International Journal of Economics, Business and Management Research

Vol. 9, No.12; 2025

ISSN: 2456-7760

Effect of Operating Cash Flow Ratio and Net Premiums to Policyholders' Surplus Ratio on Financial Performance of Listed Insurance Companies in Nigeria

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doi.org/10.51505/IJEBMR.2025.91201 URL: https://doi.org/10.51505/IJEBMR.2025.91201

Received: Nov 06, 2025 Accepted: Nov 12, 2025 Online Published: Dec 01, 2025

Abstract

This study aims to examine the effect of the operating cash flow ratio and the net premiums to policyholders' ratio on the financial performance of listed insurance companies in Nigeria. Ex-post facto research design was adopted, while a secondary source of data collection was employed. Data were collected from the annual financial reports of six listed insurance companies. The study utilized panel regression to analyse the data from a sample of six (6) listed insurance companies on the Nigerian Exchange Group (NGX) from 2015 to 2024. The results of the panel regression revealed that the operating cash flow ratio and net premiums to policyholders' ratio have a significant effect on the financial performance of the listed insurance companies in Nigeria. The study recommends that Nigerian insurance companies should move beyond relying solely on profit and loss statements and integrate operating cash flow ratio dashboards into their internal performance management systems. Regular monthly or quarterly cash flow monitoring will help management detect early warning signals of liquidity stress, especially in underwriting and claims operations. Also, Nigerian insurance companies should develop and enforce internal underwriting capacity limits tied directly to their policyholders' surplus. This ensures that the volume of net premiums written is proportionate to available capital, preserving solvency and profitability. Boards should periodically review these limits using actuarial models to maintain a balanced net premiums to policyholders' surplus ratio, ideally within a range that supports growth without eroding financial stability.

Keywords: Financial Performance, Return on Assets, Operating Cashflow Ratio, Net Premiums to Policyholders' Ratio

Introduction

In the competitive and risk-intensive insurance industry, a key indicator of success is financial performance, commonly proxied by return on assets (ROA). ROA captures how efficiently a firm uses its assets to generate profits and is widely used by investors, regulators and researchers

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as a measure of organisational health and value creation (Onuaguluchi & Okwo, 2022; Dumbor et al., 2024). Globally, insurers face pressure to optimise asset utilisation, underwriting discipline and investment returns to deliver robust ROA in the face of uncertain claim patterns and regulatory demands.

Turning to independent variables, the operating cash-flow ratio (that is, operating cash flow divided by current liabilities) represents a firm's ability to convert its core operational activities into cash available to meet obligations and fund growth. Studies across non-insurance sectors report that stronger operating cash flows correlate positively with improved firm performance (Akpan et al., 2024; Yegon et al., 2022). In the insurance industry, effective cash-flow generation is critical: insurers must collect premiums, pay claims, invest reserves and maintain liquidity, all whilst avoiding undue leverage or solvency risk.

The net premiums to policyholders' surplus ratio reflects underwriting intensity relative to the insurer's capital cushion. It is calculated by dividing net premiums written by policyholders' surplus (the excess of assets over liabilities). A higher ratio suggests the insurer is writing greater premium volume relative to its buffer, which may stress underwriting capacity and heighten risk exposure. In many regulatory frameworks (notably in property-casualty markets), guidelines such as the so-called "Kenney Rule" advise prudence in premium-to-surplus levels (James, 2021). When underwriting expands faster than surplus, profitability (and ultimately ROA) may be compromised.

Ideally, listed insurance firms would generate strong operational cash flows, maintain robust policyholders' surplus, and underwrite premiums at levels aligned with capital buffers, thereby enabling sustained, healthy ROA. Specifically, a high operating cash-flow ratio should support asset utilisation and reduce reliance on external financing, while a moderate net premium to surplus ratio should guard against underwriting overextension.

However, the reality in Nigeria appears divergent. Empirical evidence suggests that although insurers operate in an industry of rising premium income, the growth in policyholders' surplus has lagged, resulting in high premium-to-surplus ratios that may erode underwriting capacity and threaten performance (Bala, 2022; 2023). Likewise, research into operating cash-flow ratios in Nigerian insurers reveals only a weak positive relationship with profitability, suggesting that operational cash generation may not be translating into asset returns as effectively as expected (Onuaguluchi & Okwo, 2022). In other words, what is theoretically ideal, that is, healthy cash-flow conversion and prudent underwriting relative to surplus to drive ROA, is not always what is obtainable in practice. This discrepancy highlights a significant gap in the literature: there is a limited amount of empirical work that examines how the operating cash-flow ratio, together with the net premiums to policyholders' surplus ratio, jointly influences ROA in Nigerian listed insurers. Addressing this gap is critical for managers, regulators and investors seeking to understand and improve insurance-firm performance in Nigeria. Taken together, this context suggests that in Nigeria, managing operational cash generation and controlling underwriting

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intensity relative to surplus may be especially important for enhancing ROA amidst regulatory, economic and market challenges.

The primary objective of this study is to examine the effect of the operating cash flow ratio and net premiums to policyholders' surplus ratio on the financial performance of listed insurance companies in Nigeria. Specifically, this study aims to:

i. Assess the impact of the operating cash flow ratio on the financial performance of listed insurance companies in Nigeria.
ii. Investigate the influence of the net premiums to policyholders' surplus ratio on the financial performance of listed insurance companies in Nigeria.

The study hypothesized that:

H_{01}: Operating cash flow ratio has no significant effect on the financial performance of listed insurance companies in Nigeria.
H_{02}: Net premiums to policyholders' surplus ratio have no significant effect on the financial performance of listed insurance companies in Nigeria.

Literature Review

Concept of Financial Performance

Financial performance refers to a company's overall financial health, typically measured using financial metrics that assess profitability, efficiency, liquidity, solvency, and other key indicators. In corporate finance, financial performance is a crucial metric that determines a company's ability to generate profits, maintain growth, and provide returns to its shareholders (Udenwa et al., 2023). For insurance companies, financial performance is often measured by how well they manage liquidity, risks, and investments, which is critical for their long-term viability. The financial performance also includes an evaluation of how organisations efficiently utilise their assets and other resources to generate revenues, which affects the firm's overall financial condition for a given period and can be used to compare one sector with another (Adesina & Adewumi, 2022).

