ABSTRACT

Despite reporting increased level of liquidity among the commercial banks in Kenya, recent instances of bank failures that have led to the receivership of three banks, have sparked renewed interest in the liquidity of financial institutions. This stems from the uncertainty faced by many depositors about the stability of certain entities within the industry. Given the important role that banks play in any economy, it is crucial to understand the influencing factors of liquidity as a key determinant of bank stability. Thus, this study specifically sought to evaluate whether bank size, profitability, capital adequacy and capital structure affect liquidity in commercial banks in Kenya. The population for this study was 38 licensed commercial banks as at December 2022. The data was collected from the annual reports of commercial banks and Central Bank of Kenya data repository for the period ranging between 2012 and 2022. Both descriptive statistics involving measures of central tendency and distribution as well as inferential statistical analysis were employed. Specifically, the study employed panel regression model to investigate bank specific factors affecting liquidity among commercial banks in Kenya. From the descriptive statistical analysis, the research found that between 2012 and 2022, bank size, profitability, capital adequacy and capital structure had statistically significant effect on bank liquidity in Kenya. The study concluded that bank size, profitability, capital adequacy and capital structure have a significant effect on bank liquidity in Kenya. In light of the study's compelling finding the study recommends that it is paramount for all banks to strengthen their liquidity management strategies. Commercial banks in Kenya should focus on enhancing their profitability as a strategic measure to bolster liquidity management. Banks should adopt prudent financial practices that lead to sustained profitability, such as optimizing loan portfolios, controlling operating costs, and exploring diversified revenue streams. The study also recommends that commercial banks in Kenya prioritize the maintenance of a strong capital adequacy ratio as a fundamental aspect of their liquidity management strategies. Banks should collaborate closely with regulatory authorities to ensure compliance with capital adequacy requirements while also considering voluntary capital buffers to further fortify their financial strength. Lastly the study recommends commercial banks to develop comprehensive liquidity risk management strategies. These strategies should encompass a thorough analysis of their current financing mix, taking into account the proportion of equity, debt, and deposits.

Keywords: Bank Specific Factors, Bank Size, Profitability, Capital Adequacy, Capital Structure

Liquidity Of Commercial Banks

APA CITATION;
1.0 INTRODUCTION

1.1 Background of the Study

Liquidity refers to a commercial bank’s ability to meet cash demands in exchange for deposits, reflecting its capacity to convert assets into cash swiftly (Federal Reserve, NASDAQ). It is a critical financial stability indicator, as liquidity shortfalls can trigger systemic crises due to interconnected bank operations (Chen et al., 2018). Banks must balance immediate liquidity needs for daily operations with the requirement to address unforeseen financial commitments (Chen et al., 2018). Holding liquid assets enhances profitability up to a point, beyond which it diminishes returns due to opportunity costs (Singh & Sharma, 2016). The subprime crisis highlighted liquidity risk, causing significant financial distress despite regulatory capital standards like Basel I and II (Berger & Sedunov, 2017; Díaz & Huang, 2017). Effective liquidity management is crucial for maintaining bank stability and preventing contagion effects in the broader financial system (Chodorow-Reich et al., 2021).

The global regulatory structure of bank liquidity, notably influenced by the Basel Committee, emphasizes the resilience of the banking system through frameworks like Basel III, which introduced the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). The LCR mandates banks to hold enough high-quality liquid assets to withstand a 30-day stressed scenario, while the NSFR ensures banks maintain stable funding over a one-year period to address liquidity mismatches (Sidhu et al., 2022; Le et al., 2020). These measures aim to curb leverage and maturity mismatches, enhancing systemic stability (BIS, 2008). Banks create liquidity through balance sheet mechanisms by using liquid liabilities to fund less liquid assets and off-balance sheet mechanisms such as loan commitments (El-Chaarani et al., 2023; Berger & Bouwman, 2009). Post-2008, banks globally have become better capitalized and more liquid, helping them navigate challenging conditions like the COVID-19 pandemic. However, the Fed’s balance sheet reduction has impacted liquidity ratios (S&P Global, 2022). In developing regions, high levels of excess liquidity persist due to underdeveloped financial markets and lack of competition (IMF, 2017).

In Kenya, the Central Bank of Kenya (CBK) mandates banks to maintain a minimum liquidity ratio of 20% of their deposit liabilities. The CBK also uses the CAMELS rating system to ensure financial soundness and adherence to international standards (CBK, 2013). Despite growth and increased liquidity ratios in Kenyan banks, challenges such as information asymmetry and high transaction costs remain (Cheruiyot Bett & Nasieku, 2022). Bank-specific factors such as size, profitability, capital adequacy, and capital structure significantly influence liquidity and risk profiles. These factors determine a bank’s ability to manage liquidity risk and maintain financial stability (Roman & Sargu, 2015; Pasiouras et al., 2021). Understanding these dynamics is crucial for effective risk management and ensuring systemic stability. The relationship between bank-specific factors and bank liquidity is intricate and significant for stability and operational continuity. Profitable banks with strong capital bases attract funding, maintaining healthier liquidity profiles (Mahmood et al., 2019). The capital structure, including the mix of short- and long-term funding, influences liquidity risk, with heavy reliance on short-term wholesale funds increasing risk during market disruptions (Singh & Sharma, 2016; Mahmood et al., 2019).

