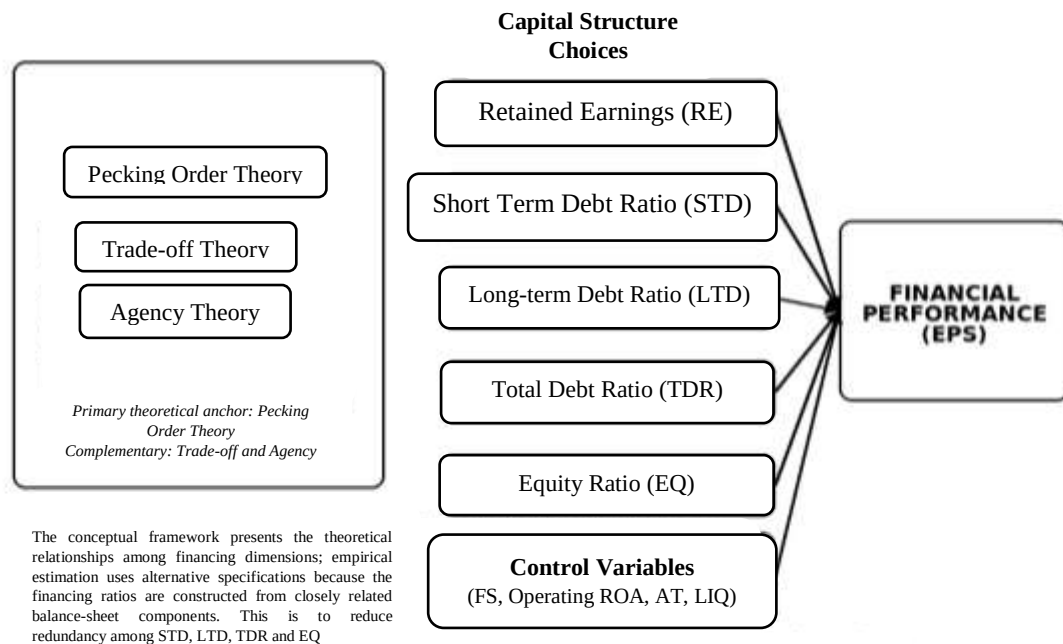


Figure 1: Conceptual Model

Empirical evidence on capital structure and financial performance remains inconclusive across countries, industries and institutional settings, suggesting that the effects of financing depend on the source, maturity and composition of capital. Evidence on retained earnings generally points to a favourable performance association. Achieng et al. (2018) found that retained earnings significantly enhanced the performance of non-financial firms listed on the Nairobi Securities Exchange, while Abdulwahab et al. (2023) reported a positive relationship between retained earnings and EPS among Nigerian listed service companies. In contrast, evidence on short- and long-term debt is less consistent. Abewardhana and Magoro (2017) reported a negative effect of short-term debt but a positive effect of long-term debt in their comparative study, whereas Dave et al. (2019) and Hussein et al. (2019) found negative effects of both debt maturities in India and Jordan, respectively. Sivalingam and Kengatharan (2018) and Abdulwahab et al. (2023), however, reported insignificant effects for the respective debt measures. These differences suggest that debt maturity effects may depend on financing costs, investment opportunities, firm characteristics and institutional conditions. Evidence on overall debt is similarly divergent. Abor (2005) and Salawu (2009) reported positive leverage–performance relationships in Ghanaian and Nigerian firms, whereas Siddik et al. (2017) and Sivalingam and Kengatharan (2018) found negative effects. Dalci (2018) identified an inverted U-shaped relationship, while Gharaibeh and Bani-Khaled (2020) reported a negative effect among Jordanian service firms and Helmy et al. (2020) a positive effect among Malaysian listed firms. Nigerian evidence also remains mixed, with Onaolapo and Kajola (2010) and Akinyomi (2013) reporting mixed or negative effects, compared with Abdulwahab et al. (2023), who found a positive and significant association between total debt and EPS among Nigerian listed service companies. Equity financing likewise produces contrasting evidence: Achieng et al. (2018) found a significant positive effect of equity on performance, whereas Abdulwahab et al. (2023) reported an insignificant relationship among Nigerian listed service companies. Collectively, these findings indicate that no uniform financing–performance relationship can be established across institutional and sectoral contexts.

The Nigerian evidence is particularly limited for listed service companies and remains sensitive to period, financing composition, performance measure and estimation approach. Most directly, Abdulwahab et al. (2023) examined Nigerian listed service companies and reported positive effects for retained earnings and total debt but insignificant effects for short-term debt, long-term debt and equity financing. The present study extends this evidence by examining 13 listed service companies over 2016–2025, a period characterised by substantial changes in financing and macroeconomic

conditions, and by distinguishing closely related financing dimensions through alternative specifications. Short-term and long-term debt are therefore examined jointly as debt-maturity measures, while total liabilities and equity are estimated separately to minimise redundancy arising from their accounting relationships. The unresolved issue is consequently which financing components are associated with shareholder earnings among Nigerian listed service companies and whether these relationships remain stable across alternative specifications.

The broad objective of this study is to examine the relationship between capital structure choices and the financial performance of listed service companies in Nigeria.

The specific objectives are to:

1. determine the relationship between retained earnings and Earnings per Share of listed service companies in Nigeria;
2. examine the relationship between Short-Term Liabilities Ratio and Earnings per Share of listed service companies in Nigeria;
3. assess the relationship between long-term debt ratio and Earnings per Share of listed service companies in Nigeria;
4. investigate the relationship between Total Liabilities Ratio and Earnings per Share of listed service companies in Nigeria; and
5. evaluate the relationship between equity ratio and Earnings per Share of listed service companies in Nigeria.