Financial performance is the financial outcomes achieved by a company as a result of its strategies and operations, often measured using profitability and efficiency ratios (Guo & Wang, 2019). Moses et al. (2024) defined financial performance as a company's ability to manage its financial resources effectively, as reflected in metrics such as profitability, liquidity, and asset management. Menik and Ermita (2021) state that financial performance is the extent to which an organization achieves its financial objectives, evaluated using profitability, solvency, and liquidity indicators. Almakura et al. (2024) defined financial performance as the effectiveness with which a company utilizes its financial resources to generate profits and create value for its shareholders.

For this study, financial performance is defined as the effectiveness with which an insurance company manages its financial resources to generate returns, ensure liquidity, and sustain

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profitability, measured by the Return on Assets (ROA) ratio. This definition is particularly relevant to this study because it highlights the critical role of liquidity management in determining the financial health of insurance companies, which operate in a highly regulated and risk-sensitive environment like Nigeria. This adapted definition is the best fit for the study because it emphasizes the operational and financial outcomes of liquidity management, directly linking the firm's ability to meet its obligations and generate profits with the return on assets. In the insurance industry, managing liquidity is key to sustaining operations, fulfilling policyholder claims, and ensuring financial stability.

Return on Assets (ROA)

Financial performance over the years has been measured in terms of three major indicators or variables, namely Profitability, Return on Asset (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE). Profitability is the potential of a venture to be financially successful, the ability of an investment to make a profit or the state or condition of yielding a financial profit or gain. Brealey et al. (2014) affirmed that managers often measure the performance of a firm by the ratio of net income to total assets, otherwise referred to as Return on Assets (ROA). In this study, we have adopted return on assets as the financial performance indicator, which was regarded as the dependent variable.

ROA is a financial ratio that shows the percentage of profit that a company earns in relation to its overall resources. ROA is a good internal management ratio because it measures profit against all the assets used to make earnings (Jeff-Anyeneh et al., 2023). The goal of business is to maximize profit, and the issue of capital adequacy has re-echoed in literature in Nigeria, with the most recent insurance reforms aimed at increasing the capital base of insurance for efficient performance. Return on Assets is a financial ratio that measures how effectively a company, or in this case an insurance company, can turn its assets into profit. This metric is crucial for evaluating the profitability of an insurance relative to its total assets, indicating how efficiently the management is using its assets to generate earnings (Udenwa et al., 2023).

The formula for ROA is:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

For this study, Return on Assets (ROA) is defined as a profitability ratio that measures the efficiency of an insurance company in generating net income from its total assets, reflecting the firm’s ability to use its resources effectively in meeting policyholder obligations and maximizing profitability. This definition is particularly relevant to this study because it highlights the operational efficiency of insurance companies in managing their assets to generate profits, which is critical in the context of liquidity management. The focus on asset efficiency makes this definition the best fit for this study, as it ties liquidity management practices to the broader goal of optimizing financial performance.

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Operating Cashflow Ratio

The operating cash flow ratio is a liquidity measure that assesses a firm's ability to cover its current liabilities with cash generated from its core operating activities. It focuses on how effectively a company can meet its short-term obligations using the cash flows derived from its regular business operations, as opposed to relying on external financing or non-operational income. This ratio is essential for evaluating the operational efficiency and liquidity of companies, particularly in industries like insurance, where maintaining adequate liquidity to meet claims and other liabilities is crucial (Laghari et al., 2023).

The formula for the operating cash flow ratio is:
Operating Cash Flow Ratio = Cash Flow from Operations

Current Liabilities

Cash flow ratio is a mathematical equation used to determine the financial condition of a business. Cash flow ratios are very helpful when attempting to comprehend the company's profits and losses. One of the financial analyses using cash flow statement information is cash flow ratio analysis and balance sheet components, and profit and loss as information in ratio analysis (Lufriansyah, 2019). According to Sarnawiah et al. (2022), cash flows from operating activities (operating activities) are company activities related to profit, where operating activities include cash inflows and net cash outflows originating from related operating activities, such as granting credit to customers, investing in inventory, and obtaining credit from suppliers. Burke (2017) said operating cash flow provides useful information for investors in assessing equity. Operating cash flow provides information and predictions related to future cash flows and earnings beyond accruals.

For this study, the operating cash flow ratio is defined as a liquidity ratio that measures the ability of an insurance company to meet its short-term liabilities using cash generated from its core insurance operations, ensuring that the firm maintains sufficient liquidity to meet policyholder claims and other operational needs without relying on external sources of finance. This definition is best suited to this study because it emphasizes the importance of cash flows from the firm's core operational activities in meeting liabilities, particularly in the insurance industry, where liquidity management is crucial for financial stability. The focus on operational cash flow aligns with the core activities of insurance companies, which rely on consistent premium income and efficient claims management to maintain liquidity. It is essential for this study because it directly ties liquidity management to financial performance in the context of policyholder obligations and regulatory requirements.

Net Premiums to Policyholders' Surplus Ratio

The Net Premiums to Policyholders' Surplus Ratio is a key metric used to assess the financial stability and risk exposure of an insurance company. It measures the relationship between the net premiums written by the company and its policyholders' surplus, which represents the company's net worth or financial cushion (Mohammad et al., 2021). A lower ratio indicates that the insurer

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has a strong surplus relative to its premium volume, suggesting financial stability and an ability to absorb losses. A higher ratio, on the other hand, may indicate that the company is writing more premiums relative to its surplus, which could increase risk exposure and reduce financial stability.

Fraser and Ormiston (2022) described the ratio as a metric that compares the volume of net premiums written by an insurance firm to its policyholders' surplus, providing insight into its underwriting risk and financial stability. Arnold (2021) explained the ratio as a solvency ratio that evaluates the balance between an insurance company's net premiums written and its policyholders' surplus, indicating how well the insurer can manage its underwriting risks. The ratio measures how well an insurance firm's surplus can absorb the risks associated with the net premiums written, reflecting the firm's financial soundness (Showket & Ishfaq, 2015). Pramusinta and Aryani (2023) described the Net Premiums to Policyholders' Surplus Ratio as a key solvency ratio used in the insurance industry to gauge the risk insurers take to their surplus.
The Net Premiums to Policyholders' Surplus Ratio compares the volume of net premiums written (i.e., the premiums after deductions like reinsurance) to the policyholders' surplus (the financial buffer available to the insurer). This ratio measures how well the insurer can cover potential claims based on the premiums it underwrites relative to the surplus it holds as a safety cushion.

