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**LIQUIDITY RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS LISTED IN
NAIROBI SECURITIES EXCHANGE**

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ABSTRACT

Liquidity pressures from falling bond values and deposit losses could lead regional banks to be more conservative in lending to ensure they can meet depositors' demands in a timely manner, resulting in stricter lending markets, additional margin requirements or higher capital requirements, which could hinder commercial and industrial activities. The purpose of the study is to assess the effect of liquidity risk management on financial performance of commercial banks in Kenya. The proxies for liquidity risk management include liquidity coverage ratio, and liquid asset ratio, while return on assets was the proxy for profitability. The study is anchored by liquidity preference theory, shift ability theory and anticipated income theory. The study adopted cross-sectional research design. The target population consisted of all 10 listed commercial banks in Kenya which formed the study's unit of analysis. The study adopted Census technique as population of interest is relatively small. The study utilized secondary data which was derived from listed commercial banks from 2020 to 2023. Data was analyzed using Ordinary Least Squares (OLS) and The findings from the model showed that there is a statistically significant relationship between liquidity risk management ratios and ROA. The results indicate that liquidity coverage ratio has a strong positive effect on ROA, meaning that an increase in liquidity coverage significantly boosts profitability. The results show that liquid asset ratio has a significant negative effect on ROA implying that an increase in liquid assets reduces profitability. The study concludes that commercial banks with higher liquidity coverage are better positioned to manage short-term obligations and financial shocks, which ultimately enhances profitability. It is concluded that holding excessive liquid assets reduces a bank's ability to generate income from interest-earning assets, such as loans and investments. It is recommended that commercial banks should prioritize maintaining a strong liquidity coverage ratio to ensure they can meet short-term obligations while simultaneously enhancing profitability. Further, commercial banks should manage their lending strategies prudently, ensuring that loan growth aligns with sustainable deposit levels.

Key Words: Liquidity Coverage Ratio, Liquid Asset Ratio, Financial Performance

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INTRODUCTION

In today's world with the increasing popularity of the Internet, once the insolvency and huge losses of commercial banks occur, they will spread rapidly, manifested as liquidity problems (WuQiong, 2023). One may argue that liquidity management is the cornerstone of commercial banks' contemporary management and a crucial representation of their managerial caliber. Recent occurrences like Silicon Valley Bank's bankruptcy, Signature Bank's closure, and Swiss Bank's acquisition of Credit Suisse Group demonstrate that, should liquidity risk materialize, it will represent a crucial turning point for commercial banks (WuQiong, 2023).

The global financial crisis of 2007–2008 was clearly a problem of liquidity management (Dang, 2016). Since this was the greatest financial crisis ever, basic concerns regarding liquidity management have been raised (Basel Committee on Banking Supervision, 2016). Pressures to reduce liquidity quickly during the crisis disproportionately affected banks (Basel Committee on Banking Supervision, 2016). Renowned commercial banks such as Lehman Brothers failed. The governments provided bailouts for other banks. Stocks saw significant price declines, which had a negative effect on the stock market (Basel Committee on Banking Supervision, 2018). A severe financial setback hit several regions of the economy, leading to home foreclosures, extended joblessness, and evictions (Basel Committee on Banking Supervision, 2018).

The Basel Committee on Banking Supervision suggested additional liquidity requirements for banks in 2010 under the Basel III framework, in the form of the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), in an effort to tighten bank liquidity-risk management strategies (Mor, 2018). The goals of the two regulations are distinct yet complimentary. The LCR requires a bank to maintain sufficient amounts of high-quality liquid assets (HQLA) in order to increase the bank's short-term resilience to liquidity shocks. In order to reduce the danger of liquidity mismatches between assets and liabilities, the NSFR makes sure that

banks have long-term, reliable sources of funding for their operations (Basel Committee on Banking Supervision, 2018). Despite their importance, banks may face difficulties in managing their liquidity due to the new liquidity requirements, as they have never been subject to enforceable liquidity charges.

In the US, liquidity crisis in commercial banks unfolded in 2023. For instance, the California Department of Financial Protection and Innovation closed Silicon Valley Bank, the 16th-largest bank in the United States, on March 10, 2023, and the New York Department of Financial Services closed Signature Bank on March 12 (Phan, Anwar, & Alexander, 2019). America's First bank's credit rating was downgraded to "junk" by Moody's following a sharp decline in the share price. There could be a bank run on about 190 small and medium-sized US banks. Around \$1 trillion in deposit balances at small and medium-sized US banks have been lost since 2022, with roughly \$550 billion of that loss happening in only one week following Silicon Valley Bank's acquisition, according to JP Morgan Chase's most recent liquidity report (Dong, Yin, & Liu, 2020).