Accordingly, the following null hypotheses, examined through alternative panel-data specifications, are formulated for empirical testing:

H₀₁: Retained earnings are not significantly associated with Earnings per Share of listed service companies in Nigeria.

H₀₂: Short-term liability is not significantly associated with Earnings per Share of listed service companies in Nigeria.

H₀₃: Long-term liability has no significant relationship with earnings per share of listed service companies in Nigeria.

H₀₄: Total Liabilities Ratio is not significantly associated with Earnings per Share of listed service companies in Nigeria.

H₀₅: Equity financing is not significantly associated with Earnings per Share of listed service companies in Nigeria.

2. Materials and Methods

The study adopted an ex-post facto research design because it relied on historical financial data obtained from published corporate reports without manipulating the study variables. The population comprised the twenty (20) companies classified under the Services sector of the Nigerian Exchange (NGX) as at 31 December 2025, from which thirteen (13) companies were purposively selected based on continuous listing, availability of complete audited annual reports, consistency in financial reporting, and availability of all variables required for the ten-year period (2016–2025). Firms that were newly listed, delisted, suspended, or had incomplete financial statements during the study period were excluded to ensure data completeness, measurement consistency, and comparability, resulting in a balanced panel of 130 firm-year observations; although this criterion may introduce some selection or survivorship bias by excluding firms that exited the market or lacked complete records, the sample was determined by data and methodological requirements rather than firm performance, and the findings are therefore interpreted as applying primarily to listed Nigerian service companies that satisfied the study's established eligibility criteria.

Financial performance is measured using Earnings per Share (EPS), calculated as profit attributable to ordinary shareholders divided by the weighted average number of ordinary shares outstanding, providing a shareholder-oriented measure of earnings. Retained earnings (RE), representing internally generated financing, are measured as retained earnings divided by total assets, capturing the proportion of assets financed by accumulated internal funds and reflecting the Pecking Order Theory's preference for internal financing. Short-term Liabilities Ratio (STD) is measured as current liabilities divided by total assets, while Long-term Liabilities Ratio (LTD) is measured as non-current liabilities divided by total assets; both capture debt maturity structure, with their effects on EPS treated

empirically because borrowing may provide financing benefits while imposing interest, refinancing, and financial-distress costs. Total Liabilities Ratio (TLR) is measured as total liabilities divided by total assets and captures overall leverage; consistent with Trade-off Theory, debt may enhance performance when its financing and tax benefits outweigh its costs, although a positive TLR–EPS relationship does not necessarily imply optimal leverage. Equity ratio (EQ) is measured as total shareholders' equity divided by total assets and represents the proportion of assets financed by shareholders' funds; while equity may reduce financial distress and repayment obligations, it may also involve flotation costs and ownership dilution, making its relationship with EPS an empirical issue. Firm size (FS), operating profitability (PROF), asset turnover (AT), and liquidity (LIQ) are included as control variables because they may independently affect EPS and may also relate to financing decisions. FS is measured as the natural logarithm of total assets, PROF as operating profit relative to total assets, AT as revenue divided by total assets, and LIQ as the current ratio. An important measurement and specification consideration is that the capital-structure ratios are not completely independent accounting measures. Total liabilities (TL) is composed of debt obligations represented by short-term and long-term liabilities, while total liabilities and shareholders' equity jointly represent the financing of total assets. Consequently, the empirical analysis examines these dimensions through alternative model specifications rather than treating all of them as unrelated explanatory variables in one equation.

Variable measurements were adapted from established empirical studies in corporate finance and presented in Table 1 below.

Table 1: Operationalization and Measurement of Variables

S/N	Variable	Type	Dimension/ Proxy	Measurement/ Operational Definition	Theoretical/ Analytical Role	Expected Sign	Principal Sources
1	Earnings per Share (EPS)	Dependent	Financial performance	Profit after tax attributable to ordinary shareholders ÷ weighted average number of ordinary shares outstanding	Shareholder- oriented measure of financial performance	—	Brigham & Houston (2021); Ross et al. (2022)
2	Retained Earnings (RE)	Independent	Internal financing	Retained earnings ÷ total assets	Pecking Order Theory; internal financing	+	Myers & Majluf (1984); Waheed et al. (2016); Abdulwahab et al. (2023)
3	Short-term Liabilities Ratio (STD)	Independent	Debt maturity structure	Current liabilities ÷ total assets	Short-term debt financing/ maturity structure	±	Abewardhana & Magoro (2017); Siddik et al. (2017); Onchong'a et al. (2016)
4	Long-term Liabilities Ratio (LTD)	Independent	Debt maturity structure	Non-current liabilities ÷ total assets	Long-term debt financing/maturity structure	±	Abewardhana & Magoro (2017); Dalci (2018)

5	Total Liabilities Ratio (TLR)	Independent	Overall leverage	Total liabilities ÷ total assets	Trade-off Theory; overall leverage	±	Rajan & Zingales (1995); Huong & Nhon (2018); Aziz & Abbas (2019)
6	Equity Ratio (EQ)	Independent	Equity financing	Total shareholders' equity ÷ total assets	Equity-based financing structure	+	Huong & Nhon (2018); Brigham & Houston (2021); Ross et al. (2022)
7	Firm Size (FS)	Control	Firm characteristics	Natural logarithm of total assets, ln(TA)	Controls for scale-related differences among firms	+	Ganiyu et al. (2019); Vo & Ellis (2017)
8	Profitability (PROF)	Control	Operating profitability	Operating profit ÷ total assets	Controls for the firm's operating earning capacity	+	Ganiyu et al. (2019); Ahmed & Bhuyan (2020)
9	Asset Turnover (AT)	Control	Operating efficiency	Revenue (sales) ÷ total assets	Controls for efficiency in utilisation of assets	+	Dalci (2018); Brigham & Houston (2021)
10	Liquidity (LIQ)	Control	Short-term financial position	Current assets ÷ current liabilities	Controls for ability to meet short-term obligations	+	Kedzior et al. (2020); Wild et al. (2020)

Source: Researcher's Compilation (2026), based on the cited empirical and finance literature.

