Effect of Liquidity Management on the Financial Performance of Listed Insurance Firms in Nigeria

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Abstract
The study examined the effect of liquidity management on the financial performance of listed insurance firms in Nigeria using data collected from audited financial statements of thirteen (20) sampled listed insurance firms in Nigeria for the period of 2018 to 2024. Ex-post facto research design was employed and the fixed effects estimate was used for testing hypotheses after the Hausman test was run. Financial performance was proxied by return on asset (ROA) and Tobins Q (TBQ) while liquidity management was proxy by Claims Ratio (CMR) and Premium Growth Rate (PGR), and Firm Size (FSZ) and Gross Domestic Product (GDP) are the control variables. The study found that Claims Ratio (CMR) has significant negative effect on the financial performance of listed insurance firms in Nigeria while Premium Growth Rate (PGR) has significant positive effect on the financial performance of listed insurance firms in Nigeria measured by ROA and TBQ. However, the study recommends that insurance firms in Nigeria should focus on streamlining claims processing and reducing settlement times while implementing effective risk management strategies to mitigate potential risks associated with premium growth.

Keywords: *Claims Ratio, firm size, liquidity management, premium growth rate.*

1. Introduction

Insurance market contributed enormously in the financial services industry of almost all developed and developing countries especially in the areas of economic growth, allocation of efficient resources, reduction of transaction costs, generating liquidity and stimulation of investments and elimination of financial losses. Also, Insurance industry plays a major role in the society as the operation of the industry can set energy for other industries and development of an economy (Abate, 2012). Insurance companies shares the function of banks and other financial institutions beside to the role of risk minimizing by pooling similar risk exposures (Daare, 2016).

Firm liquidity is a vital financial indicator that shows whether a company has the ability to meet its short-term obligations or not without suffering undesirable losses. It also plays an important role in the effective operation of a business. However, the issue of liquidity is salient to the existence of any organization especially the insurance firms.

The ability of an organization's management to effectively distribute and allocate resources determines its financial performance (Ramlan, 2020). Firms are exposed to liquidity risks and difficulties that could impair financial performance because they must make difficult decisions between liquidity management and financial performance (Dilpreet, 2018). However, liquidity Management has been an area of concern to the management of firms because of the uncertain nature of the future. Efficient liquidity management ensures a tradeoff between liquidity and profitability (Bhunia & Khan, 2011). Liquidity management aims to ensure firms discharge financial commitment as and when due (Ebhodaghe, 2015).

Looking at the relationship between liquidity and profitability, Azeez (2020) explained that while firms with high levels of liquidity may have low levels of liquidity risk, keeping a sizable portion of assets in liquid form may restrict investment in profitable ventures due to a lack of capital, which would lower profitability. On the other hand, firms that only concentrate on profitable endeavors might find it difficult to manage their daily operations because of a lack of idle capital (Azeez, 2020). Similarly, Effiong and Ejabu (2020) advised against keeping too much cash on hand because it doesn't bring in any revenue or profits for the company. These claims imply a trade-off between profitability and liquidity, necessitating that a well-run business strike a careful balance between insufficient and excessive liquidity.

Consequently, Okpala et al. (2019) define liquidity management as the strategic planning and control required to ensure that an organization has adequate liquid assets. In a nutshell, liquidity management helps businesses avoid running out of cash to meet urgent needs. Strong liquidity management should be prioritized by businesses to prevent insolvency and the potential for bankruptcy, according to Jepkorir et al. (2019), who emphasized the significance of effective liquidity management to a company's success and financial survival.

Gross written premium is the total amount of money an insurer receives from clients in return for insurance policies. It is the total of all premiums paid, irrespective of the level of risk assumed by the insurer. However, looking at the gross premiums written of insurance firms in Nigeria, the combined gross premiums written by 16 insurance companies that have released audited financial statements for 2018 increased by 15.79 percent to N345.16 billion from N298.0 billion in December 2017 (Augie, 2019). Also, in 2018, Nigeria's gross written premiums reached N400 billion, compared to N363 billion in 2017. The volume of business written by the industry operators increased by 10%, but below the decade - old target of N1 trillion (Nwoji, 2019). Additionally, insurance companies earned N335.04 billion in gross premium income during the period under review, compared to N267.66 billion in 2021 (Ukpe, 2023). Furthermore, despite the economic challenges, Nigeria's insurance sector's gross written premiums surpassed 1 trillion naira in 2023 from N844.5 billion in 2022, a new report by EnterpriseNGR shows (Adebayo, 2022). However, the industry's financial performance has been subpar despite the growth in assets and premium collection, and issues have been brought up, particularly in relation to the high expense ratio (Coronation Merchant Bank, 2019). Profit is low when the expense ratio is high.