Due to an abruptly increasing liquidity excess, SARB in South Africa encountered significant difficulties reaching the desired level of liquidity deficit since its available instruments were insufficient, which raised interest rate volatility in several money market segments. SARB is in the process of changing its operational aim to short-term interest rates in recognition of the difficulties (IMF, 2022). Egypt's FC liquidity circumstances are still tight and have been becoming worse, according to FitchRatings (2023). This is demonstrated by the increase in the banking sector's net foreign liability (NFL) position, which was USD16.4 billion at the end of September (USD15 billion at the end of April). A major source of vulnerability for banks' NFL continued to be non-resident portfolio holdings of local currency government securities (end-August 2023: USD16.5 billion).

The banking industry in Kenya is subject to a number of risks that come from both the internal

and external environments. The financial sustainability and long-term stability of banks are threatened by liquidity risk. Liquidity issues, among other dangers, remain a major challenge despite the sector's expansion (Muriithi, 2016). A significant increase in interest rates has put dozens of tiny banks in a funding crunch and affected the interbank market's cost of borrowing money (Muiruri, 2023). Due to this, tier three banks are increasingly turning to the Central Bank of Kenya (CBK) for financial support through the CBK discount window, term auction deposits, and reverse repurchase agreements (reverse repos).

The CBK's data indicates that the money markets have become less viable sources of funding due to increased tax and government payments. For example, banks have not been able to satisfy their cash reserve requirement ratio (CRR) of 4.25 percent for the three weeks ending August 3, 2023. For the third week in a row, the amount of liquidity in the banking industry and money market has decreased, with commercial banks' reserves falling short of the CRR requirement by Sh4.7 billion (Muiruri, 2023). Banks have been raising lending rates to one another at the same time. As of Thursday, August 20, 2023, the interbank lending rate—which had already reached a record-breaking eight years high—spiked once again to 17.38 percent. The majority of Kenya's banks, according to the Central Bank of Kenya (CBK), indicated increased risk awareness inside their organizations, and more than 90% of them stated that improved risk management had decreased losses.

Statement of the Problem

Commercial banks in Kenya have been experiencing increase in non-performing loans over the last two decades (Cytonn report, 2022). According to Central Bank of Kenya report (2024) asset quality deteriorated in 2023, with non-performing loans (NPLs) rising to 14.8% of gross loans, the highest since 2007. NPLs grew heterogeneously across bank tiers, with small banks experiencing the highest growth. On the cost side, operating expenses increased by 37.5% in 2023, with significant

expansions in interest on borrowed funds and general administrative expenses. Consequently, the industry pre-tax profits declined by 9.1% to Ksh. 219.21 billion in 2023 from Ksh. 241.52 billion in 2022.

Various studies have been done on liquidity management and financial performance. Muthoga (2019) did a study on liquidity risks and profitability of commercial banks listed in Nairobi Securities Exchange. Njue (2020) carried a study on liquidity management effect on financial performance of Microfinance banks in Kenya and revealed that asset quality and maturity gaps have negative and insignificant effect on performance. Njeru (2016) focused on investigating liquidity management in the context of deposit taking Saccos in Kenya. However, the study focused on Saccos and not commercial banks. Despite many of the empirical studies focusing on commercial banks, very few have encompassed the elements of short term asset quality, capital adequacy, maturity gap and interest coverage on financial performance of commercial banks. Thus, this study sought to establish the liquidity risk management and financial performance of NSE listed commercial banks.

Objectives of the Study

The general objective of the study is to determine the effect of liquidity risk management on financial performance of commercial banks listed in Nairobi Securities Exchange. The study is guided by the following specific objectives:

- To establish the effect of liquidity coverage ratio on financial performance of commercial banks listed in Nairobi Securities Exchange.
- To determine the effect of liquid asset ratio on financial performance of commercial banks listed in Nairobi Securities Exchange.

Research Hypotheses

- **H₀₁:** Liquidity coverage ratio has no significant effect on financial performance of commercial banks listed in Nairobi Securities Exchange.

- **H₀₂:** Liquid asset ratio has no significant effect on financial performance of commercial banks listed in Nairobi Securities Exchange.

LITERATURE REVIEW

Liquidity Preference Theory

The theory was proposed and developed by John Maynard Keynes in 1936. Keynes described liquidity preference theory as individuals' value money for both the transaction of current business and its use as a store of wealth (Bibow, 2015). Thus, individuals will sacrifice the ability to earn interest on liquid cash that individuals want to spend in the present, and that individuals want to have it on hand as a precaution. On the other hand, when interest rates increase, individuals become willing to hold less cash for these purposes in order to earn a profit.