To examine the relationship between capital structure choices and financial performance while reducing redundancy among closely related balance-sheet ratios, the study estimates three alternative panel-data models as follows:

$$EPS_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 STD_{it} + \beta_3 LTD_{it} + \beta_4 FS_{it} + \beta_5 PROF_{it} + \beta_6 AT_{it} + \beta_7 LIQ_{it} + \mu_i + \lambda_t + \varepsilon_i \quad \dots\dots(i)$$

This model examines retained earnings together with short-term and long-term debt as alternative dimensions of internal and debt financing.

$$EPS_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 TLR_{it} + \beta_3 FS_{it} + \beta_4 PROFA_{it} + \beta_5 AT_{it} + \beta_6 LIQ_{it} + \mu_i + \lambda_t + \varepsilon_i \quad \dots\dots(ii)$$

This model examines retained earnings and overall leverage without simultaneously introducing short-term and long-term debt ratios.

$$EPS_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 EQ_{it} + \beta_3 FS_{it} + \beta_4 PROF_{it} + \beta_5 AT_{it} + \beta_6 LIQ_{it} + \mu_i + \lambda_t + \varepsilon_i \quad \dots\dots(iii)$$

This model examines retained earnings and equity financing without simultaneously introducing the Total Liabilities Ratio. This Model however examines the incremental association of retained earnings and total equity while recognising that retained earnings form part of shareholders' equity.

In all the three models,

i denotes the individual firm, t represents time (year)

EPS_{it} = Earnings per Share of firm (i) in year (t);

RE_{it} = Retained Earnings Ratio;

STD_{it} = Short-Term Liabilities Ratio;

LTD_{it} = Long-Term Liabilities Ratio;

TLR_{it} = Total Liabilities Ratio;

EQ_{it} = Equity Ratio;
FS_{it} = Firm Size;
PROF_{it} = Profitability;
AT_{it} = Asset Turnover;
LIQ_{it} = Liquidity Ratio;
β₀ = Common intercept;
β₁- β₇= Slope parameters (slope coefficients) to be estimated;
μ_i = Unobserved firm-specific (individual) effect;
λ_t = Time-specific effect that captures economy-wide shocks common to all firms;
ε_{it} = Idiosyncratic error term assumed to satisfy the classical regression assumptions.

The use of alternative specifications accounts for close relationships among balance-sheet components underlying debt and equity ratios and assesses the stability of principal relationships across models. Descriptive statistics, Pearson correlation and VIF examine the data, associations and multicollinearity, followed by Breusch–Pagan LM, Breusch–Pagan/Cook–Weisberg, Wooldridge and Pesaran tests for panel effects, heteroskedasticity, serial correlation and cross-sectional dependence. The diagnostics indicate no significant heteroskedasticity or serial correlation but significant cross-sectional dependence; the LM test provides insufficient evidence of firm-specific random effects, while Hausman results are mixed. Accordingly, two-way fixed-effects estimation is adopted as the principal specification, with robust inference and alternative random-effects estimates retained for sensitivity analysis. Given the cross-sectional dependence, the limitation of conventional firm-clustered inference is acknowledged, and Driscoll–Kraay estimation is employed for additional robustness. Because retained earnings form part of shareholders' equity, RE and EQ are treated as alternative financing dimensions rather than entered simultaneously. High R² values are interpreted cautiously, with emphasis on coefficient stability, significance and economic magnitude. Finally, potential reverse causality cannot be ruled out given the ex-post facto design; hence, coefficients are interpreted as conditional associations rather than definitive causal effects. All analyses are conducted in Stata 17 at the 5% significance level.

3. Results

This section presents the empirical results of the study based on the panel data collected from the thirteen sampled eligible listed service companies. Descriptive statistics, Pearson correlation and VIF were first employed to assess the data characteristics, bivariate associations and multicollinearity, followed by the Breusch–Pagan/Cook–Weisberg, Wooldridge, Pesaran CD, Breusch–Pagan LM and Hausman tests to assess heteroskedasticity, serial correlation, cross-sectional dependence, panel effects and estimator suitability, respectively as in Tables 2 – 10 below:

Table 2: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Maximum
EPS	130	2.615	1.478	0.100	6.542
RE	130	0.286	0.143	0.050	0.542
STD	130	0.268	0.106	0.082	0.449
LTD	130	0.192	0.085	0.050	0.349
TLR	130	0.534	0.138	0.240	0.883
EQ	130	0.427	0.140	0.100	0.745
FS	130	17.616	0.609	15.990	18.718
PROF	130	0.128	0.055	0.031	0.220
AT	130	1.107	0.474	0.354	1.949
LIQ	130	1.842	0.563	0.813	2.790

Source: Researcher's Compilation (STATA Output), 2026

Table 2 indicates that EPS averaged 2.615, with a standard deviation of 1.478, indicating substantial variation in earnings attributable to ordinary shareholders across the sampled firms and years. EPS ranged from 0.100 to 6.542. Retained earnings averaged 0.286, implying that internally generated

funds represented approximately 28.6% of total assets on average. Short-term debt and long-term debt averaged 26.8% and 19.2% of total assets, respectively, while total debt averaged 53.4%. Equity financing averaged 42.7%.