The formula for calculating this ratio is:
Net Premiums to Policyholders' Surplus Ratio = $\frac{\text{Net Premiums Written}}{\text{Policyholders' Surplus}}$

This ratio is essential for evaluating an insurer's underwriting risk and financial strength. It shows whether the insurer has enough financial cushion to handle claims and other obligations based on the volume of premiums it writes (Sani et al., 2023).

For this study, the Net Premiums to Policyholders' Surplus Ratio is defined as a solvency ratio that measures the extent to which an insurance company's policyholders' surplus supports the net premiums it has written, indicating the firm's ability to absorb losses and manage underwriting risks. This definition is well-suited to this study because it focuses on the insurer's ability to balance premium growth with financial stability, which is critical for maintaining liquidity and managing risks in the context of the Nigerian insurance industry. This adapted definition is the best fit for the study because it emphasizes the importance of maintaining a healthy surplus relative to the volume of premiums written. In the Nigerian context, where economic volatility and regulatory requirements are significant, this balance ensures that insurance firms can meet claims obligations while minimizing the risk of financial distress.

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Empirical Review

Operating Cashflow and Financial Performance

Laghari et al. (2023) investigated the impact of changes in cash flow measures and metrics on firm financial performance. The study uses generalized estimating equations (GEEs) methodology to analyze longitudinal data for a sample of 20288 listed Chinese non-financial firms from the period 2018:q2-2020:q1. The main advantage of GEEs method over other estimation techniques is its ability to robustly estimate the variances of regression coefficients for data samples that display high correlation between repeated measurements. The findings of the study show that the decline in cash flow measures and metrics brings significant positive improvements in the financial performance of firms. The empirical evidence suggests that performance improvement levers (i.e. cash flow measures and metrics) are more pronounced in low leverage firms, suggesting that changes in cash flow measures and metrics bring more positive changes in low leverage firms' financial performance relative to high leverage firms. The results hold after mitigating endogeneity based on the dynamic panel system generalized method of moments (GMM) and sensitivity analysis, considering the robustness of the main findings. The paper makes a significant contribution to the literature related to cash flow management and working capital management. Since this paper is among the few to empirically study how cash flow measures and metrics are related to firm performance from a dynamic standpoint, especially in the context of Chinese non-financial firms.

The study fills a gap in the literature by analyzing how changes in cash flow measures and metrics dynamically impact firm performance, particularly in the under-researched context of Chinese non-financial firms. The use of generalized estimating equations (GEEs) by the study is a major strength, as it effectively handles data with high correlation in repeated measures. This ensures that the results are reliable and well-suited for the longitudinal nature of the dataset. Also, the use of a substantial sample of 20,288 listed Chinese non-financial firms enhances the generalizability of the findings across various industries and organizational structures. Investigating Chinese non-financial firms during a critical period (2018:Q2–2020:Q1) provides a unique perspective, particularly given the global and regional economic challenges during this time, which include Covid-19. However, the period from 2018:Q2 to 2020:Q1 (approximately two years) is relatively short for assessing the long-term impacts of cash flow changes on financial performance, especially for firms operating in dynamic economies like China.

Mukdad (2023) explored measuring financial performance based on the operating cash flow of Emirates Insurance Company over ten years using financial ratios based on operating cash flow and analyze the impact of the operating cash flow margin ratio on return on equity and return on assets. The study employed secondary data sourced from the company's reports from 2010 to 2019. Several statistical measurements were used, such as the coefficient of variation, correlation and regression analysis. The findings revealed a moderately high level of instability due in large part to the sharp fluctuations witnessed over the years. In addition, a moderately strong correlation was seen between operating cash flow margins and the remainder of the cash flow ratios studied. Finally, regression analyses indicate a significant negative impact of operating

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cash flow margins on each of return on equity and return on assets. The study recommends that future research focus on devising effective cash flow management strategies to mitigate the risks and problems associated with low operating cash flow within the insurance industry and ensure long-term durability as a going concern.

By focusing on Emirates Insurance Company, the study provides in-depth insights into the financial performance of a specific insurance company over a long period, offering valuable lessons for similar firms. While a single-company analysis offers depth, it limits the generalizability of the findings to other firms or sectors within the insurance industry or other regions. Also, while multiple statistical tools were used, the study does not address potential endogeneity issues, which could bias the results. For example, other unobserved factors may influence both cash flow margins and financial performance metrics.'

Sarnawiah et al. (2022) examined the influence of operating cash flows and financing cash flows on financial performance through earnings quality as an intervening variable at the Indonesian telecommunication companies listed on the Indonesia Stock Exchange. The study was explanatory research, which used a quantitative approach to answer research problems. A sample of 88 samples of the financial data of telecommunications companies in Indonesia. Data collection was done through secondary data. Hypothesis testing uses the Structural Equation Model (SEM) analysis tool with the Smart PLS program. The findings of the study indicate that operating cash flow has a positive and significant direct effect on earnings quality, cash flow financing has a positive and significant direct effect on earnings quality, and operating cash flow has no direct significant effect on financial performance. financing cash flows do not have a direct significant effect on financial performance; earnings quality has a positive and significant direct effect on financial performance. Earnings quality is able to mediate operating cash flows and financing cash flows on the financial performance of telecommunications companies in Indonesia listed on the Indonesia Stock Exchange.

The study incorporates earnings quality as an intervening variable, providing a nuanced understanding of how operating and financing cash flows influence financial performance indirectly. This is a significant contribution as it highlights the mediating role of earnings quality. The use of the Structural Equation Model (SEM) with Smart PLS is an appropriate and robust method for testing complex relationships between variables and provides reliable results for this type of research. The study does not specify whether the financial data spans multiple years or is cross-sectional. If it is based on limited years, it may not capture the long-term effects of cash flow measures on financial performance.

John and Ohazuluike (2021) investigated the effect of cash flow on the financial performance of food and beverage firms in Nigeria. An ex-post facto research design was adopted. The study used secondary sources of data and listed food and beverage companies. The analytical techniques used for the study were a random panel regression model and descriptive statistics. It was revealed that cash from operating activities significantly affects profit for the year of food and beverage firms in Nigeria. Cash from financing activities has a significant effect on profit for

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the year of food and beverage firms in Nigeria, and cash from investment activities significantly affects profit for the year of food and beverage firms in Nigeria. The study recommended that food and beverage firms in Nigeria should pay out dividends as at when due and timely too, as it was found out that dividend paid has a significant effect on net profit margin.