Furthermore, insurance business in Nigeria in the past has had its good, bad and ugly moments. One of such bad and ugly moments that have had significant impact on the image and perception of the industry is the issue of claims payment (Popoola, 2023). Nonpayment of claims as at when due reduces the confidence of the policyholders which in turn makes it difficult to attract new

policyholders, thus producing a negative influence on the profitability of the insurance company (Diacon, 1983). Claims from previous years usually surface in succeeding years, which makes the insurance businesses challenging and the attainment of profitability very difficult. The Nigerian insurance industry has witnessed rising claims from policyholders. In 2017, the reported claims in the financial statements of 22 major leading insurance companies showed claims expenses to be over N40 billion as against N34.1 billion in the previous year. This is a 17.3 percent growth, which when compared with the 8.76 percent growth in premium income, recorded in the same periods, calls for concern (Onuoha, 2017). However, the rising claims was coming against sluggish growth in premium income as Gross Premium written recorded marginal increase at N118.55billion against N109 billion recorded in 2016 (Onuoha, 2017). This means that while claims expenses rose by a significant 17.3 percent, premium income was growing at less momentum of 8.76 percent.

In view of this, the main objective of this study is to examine the effect of liquidity management on the financial performance of listed insurance firms in Nigeria.

Other specific objectives are:

1. To exam the effect of claim ratio on the financial performance of listed insurance firms in Nigeria.
2. To exam the effect of Premium growth rate on the financial performance of listed insurance firms in Nigeria.

Based on the above objectives, the following null hypotheses are formulated to guide the study**:**

$H0_1$: There is no significant effect of claim ratio on the financial performance of listed insurance firms in Nigeria

$H0_2$: There is no significant effect of Premium growth rate on the financial performance of listed insurance firms in Nigeria.

2.1 Concept of Financial Performance

Performance is defined as a firm's ability to use its resources efficiently and effectively in order to achieve its goals (Davis, et al., 2000). Also, Verboncu and Zalman (2005) see performance as a particular result obtained in management, economics, marketing etc. that express elements of competitiveness, efficiency and effectiveness of the organization and its procedural and structural components. According to Shoukat and Nadeem (2014), financial performance is a measure of how well a firm manages its assets to generate incomes. Also, Heremans (2007) defines financial performance as the use of financial measures to determine the degree of objectives realization, making financial resources available, and supporting the bank with opportunities for investment.

However, performance measures that are often used by both practitioners and academics are classified into traditional measures, economic measures and market-based measures (ECB, 2010). The traditional measures of performance broadly used are the return on equity (ROE), return on assets (ROA), or Cost-to-Income ratio (Grove, et al., 2011). Moreover, the net interest margin (NIM) is also considered as a traditional measure of performance (ECB, 2010). The economic measures of performance emphasize firm efficiency as one of the fundamental elements of performance, but they require high amount of information (ECB, 2010). The most used indicator is known as Economic Value Added. Finally, the market-based measures of performance show how the activity of firm is valued by the capital markets in a particular period of time in relation to its estimated economic value. The market-based measures of performance is categorized as long

term and it includes Tobin's Q, Market Value Added (MVA), Market-to-Book Value (MTBV), Price-Earnings Ratio (PE), Dividend Yield (DY) (Al-Matari, et al., 2014). The market-based measure is characterized as forward-looking and it reflects the expectations of the shareholders concerning the firm's future performance, which has its basis on previous or current performance (Wahla, et al., 2012; Ganguli & Agrawal, 2009).
Therefore, the study used Return on Asset (ROA), an accounting-based measure of performance and Tobin's Q, a market-based measure of performance.

2.2 Concept of Liquidity and Liquidity Management

Pandey (2005) sees liquidity as the company's ability to use current assets to pay short-term liabilities past due. Also, Kimathi et al. (2015) sees liquidity as the company's ability to pay short-term liabilities, defined as the ratio between current assets and current liabilities. However, companies with high liquidity will have higher liabilities due to their ability to endure short-term debts, indicating a positive correlation between liquidity and debt level.
Biety (2003) defines liquidity management as the ease and speed with which an asset is sold and still realizes fair price. Also, Liquidity management is the routine process of managing a firm's investment in current assets, current liabilities, short-term borrowings and short-term investment of surplus cash, which affect the profitability of the firm. Also, According to Akinwumi, et al. (2017), liquidity management encompasses efficient and effective planning and organization of the firm's assets which will enhance its liquidity and profitability at the minimum cost possible. Liquidity is the availability of cash that enables companies to take care of their daily financial activities (Akter & Mahmud, 2014). However, this study used claims ratio, and premium growth rate as proxies for liquidity management. They are explained below.