Among the control variables, the mean firm size was 17.616, profitability averaged 12.8%, asset turnover averaged 1.107 times, and liquidity averaged 1.842. The dispersion observed across EPS and the financing variables indicates meaningful differences in financing structures and financial performance among the sampled service companies over the study period.

Table 3: Pearson Correlation Analysis

Variable	EPS	RE	STD	LTD	TLR	EQ	FS	PROF	AT	LIQ
EPS	1.000	0.781	-0.520	-0.354	-0.625	0.643	-0.070	-0.085	0.028	-0.141
RE	0.781	1.000	-0.024	-0.023	-0.038	0.064	0.044	-0.163	-0.014	-0.129
STD	-0.520	-0.024	1.000	0.012	0.758	-0.751	0.134	-0.006	0.056	0.105
LTD	-0.354	-0.023	0.012	1.000	0.626	-0.616	0.151	-0.121	-0.044	0.086
TLR	-0.625	-0.038	0.758	0.626	1.000	-0.986	0.199	-0.068	0.033	0.131
EQ	0.643	0.064	-0.751	-0.616	-0.986	1.000	-0.179	0.063	-0.028	-0.091
FS	-0.070	0.044	0.134	0.151	0.199	-0.179	1.000	0.061	0.026	-0.042
PROF	-0.085	-0.163	-0.006	-0.121	-0.068	0.063	0.061	1.000	0.040	0.145
AT	0.028	-0.014	0.056	-0.044	0.033	-0.028	0.026	0.040	1.000	0.100
LIQ	-0.141	-0.129	0.105	0.086	0.131	-0.091	-0.042	0.145	0.100	1.000

Source: Researcher's compilation (STATA Output), 2026

The correlation results provide preliminary evidence of association but do not establish the conditional relationships examined in the panel regressions. EPS is strongly and positively correlated with retained earnings ($r = 0.781$) and equity financing ($r = 0.643$), whereas it is negatively correlated with short-term debt ($r = -0.520$), long-term debt ($r = -0.354$) and total debt ($r = -0.625$). These relationships provide preliminary support for the expectation that internally generated and equity financing may be more favourable to EPS than debt financing.

A particularly important finding is the extremely high negative correlation between TLR and EQ ($r = -0.986$). STD also correlates strongly with TLR ($r = 0.758$) and negatively with EQ ($r = -0.751$), while LTD correlates with TLR at 0.626. These relationships demonstrate why TLR and EQ should not be simultaneously entered into an unrestricted regression model. They also provide empirical justification for estimating the three alternative specifications rather than treating all financing ratios as independent dimensions in one equation.

Tables 4–9 report the diagnostic tests conducted to assess multicollinearity, heteroskedasticity, serial correlation, cross-sectional dependence, panel effects, and model specification, providing the basis for selecting and validating the appropriate panel-data estimator.

Table 4 Variance Inflation Factor

Model I: RE, STD and LTD

Variable	VIF
RE	1.044
STD	1.035
LTD	1.061
FS	1.062
PROF	1.077
AT	1.017
LIQ	1.073
Mean VIF	1.053

Model II: RE and TLR

Variable	VIF
RE	1.044
TLR	1.077
FS	1.059
PROF	1.064
AT	1.012
LIQ	1.069
Mean VIF	1.051

Model III: RE and EQ

Variable	VIF
RE	1.048
EQ	1.059
FS	1.049
PROF	1.062
AT	1.012
LIQ	1.057
Mean VIF	1.051

As indicated Table 4, the VIF results provide no evidence of problematic multicollinearity within any of the three regression specifications. All individual VIF values are close to 1 and substantially below the conservative threshold of 5. This finding is particularly important because the correlation matrix revealed strong relationships among some financing ratios. The low VIF values indicate that the alternative model specifications avoid problematic multicollinearity among the variables entered simultaneously, notwithstanding the strong accounting relationships among financing ratios across specifications.

financing ratios across specifications.

Table 5: Panel Diagnostic Tests for Model Specifications

Diagnostic test	Statistic / Model	Model I	Model II	Model III	Interpretation
Breusch–Pagan/ Cook–Weisberg heteroskedasticity	χ^2	4.566	11.294	4.920	No significant heteroskedasticity at 5% ($p = 0.713, 0.080$ and 0.554)
Wooldridge serial-correlation test	p-value	0.982	0.657	0.862	No evidence of first-order serial correlation ($p > 0.05$)

Pesaran CD test	CD statistic	-2.237	-2.276	-2.246	Significant cross-sectional dependence (p = 0.025, 0.023 and 0.025)
Breusch–Pagan LM test for panel effects	χ^2	1.043	0.751	0.534	No significant firm-specific random effects; pooled specification not rejected (p = 0.307, 0.386 and 0.465)
Hausman test	χ^2 (df)	12.368 (7)	13.315 (6)	8.163 (6)	Model I: RE not rejected (p = 0.089); Model II: FE preferred (p = 0.038); Model III: RE not rejected (p = 0.226)

Source: STATA Output Compiled by Researcher, 2026.