The liquidity preference theory attempts to describe the reasons as to why financial institutions need to hold cash. In the study "The general Theory of employment, interest and money" Keynes in 1936 identified three reasons why liquid cash is important, the speculative motive, the precautionary motive and the transaction motive. Money needed by banks for their daily activities in order to complete economic transactions is known as the demand for money for transaction motives and is usually depends on the size of the income, time gap between the receipts of income and spending habits. Precautionary motive is when banks want to keep some liquid money to meet some unforeseen emergencies, contingencies and accidents while speculative motive is when the banks keep cash with them to take advantage of the changes in the prices of bonds and securities.

Shiftability Theory

Shiftability theory was proposed by Moulton in 1918. In banking, the shiftability theory is an approach to keeping banks liquid by encouraging the shifting of assets. When a bank has a shortage of ready money, it can repo or sell its assets to a bank that is more liquid. This approach lets the banking system move more efficiently with fewer reserves or investments in long-term assets. This theory suggests that the liquidity of an institution is

maintained when such institution holds assets which could be easily sold or converted to other investments for cash. This assertion contends that the liquidity level of banks is capable of improving if the banks are always in possession of assets to sell as this is good for the proper functioning of the banks. Therefore, the theory contends and recognizes that a shift ability, transferability or marketability of the assets of financial institutions serves as a basis in ensuring their liquidity.

The basic assumptions of the theory is that, for an asset to be perfectly shiftable, it must be directly transferable without any loss of capital loss when there is a need for liquidity. This is specifically used for short term market investments, like treasury bills and bills of exchange which can be directly sold whenever there is a need to raise funds by banks (Al-Qaraleh, 2023). But in general circumstances when all banks require liquidity, the shiftability theory need all banks to acquire such assets which can be shifted on to the central bank which is the lender of the last resort.

Anticipated Income Theory

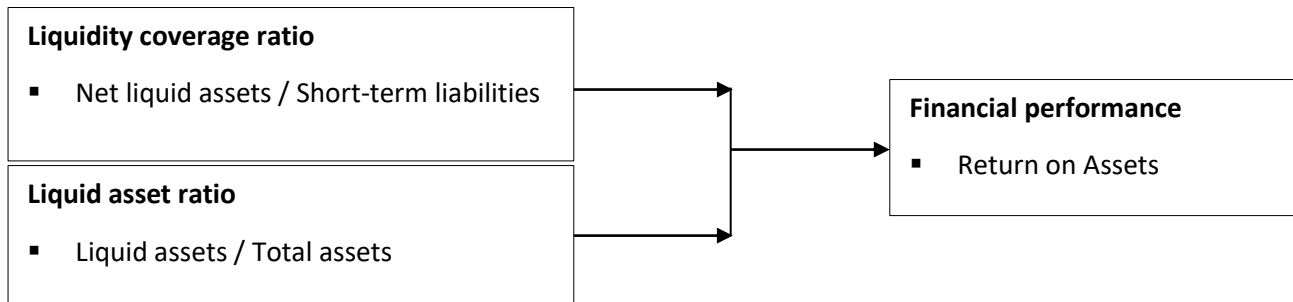
This theory was proposed by H.V. Prochanow in 1944 on the basis of the practice of extending term loans by the US commercial banks. This theory states that irrespective of the nature and feature of a borrower's business, the bank plans the liquidation of the term-loan from the expected income of the borrower. A term-loan is for a period exceeding one year and extending to a period less than five years.

It is admitted against the hypothecation (pledge as security) of machinery, stock and even immovable property. The bank puts limitations on the financial activities of the borrower while lending this loan. While lending a loan, the bank considers security along with the anticipated earnings of the borrower. So a loan by the bank gets repaid by the future earnings of the borrower in installments, rather giving a lump sum at the maturity of the loan (Mor, 2018).

Liquidity is settled to the bank when the borrower saves and repays the loan regularly after certain period of time in installments. It fulfills the safety principle as the bank permits a relying on good security as well as the ability of the borrower to

repay the loan. The bank can use its excess reserves in lending term-loan and is convinced of a regular income. The theory supports maturity gap variable in the study.

Conceptual Framework



Independent Variables

Dependent Variable

Figure 1: Conceptual Framework

Review of Literature on Variables

Liquidity Coverage Ratio

The Liquidity Coverage Ratio (LCR) is a regulatory requirement designed to ensure banks have enough high-quality liquid assets (HQLA) to cover potential cash outflows during a 30-day stress scenario, protecting against liquidity risk (Kosmidou, 2016). The LCR is part of the Basel III reforms, a set of international banking regulations designed to strengthen the global financial system (BIS, 2009).