2.2.1 Claims Ratio

The claim ratio is something very specific for the insurance business. It is claims payable as a percentage of premium income. This is also known as claims loss ratio (Pietersz, 2016.). The claims ratio measures the number of claims in a period and divides that by the earned premium for the same period. Insurance is the business of managing liquidity risks and it is essential to have a thorough understanding of the incurred claims ratio. If the value is higher than expected or established norms, then further investigation is required to figure out why that is. It is important to investigate if there is a threat of an insurance fraud. If the ratio is lower than expected, it could indicate irrelevant products or difficulties in claiming, possibly affecting customer satisfaction, and obviously requires more investigation. (Klipfolio, 2016).

2.2.2 Premium Growth Rate

Premium growth as measured by percentage change in total assets or sometimes as percentage change in premium of insurance companies (Abate, 2012). Premium growth rate measures the rate of market penetration (Ahmed et al, 2011). The premium growth ratio can be measured by comparing the changes in net premium with the previous net premium. The ideal number for the premium growth ratio is at least 23%. When the corporate ratio is 23% or more, it can be said that the company is in a healthy and normal state.

2.2.3 Empirical Review

Hussaini et al. (2024) examined the effect of liquidity management on the financial performance of quoted Deposit Money Banks in Nigeria using Ex-post Facto research design. The study

concentrated on the period from 2011 to 2020. The data was collected from the individual financial reports of the listed twelve (12) deposit money banks in Nigeria. With the aid of ordinary least square regression analysis, the panel data was analyzed and the result shows that operating cost ratio and capital adequacy ratio had a positive significant effect on return on assets, while current ratio had a negative insignificant effect on return on assets.

Naik and Vikas (2024) examined the effect of expense ratios on mutual fund performance in the Indian market, focusing on large-cap mutual funds. The study utilized historical data from 2019 to 2023 and employed ARIMA modeling to analyze future Net Asset Value (NAV) trends. Results showed an inverse relationship between expense ratios and mutual fund performance, indicating that lower expense ratios enhance returns. The study recommended investors prioritize funds with lower costs. However, a limitation was the exclusion of sector-specific funds, which could have provided a more comprehensive analysis.

Ihejirika et al. (2024) examined the effect of liquidity management on the Zombie firm status using sample of listed non-finance firms in Nigeria from 2012 to 2021. The study used ex-post facto research design and Logistic regression to test the hypotheses of the study. Current ratio, receivable days, and cash conversion cycle are the liquidity management proxies employed in this study while the dependent variable of the study is zombie firm status. The study found that a 1% increase in the current ratio will lead to about 1% insignificant increase in interest coverage ratio and thus decreasing zombie status of the firms during the period under investigation. Also, the study also concludes that a 1% increase in the receivable days will lead to about 1% significant decrease in interest coverage ratio and thus increasing zombie status of the firms during the period under investigation. Finally, we conclude that a 1% increase in the cash conversion cycle will lead to about 98% insignificant decrease in interest coverage ratio and thus increasing zombie status of the firms during the period under investigation.

Okeke (2024) examined the effect of liquidity management on financial performance of deposit money banks in Nigeria using ex post facto research design and secondary data to examine the relationship between liquidity indicators and key profitability metrics. Findings indicate that while liquidity management does not significantly influence profitability and return on assets, it does exhibit a notable impact on Union Bank Plc's return on equity. The study concludes that maintaining adequate liquidity is crucial for banking stability, but its effect on shareholder returns is a more nuanced consideration.

Binay and Chaurasiya (2023) examined the effect of liquidity management on the profitability of joint venture commercial banks in Nepal using data from five banks and the study found that the Total Loan to Total Assets Ratio substantially influenced profitability (ROA), accounting for 61.5% of the variance. However, the effects of the Credit Deposit Ratio, Capital Adequacy Ratio, Current Reserve Ratio, and Total Deposit to Total Assets Ratio were not statistically significant. The findings highlight the significance of effective liquidity management, especially Total Loan to Total Assets Ratio, for increasing the profitability of joint venture commercial banks in Nepal.

Esther et al. (2023) examined the effect of liquidity management on banks' performance in Nigeria for the period of ten years (2012-2021). Liquidity management proxies, liquidity ratio, cash ratio, efficiency ratio and loan-to-deposit ratio were regressed against Tobin's q using Fixed Panel Least Square method in the model estimation. Other preliminary tests carried out include the descriptive statistics test, Levin, Lin and Chu unit root and the Hausman Specification tests. The study found that liquidity management and efficiency ratio have significant positive relationship with the performance of Deposit Money Banks in Nigeria while Cash Ratio has nonsignificant negative relationship with the performance of Deposit Money banks in Nigeria. Based on the above

findings, the study concludes that there is a significant positive relationship between liquidity management and bank performance in Nigeria.