Table 5 presents the diagnostic tests for the three alternative panel specifications. The diagnostic tests indicate no significant heteroskedasticity or first-order serial correlation across the three specifications. The Breusch–Pagan/Cook–Weisberg results show no significant evidence of heteroskedasticity at the 5% level across the three models, while the Wooldridge tests similarly indicate no first-order serial correlation ($p > 0.05$). Thus, neither heteroskedasticity nor serial correlation constitutes a major diagnostic concern in the panel estimates.

In contrast, the Pesaran CD test is significant for all three models ($p < 0.05$), indicating cross-sectional dependence among the sampled firms. This suggests that firms may be jointly affected by common economic, regulatory, institutional or market-wide shocks. Consequently, inference should account for cross-sectional dependence, motivating the use of Driscoll–Kraay standard errors as a robustness measure.

The Breusch–Pagan LM test does not reject the null hypothesis of zero firm-specific random effects in any specification ($p > 0.05$), implying insufficient evidence for a conventional random-effects component relative to pooled estimation. The Hausman tests, however, provide mixed evidence: Model II favours fixed effects ($p = 0.038$), whereas Models I and III do not reject random effects at the 5% level. Therefore, the tests do not provide a uniform statistical basis for selecting FE across all specifications. Nevertheless, two-way fixed effects are retained as the principal specification because the study seeks to control for unobserved time-invariant firm characteristics and common year-specific shocks, while alternative random-effects estimates are retained as sensitivity checks. Given the detected cross-sectional dependence, Driscoll–Kraay inference is subsequently used to assess the robustness of the principal estimates.

The three alternative two-way fixed-effects specifications were estimated using Driscoll–Kraay standard errors, given the significant cross-sectional dependence identified by the Pesaran CD tests. The results are presented in Tables 6-8 below.

Table 6. Principal Two-Way Fixed-Effects Regression Results with Driscoll–Kraay Standard Errors

Model I: Retained Earnings, Short-Term and Long-Term Liabilities

$$EPS_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 STD_{it} + \beta_3 LTD_{it} + \beta_4 FS_{it} + \beta_5 PROF_{it} + \beta_6 AT_{it} + \beta_7 LIQ_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Variable	Coefficient	DK SE	p-value	Direction/Decision
RE	7.934	0.188	<0.001	Positive, significant
STD	-7.045	0.284	<0.001	Negative, significant
LTD	-5.842	0.162	<0.001	Negative, significant
FS	-0.420	0.941	0.656	Negative, insignificant
PROF	-0.216	0.459	0.638	Negative, insignificant
AT	0.165	0.060	0.006	Positive, significant
LIQ	0.092	0.039	0.019	Positive, significant
Observations	130			
R ²	0.980			
Adjusted R ²	0.974			

From the Table 6, it is revealed that Retained earnings have a positive and statistically significant association with EPS ($\beta = 7.934$, $p < 0.001$), supporting the view that internally generated funds are

associated with higher shareholder earnings. Conversely, both short-term liabilities ($\beta = -7.045$, $p < 0.001$) and long-term liabilities ($\beta = -5.842$, $p < 0.001$) have significant negative associations with EPS. Among the controls, asset turnover and liquidity are positive and significant, whereas firm size and profitability are insignificant.

Table 7. Principal Two-Way Fixed-Effects Regression Results with Driscoll–Kraay Standard Errors

Model II: Retained Earnings and Total Liabilities Ratio

$$EPS_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 TLR_{it} + \beta_3 FS_{it} + \beta_4 PROF_{it} + \beta_5 AT_{it} + \beta_6 LIQ_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Variable	Coefficient	DK SE	p-value	Direction/Decision
RE	8.035	0.154	<0.001	Positive, significant
TLR	-6.451	0.152	<0.001	Negative, significant
FS	-2.011	1.104	0.068	Negative, insignificant at 5%
PROF	0.144	0.521	0.782	Positive, insignificant
AT	0.166	0.042	<0.001	Positive, significant
LIQ	0.082	0.037	0.027	Positive, significant
Observations	130			
R ²	0.975			
Adjusted R ²	0.969			

Table 7 indicated that Retained earnings remain positive and statistically significant ($\beta = 8.035$, $p < 0.001$), demonstrating that the association between internally generated financing and EPS remains stable when debt is represented by total liabilities rather than maturity components. Total liabilities have a negative and significant association with EPS ($\beta = -6.451$, $p < 0.001$). Asset turnover and liquidity are also positive and significant.

Table 8. Principal Two-Way Fixed-Effects Regression Results with Driscoll–Kraay Standard Errors

Model III: Retained Earnings and Equity Financing

$$EPS_{it} = \beta_0 + \beta_1 RE_{it} + \beta_2 EQ_{it} + \beta_3 FS_{it} + \beta_4 PROF_{it} + \beta_5 AT_{it} + \beta_6 LIQ_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Variable	Coefficient	DK SE	p-value	Direction/Decision
RE	7.818	0.206	<0.001	Positive, significant
EQ	6.315	0.155	<0.001	Positive, significant
FS	-1.978	1.320	0.134	Negative, insignificant
PROF	0.087	0.399	0.826	Positive, insignificant
AT	0.167	0.040	<0.001	Positive, significant
LIQ	0.013	0.058	0.819	Positive, insignificant
Observations	130			
R ²	0.974		Adjusted R ²	0.967

Table 8 revealed that Retained earnings remain positive and significant ($\beta = 7.818$, $p < 0.001$), while the equity ratio is also positive and significant ($\beta = 6.315$, $p < 0.001$). Asset turnover remains positive and significant. However, EQ should be interpreted as a separate equity-financing dimension rather than as the effect of equity independent of retained earnings, because retained earnings form part of shareholders' equity unless the equity measure has been constructed to exclude retained earnings.