The study examines all three key components of cash flow: operating activities, financing activities, and investing activities and their effects on financial performance. This comprehensive approach ensures that critical aspects of cash flow management are addressed. While the analysis of dividend policy is interesting, it appears to deviate from the primary objective of examining cash flows and financial performance. This secondary focus could dilute the study's central argument. The study does not provide detailed information on the sample size or the time frame of the data, which limits the transparency and replicability of the study.

Net Premium to Policyholder Surplus Ratio and Financial Performance

Fanny (2022) explored the influence of the insurance company's specific variables and macroeconomic factors on the financial performance of general insurance companies in Indonesia. The insurance company's specific variables are proxied by the claims ratio, premium growth ratio and risk-based-capital ratio, as well as macroeconomic variables by Gross Domestic Product (GDP) and inflation; financial performance is proxied by return on assets and return on equity. The research samples are 35 registered general insurance companies at the Financial Services Authority for the 2016-2019 periods. The research method is panel data regression analysis with a stages model estimation approach: Chow-test, Hausman-test and the Lagrange Multiplier-test to estimate the proper regression model of the Common Effect Model, Fixed Effect Model or Random Effect Model. The most fit regression model analysis to be selected is the Random Effect Model. The results show that the claims ratio affects return on assets and return on equity significantly, the risk-based-capital ratio affects return on assets significantly, but does not affect return on equity significantly. While the premium growth ratio, GDP and inflation do not affect return on assets and return on equity significantly. The broad line of business requires general insurance companies to be observant in managing claim expenses and maintaining solvency levels, especially investment in assets.

The study captures a holistic view of the determinants of financial performance by considering both firm-specific variables (like claims ratio, premium growth ratio, and risk-based-capital ratio) and macroeconomic factors (like GDP and inflation). The use of Chow-test, Hausman-test, and Lagrange Multiplier-test to select the most appropriate regression model demonstrates methodological rigour and ensures the suitability of the Random Effect Model. However, the study does not report conducting robustness checks (tests for heteroscedasticity, multicollinearity, or autocorrelation) to ensure the reliability and validity of the regression results.

Mohammad et al. (2021) analyzed the simultaneous and partial effects of Gross Premium, Claim Reserve, Premium Reserve, and Claim Payment on ROA of general insurance companies in the Indonesian Stock Exchange. The samples used in the study were as many as 10 general insurance

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companies listed on the Indonesia Stock Exchange. Data was processed through panel regression, resulting in Gross Premium having a positive and significant effect on ROA. Claims Reserves have a negative and significant effect on ROA. Premium Reserves have a positive but insignificant effect on ROA. Claim payments have a negative and significant effect on ROA.

By considering multiple independent variables, the study provides a more comprehensive understanding of factors influencing Return on Assets (ROA), the chosen proxy for financial performance. The study does not specify the time frame of the data used, making it unclear whether the findings are representative of long-term trends or specific to a certain period. The study reports that Premium Reserve has a positive but insignificant effect on ROA, but does not explain why this might be the case or explore potential reasons.

Ono et al. (2019) examined and analysed the influence of Net Premium Growth, Claim Ratio, and Risk-Based Capital affect the Financial Performance of Line Insurance Companies. The study population was insurance companies listed on the Indonesia Stock Exchange from 2014-2018. The sample used in the study was 17 life insurance companies. Net Premium Growth and Claim Ratio do not significantly influence financial performance. Risk-based capital has a negative effect on the financial performance of life insurance, namely ROA. Simultaneously, the three ratios of Net Premium Growth, Claim Ratio and Risk-Based Capital affect the financial performance of life insurance companies that are proxied by ROA. The study implies that life insurance companies are expected to be able to maintain the stability of premium growth every year to be above the normal limit of 23%.

The study investigates both individual (partial) and collective (simultaneous) effects of the variables on ROA, giving a comprehensive understanding of the relationships. The study finds that Net Premium Growth and Claim Ratio do not significantly influence financial performance, but it does not explore or explain the underlying reasons for these findings. For instance: Were there industry-specific or macroeconomic factors at play? Or could the insignificant effects be due to data quality issues or variability among the sampled companies? The study's recommendation to maintain premium growth above 23% lacks sufficient empirical support or justification. Why is 23% the threshold, and how was this figure determined? Does it apply universally across the industry or only to the sampled companies?

Theoretical Framework

Capital Adequacy Theory

The concept of capital adequacy has its roots primarily in banking regulation, but it is equally pertinent to insurance firms. While there is no single “founding” author of the Capital Adequacy Theory, the underpinning logic can be traced to early work on the regulation of financial institutions, specifically the idea that financial firms must hold a buffer of capital (equity plus reserves) to absorb unexpected losses, thereby protecting policyholders, depositors, and the public interest. For example, regulators have long emphasized that capital serves as a buffer against losses and thus underpins the stability of institutions. In insurance contexts, authors such

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as Lewis (1998) and Ediz et al. (1998) recognised the importance of capital adequacy from an insurance perspective: "capital requirements are among the greatest weapons against insolvency, but the capital to hold for gauging insolvency should be determined beyond statutory requirement" (Akpan et al., 2020). Thus, Capital Adequacy Theory may be defined as the theoretical framework that emphasises the need for insurers (and more broadly, financial institutions) to hold adequate surplus capital in relation to their risk exposures to maintain solvency, protect claimants/policyholders, and support sustained financial performance.

At its core, the theory posits that capital provides a cushion that absorbs unexpected losses arising from underwriting, investment, operational or market risk. The nexus can be summarised as follows:

i. Risk exposure: Insurers underwrite risk (claims, underwriting losses, catastrophes), invest assets (market risk, credit risk) and incur operational risks.
ii. Capital buffer: Policyholders' surplus (equity + reserves) acts as a buffer against those risks. The larger the buffer relative to risk exposures, the better the insurer can absorb losses.
iii. Financial performance and solvency impact: Holding adequate surplus enhances the firm's ability to pay claims, reduces insolvency risk, and supports trust with policyholders and investors, which in turn can improve financial performance metrics such as Return on Assets (ROA) or Return on Equity (ROE).
iv. Underwriting/leverage discipline: The theory further suggests that firms should align premiums written (and other exposures) with their surplus base. Over-leveraging (writing too many premiums relative to surplus) undermines the buffer and threatens performance.