Chhetri (2023) investigates the impact of liquidity management on the profitability of three development banks in Nepal using Data collected from books and financial annual reports, covering Fiscal Years 69/70 to 78/79, resulting in 30 observations. The study used correlation analysis and regression analysis to examine the relationship between liquidity management indicators, which are, in this case, Cash Reserve Ratio (CRR), Credit Deposit Ratio (CDR), Non-Performing Assets (NPA), Total Liabilities and Total Assets Ratio (TLTA), and Deposit to Total Assets Ratio (DTA) and profitability of development banks, i.e., Return on Equity (ROE). The study found that liquidity management indicators have varying effects on profitability. The correlation analysis reveals strong positive correlations between CRR and ROE and moderate positive correlations between CDR, TLTA, and DTA with ROE. Additionally, NPA exhibits a significant negative correlation with ROE. The regression analysis further confirms the overall significance of the model, with CRR having a statistically significant positive impact on ROE.

Joseph and Adelegan (2023) examined the impact of liquidity management on financial performance of deposit money bank in Nigeria using time series data from 2011 to 2020. The study analyses the data with the aid of E-view statistical package for descriptive and correlation analysis and STATA 11 after testing for the best estimator from pool OLS, fixed effect and random effect estimator based on Breusch and Pagan LM test, F-test and Hausman test. Deposit to asset ratio has negative but statistically insignificant relationship with returns on assets of DMBs in Nigeria. Cash reserve ratio has nonsignificant positive relationship with returns on equity of DMBs in Nigeria. Loan deposit ratio has negative but statistically nonsignificant relationship with net interest margin of deposit banks in Nigeria.

Koti, et al. (2023) examined the effect of premium retention on the financial performance of life assurance companies in Kenya using a descriptive research design for all 27 life assurance firms in Kenya, with a purposive sample of 17 firms. Data was collected from audited financial reports covering 2015–2021. Findings indicated that premium retention had a significant positive effect on financial performance. The study recommended maintaining an optimal premium retention level through prudent underwriting practices. A limitation of the study was its reliance on secondary data, which may not fully capture operational inefficiencies.

Pramusinta and Aryani (2023) examined the impact of net premium growth, claim ratio, risk-based capital, and retention ratio on the financial performance of insurance firms in the ASEAN region between 2017 and 2019. Using panel data regression, the study found that net premium growth positively influenced financial performance, while claim ratio, risk-based capital, and retention ratio had no significant effect. The study highlighted governance weaknesses in some ASEAN insurance markets but did not consider external economic shocks, which could influence financial performance.

Markonah et al. (2023) explored the effect of premium income, claim expenses, and underwriting results on profitability in Indonesian joint enterprise insurance firms. Using purposive sampling, the study analyzed 48 firms from 2018 to 2021. The findings showed that underwriting results positively influenced profitability, whereas premium income had a negative effect, and claim expenses had no impact. A limitation was the study's focus on general insurance firms, excluding life insurance companies.

Ahmed et al. (2022) examined the effect of liquidity management on financial performance of listed deposit money banks in Nigeria using fourteen (14) listed deposit money banks and data were collected from the annual reports and accounts of the sample Banks for the period of the

study. Descriptive statistics, correlation and multiple regression technique were used. The study revealed that Liquidity ratio (LR) has positive and significant impact on the financial performance of listed Deposit Money Banks in Nigeria. The finding further shows that cash reserve ratio (CRR) is negative and significantly related to the financial performance of listed Deposit Money Banks in Nigeria. Finally, the finding shows that Loan to debt ratio (LDR) has a positive but insignificant relationship with financial performance of listed Deposit Money Banks in Nigeria. The study therefore, concludes that Liquidity ratio and Loan to deposit ratio have an impact in influencing the financial performance of listed DMB's in Nigeria. Therefore, the study recommended that the listed DMBs should pay attention on their liquidity by increasing its level through prudent spending, aggressive deposit and debt recovery.

Olowokudejo and Ajijola (2022) examined the effect of liquidity management on the return on assets of insurance companies in Nigeria using ex-post facto research design from nine years (2011- 2019) and data was sourced from the annual reports and accounts of various insurance companies quoted on the Nigerian Stock Exchange. The study employed panel regression analysis of ordinary least square (OLS) estimation technique in analysing the data obtained. Return on assets (ROA) is used as dependent variable to measure financial performance while Current ratio (CUR), Total Sales (TSL), and Leverage ratio (LER) were proxies for liquidity management. The study found that the total sales, degree of leverage, and liquidity ratio exert a significant positive effect on return on assets. This has demonstrated that total sales, leverage, and liquidity have a long-term goal. Therefore, it becomes important for insurance companies to avoid sales and profit fluctuations risks as well as any other form of liquidity risk by operating in excess of the break-even point.