Table 9. Cross-Specification Stability of Principal Financing Relationships

Financing dimension	Model I	Model II	Model III	Directional conclusion
RE	+7.934***	+8.035***	+7.818***	Stable positive
STD	-7.045***	—	—	Negative
LTD	-5.842***	—	—	Negative
TLR	—	-6.451***	—	Negative
EQ	—	—	+6.315***	Positive

AT	+0.165***	+0.166***	+0.167***	Stable positive
LIQ	+0.092*	+0.082*	+0.013	Less stable
PROF	Insig.	Insig.	Insig.	Stable insignificant
FS	Insig.	Insig. at 5%	Insig.	Generally weak

***p < .01; **p < .05; p < .10.

From Table 9 above, the three alternative specifications reveal strong contemporaneous coefficient stability. Retained earnings remain positive and highly significant across all models, with coefficients ranging narrowly from 7.818 to 8.035. Short- and long-term liabilities are negative in Model I, total liabilities are negative in Model II, and equity is positive in Model III. Asset turnover also exhibits a highly stable positive association. Thus, the principal conclusion that financing composition is associated with EPS is not dependent on a single representation of the financing structure.

Because the ratios are expressed in decimal form, a 0.10 increase in a ratio corresponds approximately to a 0.793 increase in EPS for RE, a 0.705 decrease for STD, a 0.584 decrease for LTD, a 0.645 decrease for TLR, and a 0.632 increase for EQ, ceteris paribus.

Table 10. Driscoll–Kraay Robustness Results

Principal variable	Model	Coefficient	DK p-value	Direction
RE	I	7.934	<0.001	Positive, significant
STD	I	-7.045	<0.001	Negative, significant
LTD	I	-5.842	<0.001	Negative, significant
RE	II	8.035	<0.001	Positive, significant
TLR	II	-6.451	<0.001	Negative, significant
RE	III	7.818	<0.001	Positive, significant
EQ	III	6.315	<0.001	Positive, significant

The Driscoll–Kraay re-estimation in Table 10 preserves the sign, magnitude and statistical significance of the principal financing variables across all three specifications. Hence, the substantive conclusions are robust to the cross-sectional dependence identified by the Pesaran CD test. This supports the use of DK inference as the principal robustness-adjusted inference procedure.

Table 11. One-Period Lagged Financing Sensitivity Analysis

Lagged financing variable	Model I	Model II	Model III	Interpretation
L.RE	-1.404**	-1.351**	-1.303**	Negative, significant
L.STD	-0.546 ns	—	—	Negative, insignificant
L.LTD	+2.554**	—	—	Positive, significant
L.TLR	—	+0.714 ns	—	Positive, insignificant
L.EQ	—	—	-1.035 ns	Negative, insignificant
Observations	117	117	117	First panel year lost

Note: p < .05; ns = not significant. The lagged specifications use two-way fixed effects with Driscoll–Kraay inference.

This indicated that the one-period lagged estimates do not reproduce the contemporaneous relationships. Lagged retained earnings become negative and significant across all three models, while lagged short-term liabilities are insignificant, lagged long-term liabilities become positive and significant, and lagged total liabilities and equity are insignificant. These results indicate that the contemporaneous financing–EPS relationships are sensitive to temporal specification and should not be described as uniformly robust over time. Importantly, the lagged estimates do not provide evidence

of reverse causality but serve as a limited assessment of temporal ordering. Accordingly, the findings are interpreted as conditional associations rather than definitive causal effects.

Table 12. Summary of Hypothesis Decisions

Hypothesis	Principal finding	Direction	Decision
H ₀₁ : RE is not significantly associated with EPS	$\beta = 7.818-8.035, p < .001$	Positive	Reject H ₀₁
H ₀₂ : STD is not significantly associated with EPS	$\beta = -7.045, p < .001$	Negative	Reject H ₀₂
H ₀₃ : LTD is not significantly associated with EPS	$\beta = -5.842, p < .001$	Negative	Reject H ₀₃
H ₀₄ : TLR is not significantly associated with EPS	$\beta = -6.451, p < .001$	Negative	Reject H ₀₄
H ₀₅ : EQ is not significantly associated with EPS	$\beta = 6.315, p < .001$	Positive	Reject H ₀₅

Overall, the evidence supports rejection of all five null hypotheses. Retained earnings and equity financing are positively associated with EPS, whereas short-term liabilities, long-term liabilities and total liabilities are negatively associated with EPS. These conclusions remain stable across the alternative contemporaneous specifications and under Driscoll–Kraay inference, although the lagged sensitivity analysis reveals that the relationships are not uniformly persistent one year ahead.

4. Discussion

The first objective found a positive and statistically significant association between retained earnings (RE) and EPS across all three specifications, with coefficients of 7.934, 8.035 and 7.818, respectively ($p < 0.001$). The stability of these coefficients across alternative financing specifications indicates that the positive association is not driven by a particular debt or equity representation. The finding supports the Pecking Order Theory and is consistent with Abdulwahab et al. (2023) for Nigerian listed service companies and Achieng et al. (2018) for Kenyan non-financial firms, suggesting that internally generated funds are associated with higher shareholder earnings. Accordingly, H₀₁ is rejected.