The LCR builds on traditional liquidity “coverage ratio” methodologies used internally by banks to assess exposure to contingent liquidity events (Matz, & Neu, 2007). The total net cash outflows for the scenario are to be calculated for 30 calendar days into the future. The standard requires that, absent a situation of financial stress, the value of the ratio be no lower than 100% (i.e the stock of HQLA should at least equal total net cash outflows) on an ongoing basis because the stock of unencumbered HQLA is intended to serve as a defence against the potential onset of liquidity stress. During a period of financial stress, however, banks may use their stock of HQLA, thereby falling below 100%, as maintaining the LCR at 100% under such circumstances could produce undue negative

effects on the bank and other market participants. Supervisors will subsequently assess this situation and will adjust their response flexibly according to the circumstances.

The LCR aims to make banks more resilient to short-term liquidity shocks by requiring them to hold a sufficient stock of HQLA that can be quickly converted into cash. The LCR helps protect depositors and the financial system by ensuring that banks can meet their obligations during periods of stress. If a bank's LCR falls below 100%, it could indicate that the bank may not have enough liquidity to cover its short-term obligations or pay for its daily operations. The LCR is calculated by dividing the bank's stock of HQLA by the estimated total net cash outflows over a 30-day period.

Liquid Asset Ratio

Most common measure of liquidity risk is liquid asset ratio which is the share of liquid assets on total assets. This ratio should give us information about the general liquidity shock absorption capacity of a bank (Rychtárik, 2009). As a general rule, the higher the ratio, the higher the capacity to absorb liquidity shock, given that market liquidity is the same for all banks in the sample. Nevertheless, high value of this ratio may be also interpreted as

inefficiency. Since liquid assets yield lower income liquidity bears high opportunity costs for the bank. Therefore, it is necessary to optimize the relation between liquidity and profitability. Moore (2010) notes that the liquid asset ratio has also its short-coming: it ignores the flow of funds from repayments, increases in liabilities and the demand for bank funds.

Liquid assets should be marketable or transferable. This means, they are expected to be converted to cash easily and promptly, and are redeemable prior to maturity. Another quality of liquid assets is price stability. Based on this characteristic, bank deposits and short term securities are more liquid than equity investments due to the fact that the prices of the former are fixed than the prices and value of the later (Richard, 2013).

Financial Performance

Financial performance is a complete evaluation of a company's overall standing in categories such as assets, liabilities, equity, expenses, revenue, and overall profitability. It is measured through various business-related formulas that allow users to calculate exact details regarding a company's potential effectiveness.

ROA shows the profits generated by asset values and decides how banks use investment resources throughout the year to generate profits (Sheeba, 2011). The performance of banks with ROA approach aims to show the level of efficiency of asset management performed by the bank concerned. ROA is an indicator of the ability of banks to earn a profit on a number of assets owned by banks (Frianto, 2012: 71). ROA measures the ability of bank management to generate revenue by utilizing the assets of the companies they have. In other words, it shows how efficiently the company's resources are used to generate revenue which further indicates the efficiency of managing a company in generating net income from all institutional resources (Khrawish, 2011).

Return on Assets is the measure of efficiency which determines how well the banks use its scarce

resources to generate profits. It is the ratio of net income to the total asset. A higher ratio is an indication of a better financial performance. This ratio has been used in similar studies by Athanasoglou, Brissimis and Delis (2016); Perera, Skully and Chaudhry (2016). The current study uses return on assets as financial performance metric.

Empirical Review

Noghondari, Zeinali and Beytollahi (2021) researched on the effect of interest coverage ratio on the Structural and Reduced-Form Models in Predicting Credit Derivatives Price. The research data was extracted from the Bloomberg Terminal for an eight-year period from 2008 to 2015. The statistical population of the research included the North American and European companies recognized as the reference entities for Credit Default Swaps (CDS) in the given period, and the statistical sample consisted of 125 companies. The data was analyzed using four Artificial Neural Network (ANN) algorithms, namely ANFIS, NNARX, AdaBoost, and SVM. The research results indicated the increased predictive accuracy of the pricing models under scrutiny after adding the ICR.

Ji (2017) investigated the effect of cash based interest coverage ratio on the value relevance of accounting information. In this study, 2,991 companies that satisfy sample selection criterion of KOSPI and KOSDAQ listed companies from 2011 to 2014, to which International Financial Reporting Standards are obliged, were tested. Financial data from 2011 to 2014 was collected for firms listed on the Korean Stock Exchange, as obtained from the KIS-Value Database. The empirical results show that the value relevance of net asset value and earnings per share is lower when the cash based interest coverage ratio is less than 1.