Mngueshima (2022) examined the effect of premium growth rate on financial performance of quoted composite insurance companies in Nigeria for the period 2015- 2019.The study data which was collected by secondary means was analyzed using STATA 13 to test the relationship between the independent variable (premium growth rate) and the dependent variable (financial performance). Findings from the study indicate that there is a negative relationship between premium growth rate and return on equity of the companies during the study period, i.e. increase in debt to asset ratio lead to decrease in return on equity. And that there is a positive relationship between return on equity and Debt to equity ratio, i.e. increase in debt to equity ratio leads to increase in return on equity. The study therefore recommends that insurance companies in Nigeria deploy more debt in their capital structure mix, but should endeavour to minimize their debt to assets ratio.

Onuaguluchi and Okwo (2022) examined the effect of liquidity management on gross earnings of insurance firms in Nigeria using current ratio, cash ratio, and operating cash flow ratio as the independent variables while the dependent variable is profit for the year. The study adopted an ex-post-facto research design, covering the period between 2011 and 2020 and secondary data were extracted from the annual report and accounts of the sampled insurance companies. The study found that current ratio has a positive and strong relationship with profit for the year of firms in Nigeria insurance subsector. Cash ratio has a negative and weak relationship with profit for the year of firms in Nigeria insurance subsector. The operating cash flow ratio has a positive and weak relationship with profit for the year of firms in the Nigeria insurance subsector. This implies that an increase in current ratio results in a significant increase in profit for the year of insurance firms in Nigeria.

Kehinde and Solape (2021) examined the effect of liquidity management on the financial performance of Nigeria's deposit money banks using secondary data collected from the annual

reports of deposit money banks listed on the Nigerian Stock Exchange. While financial performance was measured using return on asset, return on equity, and net profit margin, liquidity management proxies such as liquidity ratio, loan-to-deposit ratio, cash reserve ratio, and deposit rate were used. The relationship between the variables were determined using the panel least squares regression technique. The study found that liquidity management affects deposit money institutions' financial performance in Nigeria in a favourable and significant way.

Olaleye et al. (2021) examined the effect of liquidity management on profitability of commercial banks in Nigeria using data obtained from the financial statements of tier 1 banks over the period 1998 to 2018 and correlational research design and engaged the Johansen test with the vector error correction model to access the long run and short run relationship among the variables. The results of the Johansen test revealed at most two cointegrating equations among the variables, while result of vector error correction revealed a positive effect of liquidity on return on asset and return on equity but a negative effect on net profit margin. Results revealed a fairly stable trend in the liquidity and profitability indicators from 1998-2018 and concluded that banks controlled enough liquidity to serve their obligations.

Ajayi and Lawal (2021) examined the effect of liquidity management on bank performance using secondary data from the published annual reports of 5 sampled Deposit Money Banks in Nigeria for a period of 2009-2018. The proxies for liquidity management include loan-to-deposit ratio, loan-to-assets ratio, and liquid ratio, while return on assets was the proxy for profitability. Data were analyzed using Auto Regressive Distributed Lag (ARDL) and the study found that there is a significant negative relationship between loan-to-deposit ratio and return on assets, and a significant positive relationship between loan-to-asset ratio and return on assets and nonsignificant positive relationship between liquidity ratio and return on assets. The study concludes that there is a significant and positive relationship between liquidity management and the profitability of banks in Nigeria.

Ikechi et al. (2021) examined the link or nexus between liquidity management and bank profitability in Nigeria. An ex-post facto research design was employed as relevant data were collected from the annual report of affected banks and the CBN statistical bulletin for the period 2006 to 2019. A total of 6 variables, split into 3 dependent and 3 independent variables were used in the study. The profitability ratios constitute the dependent variables. They are Return on Equity (ROE), Return on Assets (ROA) and Profit after Tax (PAT) while the Liquidity management ratios that make up the independent variables include Cash Ratio (CAR), Loan to deposit ratio (LTDR) and Loan to Assets ratio (LTAR). A panel data analysis involving the use of Generalized Least Square (GLS) method on a time series data with 14 observations and 10 cross sections were used to ascertain relationships. Outcome of the study indicates that, the coefficient of liquidity management ratios had a mixed bag relationship with profitability ratios of selected commercial banks - While some had a positive impact, others were negative. However, in return to equity (ROE) equation, it maintained a strictly negative relationship with loan to asset ratios (LTAR) of all the selected commercial banks except for Sterling bank. It was also a mixed bag scenario with other profitability ratios and the panel cross section fixed effects. Conclusively, it could be said that the actual sway of each policy is a function of other endogenous variables inherent in each bank.