Hence, the nexus between surplus capital, underwriting intensity, risk absorption, and performance lies at the heart of the Capital Adequacy Theory.

Support for the theory is found in both regulatory and academic literature. The role of capital as a buffer against financial distress is emphasised by regulators: "Policymakers and commentators often begin a discussion of bank capital adequacy requirements by citing their role in providing a buffer against bank losses … and creating a disincentive to excessive risk taking" (Admati et al., 2013). In an insurance context, Famous et al. (2025) show that higher capital adequacy ratios are positively associated with profitability among listed Nigerian insurance firms. Empirical work in Nigeria, specifically Akpan et al. (2020), identified that deposit structure (premium base) and firm size have a positive and significant influence on insurance capital adequacy, consistent with the theory's tenet that stronger capital and a larger base support capacity. These support the notion that insurers with stronger capital buffers tend to perform better financially, consistent with the theory.

Despite its appeal, Capital Adequacy Theory is not without critique. One line of criticism argues that higher capital requirements may reduce firms' growth potential. For example, stricter capital regulation can impose costs by reducing the ability to create liquidity and accept new business. The critique states: "Capital adequacy regulation can impose an important cost because it

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reduces the ability of banks (and by extension insurers) to create liquidity by accepting deposits or underwriting" (Admati et al., 2013). Another criticism is that simply holding capital is not sufficient unless combined with good risk management and governance; capital without efficient operations may not guarantee performance or solvency. A further critique is that capital adequacy ratios often rely on historical risk weights or assumptions, which may misestimate real risk exposures, thereby giving a false sense of adequacy (Thomas et al., 2013). Hence, while the theory emphasises capital buffers, critics argue that in practice the trade-offs (costs, growth constraints) and measurement limitations should be acknowledged.

In Nigeria, the deposit insurance and banking parallels aside, the insurance sector has increasingly emphasised capital adequacy. The National Insurance Commission (NAICOM) has raised minimum capital requirements for insurance firms significantly, for non-life insurers to ₦15 billion and life insurers to ₦10 billion under the 2025 Reform Act (Oni, 2025). Empirical Nigerian insurance-sector studies also highlight that capital adequacy remains a persistent challenge, and that firms with stronger capital bases tend to settle claims more effectively and have better financial performance. For example, a Nigerian study of listed insurers found that capital adequacy significantly influences claims settlement management and performance (Oyerinde et al., 2025). Thus, the theoretical logic of Capital Adequacy Theory resonates strongly in the Nigerian insurance context: insurers with stronger surplus relative to underwriting risk (including net premiums written) are better positioned to absorb shocks, maintain operations and deliver sustainable returns.

The capital adequacy theory aligns with this study as the net premiums to policyholders' surplus ratio directly links to the underwriting intensity relative to the capital buffer (surplus). A lower ratio implies stronger capital adequacy (less pressure on surplus), while a high ratio suggests a weaker buffer and higher risk. This fits with the theory's assertion that adequate surplus is key for maintaining performance and stability. The operating cash-flow ratio, although not strictly a capital metric, is related because strong cash flows support capital formation, keep reserves and enhance the firm's capacity to absorb losses. Thus, while the theory emphasises capital buffer, in the model it bridges with liquidity (cash-flow), which supports the buffer's effectiveness in driving performance (ROA). Therefore, capital adequacy theory provides a conceptual backbone: firms with prudent underwriting (moderate premiums and surplus) and strong operational cash flow (supporting surplus build-up) should, according to the theory, exhibit better financial performance. The empirical focus on ROA in the Nigerian listed insurance firms context is directly compatible with the theory's implication that capital adequacy influences performance.

Methodology

This study adopts an ex-post facto research design. This is because the phenomenon observed in the study has already taken place. Ex post facto research is ideal for conducting social research when it is not possible or acceptable to manipulate the characteristics of human participants (Kerlinger, 1986). The population of this study comprises all twenty-three (23) insurance companies listed on the Nigerian Exchange floor.

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The probability sampling method was adopted to determine the sample size. This research adopted a simple random sampling method to pick 6 listed insurance companies based on the availability of data for the period under review, especially the availability of 2024 financial reports. They are Linkage Assurance Plc, AIICO Insurance Plc (AIICO), Mutual Benefits Assurance Plc, African Alliance Plc, Coronation Insurance Plc and Royal Exchange Plc. The six (6) listed insurance companies represent the sample size for this study, for a ten (10) year period spanning from 2015 to 2024. The ten (10) year period is chosen to have fairly, reasonable and reliable up-to-date financial data. This study made use of panel secondary data precisely. The data were sourced from the annual reports and accounts of the selected listed insurance companies.

To establish the relationship between the operating cash flow ratio, net premiums to policyholders' surplus ratio and return on assets for selected listed insurance companies, the study employed panel regression analysis. The panel regression model is formulated below:

$ROA_{it} = \beta_0 + \beta_1 OCFR_{it} + \beta_2 NPPS_{it} + \varepsilon_{it}$

Where:

ROA_{it} = Return on Assets in *i* year *t*

β_0 = Coefficient of the constant variable

$OCFR_{it}$ = Operating Cash Flow Ratio in *i* year *t*

$NPPS_{it}$ = Net Premiums to Policyholders' Surplus Ratio in *i* year *t*

β_1, β_2=Regression coefficients of independent variables

ε_i= error term.

The study employed descriptive statistics to know the characteristics of the variables, Pearson product-moment correlation to know the relationship among the variables and panel regression technique to test relationships among theoretically related variables and estimate the effects of one variable on the other with the aid of a statistical package. To ensure the reliability of results, the study carried out some diagnostic tests, like Normality, Autocorrelation and Heteroskedasticity. The essence is to guard against spuriousness as observed by Granger and Newbold (1974) and Gujarati and Porter (2009), that the presence of these factors usually introduces bias in the OLS estimators and thus, any conclusion drawn from the results will be spurious.

The model is considered appropriate because the major purpose of regression is: first, the possibility of determining the independent variables that can best explain the variation of the dependent variable. Second, recognizing whether the independent variables are still significant while the other independent variables are controlled or held constant (Omar, 2007).