Ngalawa, Kirori, and Ngare (2022) researched on the role of maturity gaps and short-term market interest rates on interest rate risk exposure in commercial banks in Kenya. This study adopted a panel data research design in methodology to

analyze the critical interest rate risk drivers across the banking sector in Kenya. The study period covered 2005-2015. The study was informed by Expectations Hypothesis theory. Correlational research design was used and captured both cross-sectional and longitudinal dimensions of the effects of the variables under investigation that is Maturity gaps ratio (MGRs) and Interest Rate Sensitivity Ratio (IRSRs). The Interest rate risk (IRR) was expressed as a function of maturity gaps, interest rate sensitivity ratio and short-term market interest rates. STATA software was used as the tool for data manipulation. The findings indicated that that a rise in Maturity Gap 2, Maturity Gap 3, Maturity Gap 4, Maturity Gap 5, Interest Rate Sensitivity Ratio 2, Interest Rate Sensitivity Ratio 3, Interest Rate Sensitivity Ratio 4, 91DayTbill and 182DayTbill led to a decrease in the interest rate risk exposure for the commercial banks.

Rokhmawati (2019) investigated the effect of maturity gap management on net interest income in Indonesia. - The population in this study is all conventional commercial (non-Sharia) banks in Indonesia as many as 99 banks. Of the 99 banks, 57 banks were selected as the sample of in the study. Determination of the sample is based on these criteria: the availability of the bank's annual report containing financial statements providing data about the descriptions of interest rate risk management, which also provides complete data about bank's RSA and RSL from 2013 - 2017. There are five years of the research period, so 285 unit observations are used in the analysis. The study employs multiple regression analysis with panel data. Net interest income is derived from the difference between interest income and interest expense. The maturity gap is calculated as the difference between RSA and Risk RSL. The study uses a dummy variable of IRS, LDR, net NPL and ownership status of banks. The results of the study show that maturity gap has a negative effect on Net Interest Income (NII) and banks with positive gaps have higher NII than banks with negative gaps.

Mashamba and Kwenda (2022) researched on the current liquidity management practices of banks in South Africa by examining whether South African banks have target liquidity levels which they pursue and also by determining the variables that drive bank liquidity ratios. The study sample comprised six commercial banks operating in South Africa over the period 1993 to 2009. For analysis, a partial adjustment model was developed and estimated using the generalized method of moments (GMM) estimator. The rate at which South African banks adjust their balance sheets was estimated at 8%. This adjustment speed implies that South African banks adjust their balance sheets slowly – probably due to high adjustment costs. Thus, South African listed banks have passively managed their liquidity and partially adjust their liquidity levels in an attempt to reach the optimal level.

Muthoga (2019) did a study on liquidity risks and profitability of commercial banks listed in Nairobi Securities Exchange. The specific objective was to evaluate the effect of net loan holdings, asset quality and liquid assets holdings on profitability of listed commercial banks at the Nairobi Securities Exchange, Kenya. The research adopted causal research design where the study population comprised all the 11 listed commercial banks at the Nairobi Securities Exchange, Kenya as at December 2018. The research used descriptive analysis and panel regression analysis for the data analysis. The panel regression analysis indicated that net loans holdings have a negative and significant effect on the profitability of commercial banks. Similarly, with respect to asset quality and profitability of commercial banks, the regression output revealed that the effect of asset quality on profitability is negative and significant.

Njue (2020) carried a study on liquidity management effect on financial performance of Microfinance banks in Kenya. Secondary data on the study variables were deduced from the audited financial statements of the MFIs under consideration. The data was obtained from the CBK website, CBK's Annual Supervision reports and also

the AMFI annual reports for 5 years from 2012-2016. The desired population of the research consisted of all the twenty-six MFIs in Kenya that were members of AMFI and available at the CBK website. Primary data was collected using questionnaires whereas the secondary data involved analysis of the audited financial statements. The study used both descriptive and inferential statistics to evaluate the data. In descriptive analysis mean, and standard deviation of the responses was analyzed whereas, under inferential statistics, Pearson correlation, panel power correlation and regression analysis were adopted. The analysed data indicated that liquidity management practices fundamentally influenced the financial performance of MFIs in Kenya.

METHODOLOGY

This study used cross-sectional descriptive survey research design. Nairobi Securities Exchange (2023) indicates that there are 10 commercial banks listed in NSE as of 31st December 2023. The target population consist of all 10 listed commercial banks in Kenya which formed the study's unit of analysis. The sampling frame for the study was all 10 listed commercial banks in Kenya. The population is small and manageable hence the research did not sample the commercial banks instead Census technique was adopted.