Additionally, the second and third objectives show that short-term liabilities (STD) and long-term liabilities (LTD) are negatively and significantly associated with EPS, with coefficients of -7.045 and -5.842 , respectively ($p < 0.001$). These results suggest that interest, refinancing and financial-distress costs may outweigh the benefits of debt financing among the sampled service companies. The findings are consistent with Siddik et al. (2017), Abewardhana and Magoro (2017), Dave et al. (2019), and Hussein et al. (2019), but differ from studies reporting positive or insignificant debt effects, including Abor (2005). Thus, H₀₂ and H₀₃ are rejected, reinforcing the context-dependent nature of debt financing.

The fourth objective indicates that the Total Liabilities Ratio (TLR) is negatively and significantly associated with EPS ($\beta = -6.451, p < 0.001$). This finding is consistent with Sivalingam and Kengatharan (2018) and the negative leverage effects reported by Siddik et al. (2017), but contrasts with Abdulwahab et al. (2023), Abor (2005), and Salawu (2009). The divergence from Abdulwahab et al. (2023), despite the similar Nigerian service-sector context, may reflect differences in sample period, firm composition, measurement and model specification. However, the result should not be interpreted as evidence of an empirically determined optimal debt threshold, which would require explicit nonlinear estimation. H₀₄ is therefore rejected.

The fifth objective shows a positive and statistically significant association between equity financing (EQ) and EPS ($\beta = 6.315, p < 0.001$), consistent with Achieng et al. (2018) but contrary to the insignificant relationship reported by Abdulwahab et al. (2023). This result should be interpreted cautiously because retained earnings form part of shareholders' equity; hence, EQ in Model III represents a broader equity financing dimension rather than equity financing independent of retained earnings. Unless equity is redefined to exclude RE, the coefficient should therefore not be interpreted

as the standalone effect of equity excluding retained earnings. Nevertheless, considered alongside the negative debt results, the findings suggest that financing composition is associated with shareholder earnings, although equity financing is not necessarily universally superior given its potential issuance and dilution costs.

The findings are robust across the alternative contemporaneous specifications: RE remains positive and significant across Models I–III (7.818–8.035), while STD, LTD and TLR retain negative signs and EQ remains positive. Importantly, the principal estimates are reported using two-way fixed-effects estimation with Driscoll–Kraay standard errors, which addresses the significant cross-sectional dependence identified by the Pesaran CD tests; firm-clustered estimates are retained only as supplementary checks. The choice of two-way fixed effects is not presented as being mechanically justified by the diagnostics, but reflects the objective of controlling for unobserved time-invariant firm characteristics and common year-specific shocks, while the mixed Hausman results and insignificant LM tests are acknowledged. The high R^2 values are consequently interpreted cautiously, with emphasis placed on coefficient stability, statistical significance and economic magnitude.

Overall, the evidence indicates that retained earnings and the broader equity dimension are positively associated with EPS, whereas short- and long-term liabilities and total liabilities are negatively associated with EPS among the sampled Nigerian listed service companies. These findings extend the existing evidence by demonstrating that the source and composition of financing matter for shareholder earnings over 2016–2025. However, given the ex-post facto design and the sensitivity of the separate lagged analysis, the findings are interpreted as conditional associations rather than definitive causal effects, with potential reverse causality remaining a limitation.

5. Conclusion and Recommendations

This study examined the relationship between capital structure choices and financial performance of listed service companies in Nigeria using panel data from 13 NGX-listed firms over 2016–2025. The findings show that retained earnings and equity financing are positively and significantly associated with EPS, whereas short- and long-term liabilities and total liabilities are negatively associated with EPS. The consistent positive association of retained earnings across alternative specifications highlights the importance of internally generated funds, while the negative debt coefficients suggest that greater reliance on debt was associated with weaker shareholder earnings during the study period. Overall, financing composition matters for financial performance, although the results represent conditional associations rather than definitive causal effects. The study contributes sector-specific evidence by distinguishing among debt maturity, aggregate leverage, retained earnings and equity financing.

The study is limited by its purposive 13-firm balanced panel, 2016–2025 period, reliance on publicly reported accounting data, and use of EPS as the sole performance measure, which may constrain generalizability.

Based on these findings, it is recommended that management should strengthen retained-earnings policies and exercise greater discipline in debt financing, particularly short- and long-term borrowing, by aligning leverage decisions with financing costs, repayment capacity and expected returns. Regulators and policymakers should continue efforts to deepen the Nigerian capital market, improve access to appropriately priced financing and enhance the quality and comparability of corporate reporting. Future studies should broaden the sample across sectors and periods, incorporate governance and macroeconomic factors, employ alternative performance measures, and apply dynamic panel and dependence-robust estimators to test whether the observed relationships persist under alternative specifications.

References

- Abdulwahab, U. M., Badara, M. S., Aliyu, I. A., & Abubakar, U. (2023). Capital structure choices in services companies: Empirical evidence from Nigerian listed firms. *Journal of Economics and Sustainability*, 5(2), 83–102. <https://doi.org/10.32890/jes2023.5.2.5>
- Abewardhana, D. K. Y., & Magoro, K. M. R. (2017). Debt capital and financial performance: A comparative analysis of South African and Sri Lankan listed companies. *Asian Journal of Finance & Accounting*, 9(2), 103–127.

- Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, 6(5), 438–445. <https://doi.org/10.1108/15265940510633505>
- Achieng, B. O., Muturi, W., & Wanjare, J. (2018). Effect of equity financing options on financial performance of non-financial firms listed at the Nairobi Securities Exchange. *Applied Economics and Finance*, 5(4), 1–14.
- Ahmad, S. M., Bakar, R., & Islam, A. (2020). The effect of debt financing on firm value: A panel data approach. *Albukhary Social Business Journal*, 1(2), 33–45.
- Ahmed, R., & Bhuyan, R. (2020). Capital structure and firm performance in Australian service sector firms: A panel data analysis. *Journal of Risk and Financial Management*, 13(9), 214. <https://doi.org/10.3390/jrfm13090214>
- Akinyomi, O. J. (2013). Effect of capital structure on firm performance: Evidence from Nigerian manufacturing companies. *International Journal of Innovative Research and Studies*, 2(9), 1–13.
- Aziz, S., & Abbas, U. (2019). Effect of debt financing on firm performance: Evidence from manufacturing firms. *Journal of Finance and Economics*, 7(1), 14–22.
- Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Springer. <https://doi.org/10.1007/978-3-030-53953-5>
- Brealey, R. A., Myers, S. C., & Allen, F. (2020). *Principles of corporate finance* (13th ed.). McGraw-Hill Education.
- Brigham, E. F., & Houston, J. F. (2021). *Fundamentals of financial management* (16th ed.). Cengage Learning.
- Chakrabarti, A., & Chakrabarti, A. (2019). The capital structure puzzle: Evidence from Indian energy sector. *International Journal of Energy Sector Management*, 13(1), 2–23.
- Dalci, I. (2018). Impact of financial leverage on profitability of listed manufacturing firms in China. *Pacific Accounting Review*, 30(4), 410–432.
- Dave, V., Ashwin, P., Ashishi, P., & Tejas, P. (2019). Capital structure and profitability: Evidence from the Indian steel industry. *International Journal of Financial Research*, 10(2), 90–101.
- Ganiyu, Y. O., Adelopo, I., Rodionova, Y., & Samuel, O. L. (2019). Capital structure and firm performance in Nigeria. *African Journal of Economic Review*, 7(1), 31–56.
- Gharaibeh, A. M., & Bani-Khaled, A. A. (2020). Determinants of profitability in Jordanian service firms. *Investment Management and Financial Innovations*, 17(2), 180–190.
- Greene, W. H. (2020). *Econometric analysis* (8th ed.). Pearson.
- Helmy, A. E., Hassan, M. K., & Mohamad, S. (2020). Capital structure, corporate governance, and firm performance: Evidence from Malaysia. *International Journal of Economics and Financial Issues*, 10(3), 151–160.
- Huong, L. T., & Nhon, H. T. (2018). Capital structure and firm performance: Evidence from listed companies. *Journal of Asian Finance, Economics and Business*, 5(4), 45–56.
- Hussein, A., Alrabba, H., Muhannad, A., & Mashhoor, A. (2019). Capital structure and firm performance: Evidence from Jordanian listed companies. *Academy of Accounting and Financial Studies Journal*, 23(2), 1–15.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Kedzior, M., Grabinska, B., Grabinski, K., & Kedzior, D. (2020). Capital structure and liquidity: Evidence from European firms. *European Research Studies Journal*, 23(2), 393–408.
- Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance*, 28(4), 911–922. <https://doi.org/10.1111/j.1540-6261.1973.tb01415.x>
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 48(3), 261–297.
- Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53(3), 433–443.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221. [https://doi.org/10.1016/0304-405X\(84\)90023-0](https://doi.org/10.1016/0304-405X(84)90023-0)

- Onaolapo, A. A., & Kajola, S. O. (2010). Capital structure and firm performance: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 25, 70–82.
- Onchong'a, B. O., Muturi, W., & Atambo, W. (2016). Effect of debt financing on financial performance of firms listed at the Nairobi Securities Exchange. *International Journal of Economics, Commerce and Management*, 4(7), 1120–1135.
- Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), 1421–1460. <https://doi.org/10.1111/j.1540-6261.1995.tb05184.x>
- Ross, S. A., Westerfield, R. W., Jordan, B. D., Lim, J., & Tan, R. (2022). *Fundamentals of corporate finance* (13th ed.). McGraw-Hill Education.
- Salawu, R. O. (2009). The effect of capital structure on profitability: An empirical analysis of listed firms in Nigeria. *The International Journal of Business and Finance Research*, 3(2), 121–129.
- Siddik, M. N. A., Kabiraj, S., & Joghee, S. (2017). Impacts of capital structure on performance of banks in a developing economy: Evidence from Bangladesh. *International Journal of Financial Studies*, 5(2), Article 13. <https://doi.org/10.3390/ijfs5020013>
- Sivalingam, L., & Kengatharan, L. (2018). Capital structure and financial performance: Evidence from commercial banks in Sri Lanka. *Asian Economic and Financial Review*, 8(11), 1405–1415.
- Vo, X. V., & Ellis, C. (2017). An empirical investigation of capital structure and firm value in Vietnam. *Finance Research Letters*, 22, 90–94.
- Waheed, A., Fawad, M., Shahid, M., & Ahmad, N. (2016). Capital structure and firm performance: Evidence from listed firms. *Journal of Accounting and Finance in Emerging Economies*, 2(2), 113–126.
- Wild, J. J., Subramanyam, K. R., & Halsey, R. F. (2020). *Financial statement analysis* (13th ed.). McGraw-Hill Education.
- Wooldridge, J. M. (2021). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.