3. Methodology

The study used ex-post facto research design and panel data was extracted from Audited Annual Financial Statements of twenty (20) life and non-life insurance firms in Nigeria that have the

required data for the period 2014–2024. Also, data were sourced from Central Bank of Nigeria Statistical Bulletin, National Insurance Commission's (NAICOM) and NIA Digest for various years. Multiple regression techniques were used for the analysis through the use of STATA 15.

3.1 Measurement of Variables and Model Specification

The definition and measurements of the dependent, independent, and control variables are presented in Table 1 below:

Table 1

Summary of Measurement, Operationalization of Variables and Sources

Variables	Proxies	Symbol	Operationalization and Sources
Dependent Variables	Return on Assets	ROA	Net Income /Total Assets. Joseph and Adelegan (2023), Ahmad et al. (2021), Ajayi and Lawal (2021),
	Tobin's Q	TBQ	Ratio of market value of equity plus book value of debt divided by the book value of total assets Pan and Tian (2014); Battaglia and Gallo (2015)
Independent Variables	Claims Ratio	CMR	Number of claims in a period divides by the earned premium for the same period. Olalekan (2018), Pietersz (2016),
	Premium Growth Rate	PGR	Current Premium–Previous Premium/Previous Premium. Damayanti and Muslih (2022), Olalekan (2018).
Control Variables	Firm Size	FSZ	Natural Logarithm of Total Asset. Bala et al. (2021), Abbas & Mourouj (2015)
	Gross Domestic Product	GDP	Annual growth rate of the economy Knezevic and Dobromirov (2016); Khanna et al. (2015).

Source: Researcher Compilation 2025

In order to examine the effect of liquidity management on the financial performance of listed insurance firms in Nigeria, the following model is specified: The original regression model of the study is represented by the following equation:

$Z_{it} = \alpha + \beta_1 \mathbf{P}_{it} + \beta_2 \mathbf{P}_{it} + \beta_3 \mathbf{P}_{it} + \beta_4 \mathbf{P}_{it} + \varepsilon_{it}$ ---------- (1)

Where the dependent variable denoted by Z_{it} of firm i at time t, α is the constant, while the coefficients of the independent variables are denoted by β_1, β_2, β_3, and β_4 for firm i at time t and ε_{it} is the disturbance term.

Based on the above original model, the model can be decomposed as follows:

$ROA_{it} = \alpha + \alpha_1 CMR_{it} + \alpha_2 PGR_{it} + \alpha_3 FSZ_{it} + \alpha_4 GDP_{it} + \varepsilon_{it}$ ---------- (2)

$TBQ_{it} = \alpha + \alpha_1 CMR_{it} + \alpha_2 PGR_{it} + \alpha_3 FSZ_{it} + \alpha_4 GDP_{it} + \varepsilon_{it}$ ---------- (3)

Where Return on Asset (ROA) and Tobin's Q (TBQ) measure financial performance. Claims Ratio (CMR), and Premium Growth Rate (PGR) are proxies for liquidity management and Firm Size (FSZ) and Gross Domestic Product (GDP) are the control variables while α and ε_{it} are previously defined.

4. Results and Discussions

Therefore, the diagnostic tests conducted are Normality Test, Multicollinearity Test, Model Specification Test, Heteroscedasticity Test, and Hausman Specification Test. The Shapiro Wilk test for data normality shows that none of the variables are normally distributed. However, when using financial data, it is nearly impossible to use normally distributed data because the distribution is unsystematically randomly distributed between and within firms (Wooldridge, 2013). The Variance Inflation Factor (VIF) was carried out to test for multicollinearity in the study models. Table 3 shows that multicollinearity does not exist, because it is obvious that the tolerance value is between 0.33 and 0.56, reasonably greater than the threshold of 0.1 while the VIF ranges between 1.17 and 1.31, substantially less than the threshold of 10 (Hair et al., 2014; Pallant, 2005). Also, the Breusch-Pagan/Cook-Weisberg test was conducted to determine the presence or absence of heteroscedasticity. The result in Table 4 below shows chi2 values of 5.22 and 7.24 which are significant at 5% for both ROA and TBQ models, indicating that the dataset violates the homoscedasticity assumption. Due to the violation of the homoscedasticity assumption in the pooled panel result as revealed by the Breusch-Pagan/Cook-Weisberg test that turns chi2 values of 5.22 and 7.24 which are significant at 5%, we re-run a pooled panel regression using robust option as recommended by Gujarati and Porter (2009) to correct the problem of heteroskedasticity. The link test was used to perform the model specification test. From Table 4, the _hat values, which are the models predicted values, are significant, as expected for ROA (0.001) and TBQ (0.000). Similarly, the _hatsq values for ROA (0.371) and TBQ (0.426) are insignificant, indicating that the models are well specified. Both fixed effects (FE) and random effects (RE) tests were run using the Generalized Least Squares (GLS) method. The results revealed a significant difference between FE and RE, allowing the Hausman specification test to be used to determine which model was superior. Finally, the Hausman test result in Table 4 showed prob>chi^2 values of 0.004 and 0.000 for ROA and TBQ models, indicating that the fixed effect regression is preferable and should be interpreted.