The study used secondary data only. Panel data of the NSE listed commercial banks were used to carry out the econometric analysis. The data on the return on assets and liquidity variables were obtainable from the annual published reports of the commercial banks and NSE handbook. Secondary data collection sheet was utilized.

A multiple panel regression model is suitable for this research because of the independent variables, time factor and cross-sectional dimensions (Wooldridge, 2010). The statistical package for social sciences, SPSS version 29 tool was employed for analyzing research data.

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

The study sought to examine the liquidity risk management and return on assets of commercial banks listed in Nairobi Securities Exchange using panel data from 10 banks over the period 2020 to 2023. The primary aim was to assess the extent to which liquidity indicators—namely the liquidity coverage ratio, and liquid asset ratio—affect financial performance, measured by return on assets (ROA).

Descriptive Statistics of the Variables

The data presented in Table 1 were extracted from the annual financial statements of the respective banks.

Table 1: Summary Statistics for the Independent and Dependent Variables

	<i>Liquidity Coverage Ratio</i>	<i>Liquid Asset Ratio</i>	<i>Return on Assets</i>
Mean	0.366046	0.279609	0.020983
Standard Error	0.011674	0.009316	0.002287
Median	0.38099	0.293941	0.022353
Standard Deviation	0.073836	0.05892	0.014461
Sample Variance	0.005452	0.003472	0.000209
Kurtosis	1.791834	1.634642	1.586145
Skewness	-1.4036	-1.26123	-0.87577
Range	0.336702	0.269092	0.068845
Minimum	0.137439	0.09865	-0.02098
Maximum	0.474141	0.367742	0.047866
Sum	14.64186	11.18434	0.839331
Count	40	40	40

From Table 1, descriptive results that Liquidity Coverage Ratio (LCR), which represents liquid assets as a proportion of total assets, has a mean value of 0.366, indicating that, on average, 36.6% of total assets are in liquid form. The negative skewness of -1.404 suggests that most firms maintain relatively high liquidity, but a few firms have significantly lower liquidity, pulling the distribution leftward. The range of 0.3367 further highlights the variability in liquidity levels across firms.

Similarly, the Liquid Asset Ratio (LAR), which measures the proportion of liquid assets to total assets, has an average value of 0.280. Like the Liquidity Coverage Ratio, it is negatively skewed (-

1.261), meaning that while most firms have adequate liquidity, some hold significantly lower liquid assets. The standard deviation of 0.059 suggests a moderate level of variation among firms.

Finally, Return on Assets (ROA), which measures profitability, has a mean value of 0.021, suggesting that firms earn an average return of 2.1% on their total assets. The negative skewness of -0.876 suggests that while most firms maintain a positive return, some firms exhibit lower profitability. The relatively low standard deviation of 0.014 indicates that ROA is fairly stable across the sample, with only moderate variation.

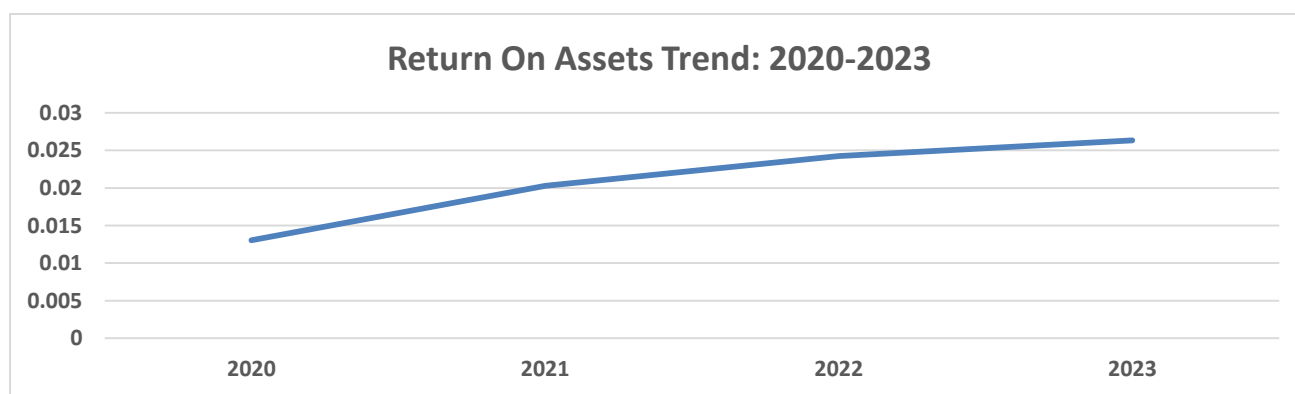


Figure 2: Return on Asset Trend Analysis

Results in Figure 1 show the trend of the average Return on Assets (ROA) for commercial banks listed on the Nairobi Securities Exchange (NSE) from 2020 to 2023. In 2020, the average ROA was 1.30%, reflecting a relatively low profitability, likely due to the economic downturn caused by the COVID-19 pandemic, which affected banking operations, loan performance, and overall financial stability. However, there was a notable recovery in 2021, with the ROA increasing to 2.03%, suggesting improved economic conditions, better asset utilization, and possibly lower loan default rates.