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Data Analysis and Discussion

Table 1: Descriptive Statistics

	ROA	OCFR	NPPS
Mean	0.034288	0.389317	1.621059
Maximum	0.116111	0.954615	3.276982
Minimum	-0.051780	-0.105620	0.300000
Std. Dev.	0.039673	0.247036	0.650085
Jarque-Bera	1.167276	1.294321	2.223196
Probability	0.557865	0.523530	0.329033
Observations	60	60	60

Source: Eview Version 10 Output

The table above revealed the data used in the study, with the return on assets having a mean value of 0.034288, while the deviation from the mean (standard deviation) was 0.039673. The probability of the Jarque-Bera is about 0.557865, which shows that the return on assets was normally distributed because the probability value was greater than 0.05. The maximum value for return on assets as of the period of this study was 0.116111, which means that the returns generated from the usage of assets were not more than 0.12, while the minimum return on assets was 0.05.

Also, the operating cash flow ratio had a mean value of 0.389317 while the deviation from the mean (standard deviation) was 0.247036. This means that the operating cash flow ratio was normally distributed because the standard deviation value was lower than the mean value, which was also supported by the Jarque-Bera probability of 0.523530, which is greater than 0.05. The maximum operating cash flow ratio as of the period of this study was 0.954615, which means that the operating cash flow ratio was not more than 0.95, while the minimum operating cash flow ratio was 0.11.

In a similar vein, the net premiums to policyholders' surplus ratio showed a mean value of 1.621059 and a standard deviation of 0.650085. This means that the net premiums to policyholders' surplus ratio was normally distributed because the standard deviation value was lower than the mean value, which was also supported by the Jarque-Bera probability of 0.329033, which is greater than 0.05. The maximum net premiums to policyholders' surplus ratio as of the period of this study was 3.276982, which means that the net premiums to policyholders' surplus ratio was not more than 3.28, while the minimum net premiums to policyholders' surplus ratio was 0.3.

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Table 2: Correlation Result

	ROA	OCFR	NPPS
ROA	1	0.467878	-0.325438
OCFR	0.467878	1	-0.027272
NPPS	-0.325438	-0.027272	1

Source: Eview Version 10 Output

The table above explains the relationship between operating cash flow ratio, net premiums to policyholders' surplus ratio and financial performance of listed insurance companies in Nigeria where the operating cash flow ratio was correlated with return on assets to the extent of 0.467878 (47%), While the net premiums to policyholders' surplus ratio was correlated with return on assets to the extent of -0325438 (33%).

Table 3: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.326765	2	0.8493

Source: Eview Version 10 Output

To choose between fixed and random effect models, the Hausman specification model was run. In a situation where the chi-square value was less than 5%, the fixed effect model would be more appropriate, but where the chi-square value was greater than 5%, the random effect model would be more appropriate. In this case, the chi-square value was 0.8493, which was greater than 5%. This means that the random effect model was appropriate for the study.

Table 4: Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035158	0.014953	2.351306	0.0222
OCFR	0.076330	0.020114	3.794814	0.0004
NPPS	-0.018869	0.007009	-2.692088	0.0093

Weighted Statistics

R-squared	0.285007	Mean dependent var	0.027044
Adjusted R-squared	0.259920	S.D. dependent var	0.038132
S.E. of regression	0.032804	Sum squared resid	0.061339
F-statistic	11.36053	Durbin-Watson stat	1.857601
Prob(F-statistic)	0.000070		

Source: Eview Version 10 Output

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The operating cash flow ratio had a significant effect on financial performance because the p-value was 0.0004, which was less than 5%, signifying that an increase in the operating cash flow ratio will increase financial performance to the extent of 0.076330.

Also, the net premiums to policyholders' surplus ratio had a significant effect on financial performance because the p-value was 0.0093, which was lower than 5%. This signified that an increase in the net premiums to policyholders' surplus ratio will decrease financial performance to the extent of 0.018869.

The coefficient of determination (R^2) is 0.285007, which means that operating cash flow and net premiums to policyholders' surplus ratios used in this study explained variation in financial performance to the extent of 29% while the remaining variation was explained by other variables not captured in the model. The model is a good fit with an F-statistics p-value of 0.0000.

The R-squared of 29% is within the acceptable threshold for social science research as suggested by Ozili (2023), that an R-squared that is between 10% and 50% is acceptable in social science research when some or most of the explanatory variables are statistically significant. This is because the goal of most social science research modelling is not to predict human behaviour. Rather, the goal is often to assess whether specific predictors or explanatory variables have a significant effect on the dependent variable.

Table 5: Post-Estimation Test

Description	**Probability values**
Normality Test:	
Jarque-Bera	1.546139
P-value:	0.461594
Serial Correlation	
F-statistics	1.414839
P-value	0.2517
Heteroskadasticity Test	
F-statistics	0.503077
P-value	0.6073

Source: Researcher's computation, 2025

Table 5 above indicates that the data are symmetry and asymptotic tails, denoting that the data are normal. This is corroborated by the Jarque-Berra Statistic of 1.546139 and its corresponding P-value of 0.461594, which is greater than the p-value of 0.05.

The Breusch-Godfrey Serial Correlation LM Test indicates that there is no autocorrelation. This is given by the F-statistic of 1.414839 and its corresponding P-value of 0.2517. The Breusch-Pagan Test of Heteroskedasticity with F-statistic 0.503077 and its corresponding P-value of 0.6073 indicates that there is no problem with heteroskedasticity.

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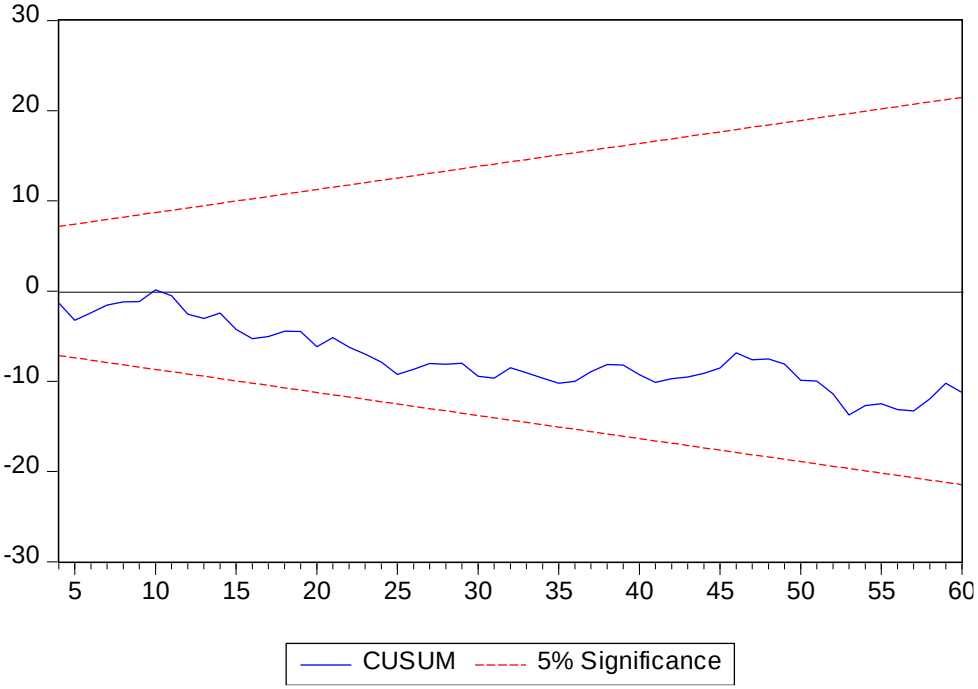
Table 6: Stability Test