Table 2

Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	140	0.546	0.140	0.178	0.766
TBQ	140	0.315	0.144	0.151	0.562
CMR	140	0.382	0.197	0.161	1.230
PGR	140	0.158	0.322	0.644	1.573
FSZ	140	3.374	1.192	0.203	6.682
GDP	140	2.023	1.010	2.019	4.045

Note: ROA= Return on Asset, TBQ = Tobin's Q, CMR= Claims Ratio, PGR= Premium Growth Rate, FSZ= Firm Size, GDP= gross domestic product,

Table 2 shows the number of observations per variable as 140. The average return on asset (ROA) is 0.54, with a minimum of 0.17 and a maximum of 0.76. The standard deviation is 0.14, indicating a modest variance in return on assets among the study's sampled listed insurance firms. In essence, the mean value of 0.54 for ROA indicates that the assets of the sample listed insurance firms generated 54 percent of the profits. While the minimum value of ROA is 0.17, this means that the minimum return earned from the assets of the sampled insurance firms during the research period is 17 per cent. Furthermore, the maximum value of 0.76 shows that 76 percent of the profits from the assets of listed insurance firms in Nigeria was generated.

Tobin's Q (TBQ) on the other hand, has an average value of 0.31, with a minimum of 0.15 and a maximum of 0.56, and a standard deviation of 0.14, suggesting a modest variation among listed insurance firms. The average of Tobin's Q (0.31) value of the listed insurance firms in Nigeria is lower than one, which means that the market value of equity of these insurance firms is lower than the book value of equity.

The claim ratio has minimum and maximum value of 0.16 and 1.23 respectively with the mean value of 0.382 and standard deviation of 0.197. Therefore, there exists a moderate variation among the value of claim ratio across the sample listed insurance firms in Nigeria included in this study. Premium growth ratio has a mean value of 0.158 and standard deviation of 0.322 with minimum and maximum values of 0.644 and 1.573 respectively.

The natural logarithm of total assets was used in this study as a proxy for firm size (FSZ) which has a mean value of N3.374 trillion with the maximum and minimum values are N6.682trillion and N0.203 trillion respectively while the standard deviation of N1.192 trillion indicating that the assets of the listed insurance firms varied extensively. In regards to the gross domestic product (GDP), it has a mean value of 2.3 per cent and a standard deviation of 1 per cent while the maximum and the minimum values are 4.5 per cent and 2 per cent respectively during the study period.

Table 3

Correlation Matrix

	ROA	TBQ	CMR	PGR	FSZ	GDP	VIF	1/VIF
ROA	1.0000							
TBQ	0.0789	1.0000						
CMR	0.1981	0.2968	1.0000				1.17	0.43
PGR	0.3884	0.2189	0.0805	1.0000			1.24	0.56
FSZ	0.2213	0.3192	0.0328	0.0170	1.0000		1.31	0.47
GDP	0.3124	0.3266	0.0481	0.0211	0.0409	1.0000	1.23	0.33
Mean VIF							**1.42**	

Note: ROA= Return on Asset, TBQ = Tobin's Q, CMR= Claims Ratio, PGR= Premium Growth Rate, FSZ= Firm Size, GDP= gross domestic product.

A high level and strong form of relationship between dependent and individual independent variables is expected in correlation analysis, whereas a low level and weak form of relationship between and among independent variables is expected. However, according to the correlation matrix seen in Table 3 above, CMR, PGR, FSZ, and GDP have a strong relationship with both ROA and TBQ. The correlation matrix also revealed that no two explanatory variables were

perfectly correlated. However, the degree of the relationship is below 0.7% which signifies absence of correlations as suggested by Gujarati (2004).

Table 4

Fixed Effect Regression Results for ROA and TBQ Models

ROA MODEL			TBQ MODEL		
CMR	-.281***	(-1.32)	CMR	-.303***	(-2.22)
PGR	.324***	(1.28)	PGR	.253***	(1.62)
FSZ	.246**	(1.12)	FSZ	.202**	(2.18)
GDP	.215**	(1.15)	FAG	.234**	(1.34)
CONS	4.637	(2.34)	CONS	4.722	(2.11)
Observation	140			140	
R^2	0.5132			0.4534	
Prob>chi2	0.0000			0.0000	
Hetro. Test: chi2	5.22**			7.24**	
Hausman	0.004			0.000	
F-Test	38.27***			42.11***	
Link Test: _hat	0.000			0.000	
_hatsq	0.371			0.426	

Note: ***, **, * denotes 1%, 5%, and 10% level of significance, the t-value is presented in parenthesis while the other figures represent the coefficients. ROA= Return on Asset, TBQ = Tobin's Q, CMR= Claims Ratio, PGR= Premium Growth Rate, FSZ= Firm Size, GDP= gross domestic product.