The upward trend continued in 2022, with the ROA reaching 2.42%, indicating sustained profitability growth and efficiency in managing assets. By 2023, the ROA further improved to 2.64%, showing that commercial banks had strengthened their financial

performance, possibly benefiting from economic recovery, increased lending activities, and better risk management strategies.

In summary, the data suggests a steady improvement in the profitability of NSE-listed commercial banks over the four-year period, reflecting a strong post-pandemic recovery and enhanced financial performance.

Correlation Analysis Results

Correlation analysis was done to determine the correlation between liquidity risk management (Liquidity coverage ratio, liquid asset ratio, loan-to-deposits ratio and loan-to-asset ratio) and financial performance as measured by Return on Assets using the Pearson's product moment correlation analysis. The results are shown in Table 2.

Table 2: Correlation Analysis Results

		LCR	LAR	ROA
Liquidity coverage ratio	Pearson Correlation	1		
	Sig. (1-tailed)			
	N	40		
Liquid asset ratio	Pearson Correlation	.762	1	
	Sig. (1-tailed)	.021		
	N	40	40	
ROA	Pearson Correlation	.053	0.043*	1
	Sig. (1-tailed)	.000	.012	
	N	40	40	40

*. Correlation is significant at the 0.05 level (1-tailed).

From the bivariate correlation results, it is revealed that regarding Return on Assets (ROA), there is a weak correlation with most liquidity and lending variables. The correlation with LAR is weakly positive ($r = 0.043$, $p = 0.012$), indicating a slight but significant relationship where banks with more liquid assets may experience marginally higher returns. However, ROA's correlation with LCR ($r = 0.053$, $p = 0.000$) is very weak, suggesting that profitability is not strongly influenced by these liquidity and lending factors.

The Liquidity Coverage Ratio (LCR) and the Liquid Asset Ratio (LAR) show a strong positive correlation ($r = 0.762$, $p = 0.021$), indicating that banks with a higher proportion of liquid assets also tend to

maintain higher liquidity coverage. This suggests that banks with strong liquidity positions are more likely to ensure a sufficient buffer of liquid assets relative to their total assets.

Diagnostic Test Results

The diagnostic tests were carried out which included Hausman test, and multicollinearity test.

Hausman Specifications Test

In order to make a decision on the most suitable model to use, both random and fixed effects estimate coefficients. The study used the Hausman's specification test (1978) to choose between fixed and random effect models. Table 3 shows the results of Hausman test.

Table 3: Hausman Test Results

	Fixed (b)	Random (B)	Difference (b-B)
Liquidity coverage ratio	-4.066	-4.314	0.248
Liquid asset ratio	-3.318	-3.426	0.108
chi ² (2)	2.121		
Prob>chi ²	0.692		

The null hypothesis of the Hausman test is that the random effects model is preferred to the fixed effects model. Hausman test revealed a chi-square of 2.121 with a p-value of 0.692 indicating that at 5 percent level, the chi-square value obtained is statistically insignificant. Thus, the study failed to reject the null hypothesis that random effects

model is preferred to fixed effects model, therefore random effects model will be adopted for analysis.

Test of Multicollinearity

Multi collinearity was assessed in this study using the variance inflation factors (VIF). According to Field (2009) VIF values in excess of 10 is an indication of the presence of Multi collinearity. The results are indicated in Table 4.

Table 4: Test of Multi-collinearity

Construct	VIF	
1	Liquidity coverage ratio	1.46
	Liquid asset ratio	1.39

a. Dependent Variable: Return on Assets

*Significance at the 0.05 level.

Table 4 shows the VIF values. VIF values are used to check for the possible problem of multicollinearity. As the VIF values are <10, this shows that multicollinearity is not a problem in the model.

Multiple Regression Analysis Results

The models specified for the study were estimated using Ordinary Least Squares (OLS) multiple regression. The regression analysis was carried with

SPSS version 29 statistical software. The panel data were obtained from the financial statements of the observed commercial banks.