Source: Eview Version 10 Output

The blue CUSUM line lies entirely within the two red dashed lines (5% significance limits) from the beginning to the end of the sample period. This indicates no evidence of structural instability in the regression model. The parameters (coefficients of the independent variables: operating cash flow ratio and net premiums to policyholders' surplus ratio) appear to be stable throughout the sample period (2015–2024).

Conclusion and Recommendations

Based on the findings of this research, the study concluded that the operating cash flow ratio has a significant effect on the financial performance of listed insurance companies in Nigeria. This indicates that insurers that convert operating activity into cash more efficiently tend to achieve higher asset returns. In practical terms, operating cash flow ratio measures the firm's ability to turn premium collections and underwriting operations into liquid resources that meet short-term obligations (claims, commissions, operating expenses) without resorting to costly external finance. A higher operating cash flow ratio therefore, supports smoother claims settlement, timely reinsurance placement, and selective investment, all of which contribute to improved returns on the asset base.

The empirical result that the net premiums to policyholders' surplus ratio significantly affects financial performance indicates that underwriting intensity relative to the insurer's capital buffer materially influences insurers' returns on assets. In plain terms, when insurers write a large volume of net premiums relative to their policyholders' surplus, they increase exposure to

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underwriting losses and reduce their capacity to absorb adverse claim shocks. This, in turn, tends to depress net earnings on the asset base and reduces ROA; conversely, a lower net premiums to policyholders' surplus ratio (more surplus per unit of premiums) supports underwriting resilience and better financial performance.

This study recommends that Nigerian insurance companies should move beyond relying solely on profit and loss statements and integrate operating cash flow ratio dashboards into their internal performance management systems. Regular monthly or quarterly cash flow monitoring will help management detect early warning signals of liquidity stress, especially in underwriting and claims operations. This can be achieved by embedding automated cash flow analytics modules in existing accounting and enterprise resource planning systems. Boards should design performance evaluation systems where the sustainability of operating cash flows, not just reported profits, influences managerial bonuses and promotions. This will discourage aggressive premium booking without corresponding premium collections or prudent claims management. Aligning incentives with strong positive cash flow will reinforce financial discipline and improve long-term return on assets.

Nigerian insurance companies should develop and enforce internal underwriting capacity limits tied directly to their policyholders' surplus. This ensures that the volume of net premiums written is proportionate to available capital, preserving solvency and profitability. Boards should periodically review these limits using actuarial models to maintain a balanced net premiums to policyholders' surplus ratio, ideally within a range that supports growth without eroding financial stability. Firms should maintain counter-cyclical capital buffers to absorb fluctuations in underwriting results and claims experience. During profitable periods, insurers should retain a portion of earnings to strengthen surplus accounts. This strategy enhances resilience during claim-heavy or recessionary years and helps moderate the net premiums to policyholders' surplus ratio when premium volumes rise sharply.

References

Adesina, O.D. & Adewumi, A.A. (2022). The Effect of liquidity management on the Financial Performance of selected Deposit Money Banks in Nigeria. *Fuoye Journal of Accounting and Management*, 5(2): 52-63.

Admati, A. R., DeMarzo, P., Hellwig, M., & Pfleiderer, P. (2013). *Fallacies, irrelevant facts, and myths in the discussion of capital adequacy regulation*. Federal Reserve Bank of Minneapolis.

Akpan, D. C., Effiong, S. T., Odudoh, S. U., & Edemeka, U. S. (2024). Empirical analysis of the effect of cash flow management on the financial performance of listed consumer goods firms in Nigeria. *International Journal of Accounting Intelligence* (IJAI), 8(3).

Akpan, S. S., Evbayiro-Osagie, E.I., & Mojekwu, J.N. (2020). Modelling Internal Determinants of Capital Adequacy in Insurance Companies. *The Nigerian Journal of Risk and Insurance*, 10(1), 2020

Almakura, F.A., Shiaki, T.K., Gambo, N. & Muhammad, R.A. (2024). Effect of Liquidity Management on the Financial Performance of Nigerian Oil and Gas Firms. *International Journal of Business and Management Review*, 12(2): 28-44

Arnold, G. (2021). *Corporate Financial Management*. Pearson.

Bala, A. (2022). *Nigeria's insurers' capacity to underwrite new policies is decreasing*. https://moneycentral.com.ng/insurance/article/nigeria-insurers-capacity-to-underwrite-new-policies-decreasing/

Bala, A. (2023). *Insurers' premium incomes grow, but policyholders' surplus lags.* https://moneycentral.com.ng/exclusive/article/insurers-capacity-to-underwrite-new-policies-decreasing/

Brealey, R. A., Myers, S. C., & Allen, F. (2019). *Principles of Corporate Finance*. McGraw-Hill Education.

Burke, Q. L. (2017). Value Relevance of Banks' Cash Flows from Operations. *Advances in Accounting*, 39(1): 60-78

Dumbor, N., Nwite, S. C., & Edike, J. B. O. (2024). Firm-level characteristics and financial performance: A study of listed insurance firms in Nigeria. *Advance Journal of Management, Accounting and Finance*, 5(6).