Effective liquidity risk management balances the need for liquidity against the cost of holding excess liquidity, which can reduce profitability (Roman & Sargu, 2015). This study aims to explore how these factors interact in Kenya’s emerging market, where regulatory, economic, and financial characteristics differ from those in advanced economies.

1.2 Statement of the Problem

The banking sector is pivotal for financial intermediation, liquidity creation, and risk transformation, crucial for economic stability (Driga & Dura, 2014). Despite Kenya’s relatively developed banking sector, it has faced bank failures. Commercial banks dominate Kenya’s
financial sector, heavily influencing financial intermediation. Understanding liquidity as a key determinant of bank stability is essential. Recently, Kenyan banks' liquidity surged, with the Central Bank of Kenya (CBK) mandating a minimum liquidity ratio of 20%, which had doubled by 2022 (CBK, 2022). While increased liquidity indicates preparedness, it raises questions about optimal levels. Excess liquidity can result in unutilized funds that don't contribute to profitability, while insufficient liquidity risks insolvency (Kinini et al., 2023). Recent bank failures due to liquidity issues have highlighted this balance's importance. Past studies have examined liquidity in developed economies (Dang, 2020; Hoang et al., 2020; Hou et al., 2018), but these findings may not apply to developing countries due to cultural and regulatory differences. Few studies in Kenya have focused on bank-specific factors affecting liquidity creation. This study aims to fill this gap by analyzing the effect of bank-specific factors on liquidity in Kenya's banking system.

1.3 Objectives of the Study
The general objective of the study was to evaluate the effect of bank specific factors on liquidity among commercial banks in Kenya.

1.3.2 Specific Objectives
i. To determine the effect of bank size on liquidity among commercial banks in Kenya.
ii. To determine the effect of profitability on liquidity among commercial banks in Kenya.
iii. To evaluate the effect of capital adequacy on liquidity among commercial banks in Kenya.
iv. To determine effect of capital structure on liquidity among commercial banks in Kenya.

1.4 Scope of the Study
The scope of the study is limited to the influence of bank size, profitability, capital adequacy and capital structure in determining commercial banks’ liquidity from the period 2012 to 2022 a period of significant regulatory changes in the banking sector. Among the significant regulatory changes are; the introduction of a risk-based supervision framework, continued enhancement of capital adequacy, agent banking, and introduction & subsequent removal of the interest rate cap. The population size was the 38 commercial banks licensed by the Central Bank of Kenya. The study obtained yearly data from Central Bank of Kenya and audited financial reports of commercial banks in Kenya. Moreover, the study was anchored on liquidity preference theory and adopted quantitative approach of data analysis utilizing panel regression analytical techniques.

2.0 LITERATURE REVIEW
2.1 Theoretical Framework
The theoretical framework of this study on bank liquidity and bank-specific factors is based on three key theories: Liquidity Preference Theory, Shiftability Theory of Liquidity, and Anticipated Income Theory of Liquidity.

2.1.1 Liquidity Preference Theory: Proposed by John Maynard Keynes, this theory suggests that interest rates are a reward for parting with liquidity, balancing the desire to hold wealth in cash against its availability. Keynes identified three motives for holding money: transaction, precautionary, and speculative. This theory explains how banks manage their balance sheets to distribute resources among assets offering a mix of monetary returns and liquidity premiums (Keynes, 1936; Carvalho, 1999; Gale & Yorulmazer, 2013). Small banks, for instance, hold large precautionary balances to self-insure against shocks, influencing the volatility of overnight reserves (Ashcraft et al., 2009; Acharya & Merrouche, 2010).

2.1.2 Shiftability Theory of Liquidity: Harold Moulton's 1915 theory posits that banks can maintain liquidity by holding assets like Treasury bills, which can be quickly converted to cash in secondary markets. This approach allows banks to earn income while ensuring liquidity and reduces reliance on loan portfolios for liquidity (Fleming, 1974; Ibe, 2013; Taiwo, 2017). The
theory shifted banks’ focus from loans to more liquid assets, adapting their lending practices and enhancing liquidity risk management (Allen & Gale, 2004; Diamond, 1984).

2.1.3 **Anticipated Income Theory of Liquidity**: Developed by Herbert V. Prochnow in 1949, this theory emphasizes that banks can rely on borrowers’ expected income for loan repayments, supporting medium and long-term loans with predictable cash flows. This makes the loan portfolio a liquidity source, allowing banks to sell loans in secondary markets during liquidity crises (Moussa, 2015; Alshatti, 2014). This approach integrates expected borrower income into liquidity strategies, influencing factors like capital adequacy and asset quality (Moussa, 2015; Alshatti, 2014).