The data was used to regress liquidity risk management (Liquidity coverage ratio, liquid and asset ratio) and financial performance as measured by Return on Assets. The results of regression analysis are presented as follows.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.629 ^a	.396	.327	.011863

a. Predictors: (Constant), Liquidity coverage ratio, Liquid asset ratio

The regression results in Table 5, showed a moderate regression between the study variables. In the model summary, the R² is 0.396 indicating that 39.6% variation in banks' return on assets is accounted for by liquidity risk management

(Liquidity coverage ratio and liquid asset ratio). However, since the model explains only 39.6% of ROA variation, other factors not included in this model likely contribute to Return on Assets.

Table 6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.00323	2	0.00161	12.384	.001 ^b
	Residual	0.00492	37	0.00013		
	Total	0.00815	39			

a. Dependent Variable: Return on Assets

b. Predictors: (Constant), Liquidity coverage ratio, Liquid asset ratio

From the Analysis of Variance results in Table 6, the p-value (Sig.) is 0.001, which is well below the 0.05 threshold, indicating that the regression model is

statistically significant. This means that, collectively, the two independent variables have a significant impact on ROA.

Table 4.7: Regression Coefficients

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.040888233	0.025303522	1.615910732	0.115093307	0.010480648	0.092257114
LCR	1.157934034	0.254667684	4.546843224	6.25381E-05	0.640931149	1.674936918
LAR	1.567345008	0.345532503	4.536027705	6.45861E-05	2.268813283	0.865876734

The optimal regression model is:

$$ROA = 0.0409 + 1.158X_1 + -1.567X_2$$

The intercept is 0.0409, meaning that if all predictor variables were zero, the model would predict an ROA of 4.09%. However, the p-value (0.115) is greater than 0.05, indicating that the intercept is not statistically significant.

On liquidity coverage ratio, the coefficient is 1.158, indicating that a 1-unit increase in LCR is associated with a 1.158 increase in ROA, holding all other factors constant. The is highly significant ($p < 0.05$), meaning that LCR has a strong positive impact on ROA. On liquid asset ratio, the coefficient is -1.567, meaning that a 1-unit increase in LAR decreases ROA by 1.567, holding other factors constant. The p-value is highly significant ($p < 0.05$), suggesting a strong negative relationship between LAR and ROA.

Discussion of Key Findings

The first objective of the study sought to determine the effect of liquidity coverage ratio on financial performance of commercial banks listed in Nairobi Securities Exchange. Regression results revealed the coefficient is 1.158, indicating that a 1-unit increase in LCR is associated with a 1.158 increase in ROA, holding all other factors constant. On hypothesis test, since p-value is less than 0.05, null hypothesis that there is no significant effect of liquidity coverage ratio on financial performance of commercial banks is rejected.

The second objective of the study sought to establish the effect of liquid asset ratio on financial performance of commercial banks listed in Nairobi Securities Exchange. Regression analysis conducted proved that liquid asset ratio had a coefficient of -1.567, meaning that a 1-unit increase in LAR decreases ROA by 1.567, holding other factors constant. On hypothesis test, since p-value is less than 0.05, null hypothesis that there is no significant effect of liquid asset ratio on financial performance of commercial banks is rejected.

CONCLUSION AND RECOMMENDATIONS

The study concludes that commercial banks with higher liquidity coverage are better positioned to manage short-term obligations and financial shocks, which ultimately enhances profitability. This result supports the notion that maintaining an adequate level of liquidity fosters financial resilience and operational efficiency.

It is concluded that holding excessive liquid assets reduces a bank's ability to generate income from interest-earning assets, such as loans and investments. While liquidity is necessary, too much idle cash lowers profitability due to missed lending and investment opportunities.

It is recommended that commercial banks should prioritize maintaining a strong liquidity coverage ratio to ensure they can meet short-term obligations while simultaneously enhancing profitability. Regulatory bodies should monitor liquidity requirements to encourage banks to strike a balance between liquidity and lending operations.

Secondly, the liquid asset composition of banks should be reviewed to minimize over-investment in non-yielding instruments. Banks should restructure their asset portfolios to reduce the share of idle liquid assets, without breaching regulatory requirements. Liquid reserves should be optimized, not maximized. Where excess liquidity exists, it should be reinvested in marketable securities or short-term, revenue-generating instruments to improve returns without jeopardizing solvency.

Recommendation for Further Research

The study recommends for further research by adding a sample of commercial banks that are not listed on the Securities Exchange so that the expected research results are obtained. Furthermore, by adding independent variables such as non-performing loans ratio, asset quality and other banks related ratios.

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