Famous, L., Edike, J. B., & Great, E. T. (2025). Impact of capital adequacy on the financial performance of quoted insurance firms in Nigeria. *Advance Journal of Management, Accounting and Finance*, 10(3), March 2025

Fanny, S. (2022). Determinant of Financial Performance for General Insurance Companies in Indonesia. *Jurnal Ecodemica: Jurnal Ekonomi, Manajemen, dan Bisnis*, 6(1), http://ejournal.bsi.ac.id/ejurnal/index.php/ecodemica

Fraser, L. M., & Ormiston, A. (2022). *Understanding Financial Statements.* Pearson.

Granger, C.W.J. & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of Econometrics*, 2(2): 111-120

Gujarati, D. & Porter, D. (2009). *Basic Econometrics*, 5th edition, New York: McGraw-Hill.

Guo, L. & Wang, Z. (2019). Ratio Analysis of J Sainsbury Plc Financial Performance between 2015 and 2018 in Comparison with Tesco and Morrisons. *American Journal of Industrial and Business Management*, 9, 325-341. https://doi.org/10.4236/ajibm.2019.92022

James, M. (2021). *Kenney Rule*. https://www.investopedia.com/terms/k/kenney-rule.asp

John, O. & Ohazuluike, M. T. (2021). Effect of cash flow on the financial performance of food and beverage firms in Nigeria. *European Journal of Accounting, Finance and Investment*, 7(5); May -2021

Kerlinger, F. (1986). *Foundation of behavioural research*, (3rd ed.) New York: Holt, Rinehart, and Winston.

Laghari F, Ahmed F, & Lo´pez Garcı´a MdlN (2023) Cash flow management and its effect on firm performance: Empirical evidence on non-financial firms of China. *PLoS ONE*, 18(6): e0287135. https://doi.org/10.1371/journal. pone.028713

Lewis, S. (1998). *Insurance risk and capital adequacy*. (cited in Oyerinde et al., 2020).

Lufriansyah, K. (2019). Ratio of Cash Flow as A Measure in Assessing the Financial Performance of Cigarette Company. *Proceeding of the 3rd International Conference on Accounting, Business & Economics (UII-ICABE 2019)*, 3(5)

Menik, I. & Ermita, P. (2021). Effect of current ratio, net profit margin, debt equity ratio, return on equity on financial distress. *American International Journal of Business Management (AIJBM)*, 4(10): 33-41

Mohammad, J., Bambang, P., & Endang, E. M. (2021). Effect of Gross Premiums, Claims Reserves, Premium Reserves, and Payment of Claims to ROA (A Survey of General Insurance Companies is Recorded in IDX*). International Journal of Economics, Management, Business and Social Science (IJEMBIS)* 1(1), January 2021

Moses, A. O., Malgit, A. A., Samuel, M. N. & Levi, M. (2024). Current Ratio and Financial Performance of Agricultural Firms Listed at the Nairobi Securities Exchange, Kenya. *Journal of Economics, Management and Trade*, 30(2): 13-20, 2024

Mukdad, I. (2023). Measuring Financial Performance Based on Operating Cash Flow. *The International Journal of Business Management and Technology*, 7(2) March-April 2023

Omar, F. (2007). A Design Science Research Methodology for Information Systems Research. *Journal of Management Information Systems*, 24(3): 45–77.

Oni, A. (2025). *NAICOM increases capital requirements for insurance companies by 400%*. https://www.thecable.ng/naicom-increases-capital-requirements-for-insurance-companies-by-400/

Ono, T., Preztika, A. A., & Rininda, A. (2019). The Influence of Net Premium Growth, Claim Ratio and Risk-Based Capital on the Financial Performance of Life Insurance Companies. *Advances in Economics, Business and Management Research*, 127(2019)

Onuaguluchi, F. I. & Okwo, I. M. (2022). Liquidity management and gross earnings of insurance firms in Nigeria. *European Journal of Accounting, Auditing and Finance Research (EJAAFR)*, 10(12):1-13, 2022

Onuaguluchi, F. I., & Okwo, I. M. (2022). Effect of liquidity on the financial performance of insurance firms in Nigeria. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 15(1): 40-45.

Oyerinde, M. T., Aduloju, S. A., & Fadun, S. O. (2025). Capital Adequacy and Claims Settlement Management in Listed Insurance Companies in Nigeria. *International Journal of Entrepreneurship, Management Social Sciences*, 2(1)

Oyerinde, T. O., et al. (2020). Modelling internal determinants of capital adequacy in Nigerian insurance companies. *The Nigerian Journal of Risk and Insurance, 10*(1).

Ozili, P. K. (2023). The acceptable R-square in empirical modelling for social science research. *MPRA Paper No. 115769*. Online at https://mpra.ub.uni-muenchen.de/115769/.

Pramusinta, A. & Aryani, Y. A. (2023). The effect of growth of net premium, claim ratio, RBC, and retention ratio on the financial performance of insurance companies in the ASEAN. *Journal of Economics, Finance and Management Studies*, 6(1):189-199. DOI: 10.47191/jefms/v6-i1-22 Region

Sani, A. B., Abdulsalam, N. K. & Yunusa, S. M. (2023). Firms' liquidity and financial performance of listed insurance companies in Nigeria. *ICAN Proceedings of the 7th Annual International Academic Conference on Accounting and Finance Disruptive Technology: Accounting Practices, Financial and Sustainability Reporting*.

Sarnawiah, S. A., Nuraeni, K., & Andi, R. (2022). The Influence of Operating Cash Flows and Financing Cash Flows on Financial Performance Through Earnings Quality as an

Vol. 9, No.12; 2025

ISSN: 2456-7760

Intervening Variable at the Indonesian Telecommunications Company Listed on the Indonesia Stock Exchange. *Journal of Research in Business and Management*, 10(12): 141-152

Showket, A. D. & Ishfaq, A. T. (2015). A comparative analysis of financial performance of public and private non life insurers in India. *International Journal of Management (IJM)*, 6(1):507-526

Thomas, L. H., Neil, R. M. & Xuhao, P. (2013). *The Failure of Risk-Based Capital Regulation*. Mercatus on Policy, Mercatus Centre at George Mason University

Udenwa, T. A., Suberu, A. A. & Jacob, Z. (2023). Effect of liquidity risk on the financial performance of quoted Deposit Money Banks in Nigeria. *International Journal of Economics, Business and Management Research*, 7(7): 54-69.

Yegon, C. K., Muturi, W., & Oluoch, O. (2022). Mediating effect of operating cash flow on the relationship between working capital and financial performance of tea firms in Kenya. *International Journal of Finance*, 2(2).