Table 4 shows that the F-statistics returns values of 38.27 and 42.11 for ROA and TBQ models that are statistically significant at 1% level of significance. These confirm the overall significance of the models. The overall R-squares are 51% and 45%, indicating that the variables considered in the models explain about 51% and 45% change in both ROA and TBQ, while about 49% and 55% change may be as a result of other variables not captured in the study models.

From the result in Table 4, claim ratio (CMR) has significant negative effect on the financial performance of listed insurance firms in Nigeria; ROA at the 0.01 level (β= -.281, p<0.01) and TBQ at the 0.01 level (β= -.303, p<0.01). This means that an increase in claim ratio (CMR) by 1, will result in a decrease in financial performance of listed insurance firms in Nigeria by 28% for ROA and 30% for TBQ. The finding may be due to the fact that higher claim ratio indicates that the insurer is paying out a larger portion of its premiums in claims. The finding is consistent with the studies by Abdeljawad and Dwaikat (2019), Mazviona, et al. (2017), Marwansyah and Utami (2017), Putra (2015), and Yusuf and Dansu (2014) who found that claim ratio (CMR) has significant negative effect on the financial performance of listed insurance firms in Nigeria while it is inconsistent with study by Ntwali et al., (2020), Caren and Mwangi (2017); Winarso (2014), Unachukwu et al. (2015); and Ofori-Attah, (2012) who found that claim ratio (CMR) has significant positive effect on the financial performance of listed insurance firms in Nigeria.

From the regression result in Table 4, premium growth rate (PGR) has significant positive effect on the financial performance of listed insurance firms in Nigeria; ROA at the 0.01 level (β= .324, p<0.01) and TBQ at the 0.01 level (β= .253, p<0.01).This means that an increase in premium to surplus ratio (PSR) by 1, will result in an increase in financial performance of listed insurance firms in Nigeria by 32% for ROA and 25% for TBQ. The finding may be due to the fact that increased premiums may indicate higher demand for insurance products, leading to more revenue for insurance firms. The finding is consistent with the studies by Damayanti and Muslih (2023),

Ajao and Ogieriakhi (2018), Hammami (2016), Kaya (2015), Batrinca (2014); and Derbali (2014) who found that premium growth rate (PGR) has significant positive effect on the financial performance of listed insurance firms in Nigeria while it is inconsistent with study Charumathi (2012) by found that premium growth rate (PGR) has significant negative effect on the financial performance of listed insurance firms in Nigeria.

Regarding the control variable, result from Table 4 shows that Firm Size (FSZ) has significant positive effect on listed insurance firm's performance; ROA at the 0.05 level ($\beta = .246$, $p<0.05$) and TQ at the 0.05 level ($\beta = .202$, $p<0.05$). This means that holding other factors constant, a percentage increase in Firm Size (FSZ) increases performance of listed insurance firms in Nigeria by 25% and 20% measured by ROA and TQ respectively. The findings may be due to the fact that large firm size enables insurance firms to effectively diversify their assumed risks and respond more quickly to changes in market conditions. Also, GDP growth rate (GDP) has significant positive effect on listed insurance firms performance; ROA at the 0.05 level ($\beta = .215$, $p<0.05$) and TQ at the 0.05 level ($\beta = .234$, $p<0.05$). This means that holding other factors constant, a percentage increase in GDP growth rate (GDP) increases performance of listed insurance firms in Nigeria by 22% and 23% measured by ROA and TQ respectively. The findings may be due to the fact that a growing GDP indicates a strong economy, which may lead to increased demand for insurance products, higher premium income, and ultimately, improved financial performance for insurance firms.

5. Conclusion and Recommendations

The study examines the effect of liquidity management on the financial performance of listed insurance firms in Nigeria. The study found that claim ratio (CMR) has significant negative effect on the financial performance of listed insurance firms in Nigeria while premium growth ratio (PGR) has significant positive effect on the financial performance of listed insurance firms in Nigeria measured by ROA and TBQ. Regarding the relationship among the control variables (firm size and gross domestic products) and financial performance of listed insurance firms in Nigeria, the study found that firm size and gross domestic products have significant positive effect on the financial performance of listed insurance firms in Nigeria measured by ROA and TBQ. However, the study recommends that insurance firms in Nigeria should focus on streamlining claims processing and reducing settlement times while implementing effective risk management strategies to mitigate potential risks associated with premium growth.

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