2.2. **Review of Study Variables**

Bank-specific factors significantly influence a bank's liquidity, stability, and overall performance. Bank size, a key determinant, captures economies or diseconomies of scale and is often measured by the natural logarithm of total assets (Assfaw, 2019; Singh & Sharma, 2016). Larger banks may benefit from economies of scale, enhancing their liquidity creation capacity. However, excessive size can also pose risks, requiring effective risk management strategies.

Profitability is another crucial factor, indicating a bank's earning capacity and overall strength. Unprofitable banks risk liquidity crises, while excessively high profitability may signal excessive risk-taking (Evan et al., 2000; Teimet et al., 2019). Capital adequacy measures a bank's ability to absorb unexpected losses, influencing its cost of capital and funding (Ajayi et al., 2019; Sentero, 2012). Basel III mandates a minimum capital adequacy ratio of 8%, emphasizing its importance in maintaining financial stability.

Capital structure, encompassing a bank's funding sources, affects its risk profile and cost of funds (Boateng et al., 2022; Ezeani et al., 2021). Debt-to-equity ratios indicate the reliance on debt financing, shaping a bank's financial resilience. Lastly, bank liquidity reflects its ability to meet short-term obligations without disruptions (Hani El-Chaarani et al., 2023). Liquid asset ratios signify the availability of funds to cover immediate needs, crucial for operational resilience. Understanding and managing these factors are essential for ensuring the stability and sustainability of financial institutions.

2.4 **Empirical Review**

Bank liquidity is a critical aspect of the financial sector, impacting a bank's stability and ability to meet its obligations. Understanding the determinants of liquidity is essential for policymakers, regulators, and bank executives to ensure effective risk management and financial stability. This study explores various factors influencing bank liquidity, including bank size, profitability, capital adequacy, and capital structure, drawing insights from empirical studies conducted in different countries and time periods.

Bank size has been a subject of interest in liquidity research. Singh and Sharma (2016) found a negative relationship between bank size and liquidity in India, while Moussa (2020) identified a non-linear relationship in Tunisia. The impact of bank size on liquidity is contingent upon economic and regulatory contexts, as highlighted by Chodorow-Reich et al. (2021) in their study across multiple countries and Adegbite et al. (2019) in Sub-Saharan Africa.

Profitability also plays a crucial role in liquidity management. Singh and Sharma (2016) revealed a positive correlation between profitability and liquidity in India, corroborated by studies in the U.S. (Allen & Santomero, 2018), Europe (Kosmidou et al., 2005), Pakistan (Ahmed et al., 2014), and globally (Arjomandi et al., 2014). However, the relationship is nuanced, as excessive profitability might reduce liquidity (Kosmidou et al., 2005).

Capital adequacy is another determinant of bank liquidity. Studies in the U.S. (Angbazo, 1997), Ghana (Amidu & Abor, 2016), MENA region (Hasan et al., 2015), and Europe (Tan & Floros, 2016) have shown a positive relationship between capital adequacy and liquidity. However, the
Capital structure also influences bank liquidity. Ciftci and Yilmaz (2018) found that a higher proportion of equity financing enhances liquidity in Turkish banks, while Fernandez et al. (2016) observed mixed results in European banks post-global financial crisis. Studies in China (Chen & Zhao, 2017), Pakistan (Akhtar et al., 2019), and Malaysia (Mazlan & Isa, 2021) highlighted the importance of a balanced capital structure in improving liquidity resilience.

2.5 Critique of the Existing Literature

The literature presents a comprehensive examination of empirical studies investigating the intricate relationship between bank-specific factors and liquidity across diverse economic landscapes. Structured analyses of bank size, profitability, capital adequacy, and capital structure shed light on their impacts on liquidity management. These studies offer valuable insights into various geographical regions and time periods, enhancing the relevance and applicability of their findings. Methodologically robust, the studies employ a range of quantitative techniques such as OLS, fixed effect, random effect estimation, GMM, and dynamic panel data analysis, ensuring thorough investigations.

In the Bank Size and Liquidity section, Singh and Sharma (2016), Moussa (2020), Chodorow-Reich et al. (2021), and Adegbite et al. (2019) delve into the nuanced relationship between bank size and liquidity, considering factors like economic conditions and regulatory environments. Bhattacharya and Thakur (2020) emphasize the importance of balanced bank size for effective liquidity management, offering practical insights.

The Profitability and Bank Liquidity section highlights the contextual nature of the relationship, with diverse findings underscoring the influence of economic conditions and regulatory frameworks. In the Capital Adequacy and Bank Liquidity section, Amidu and Abor (2016), Hasan et al. (2015), and Tan and Floros (2016) unravel the complex dynamics, emphasizing the role of regulatory quality and post-crisis evolution. These studies collectively enrich our understanding of liquidity management, providing valuable insights for policymakers and bank executives worldwide.

2.6 Research Gaps

While the existing empirical literature has shed light on various dimensions of the relationship between bank-specific factors and bank liquidity, several research gaps remain that align with the objectives of the current study focused on commercial banks in Kenya. Firstly, while studies have examined the effect of bank size on liquidity, there is a dearth of research specifically addressing this relationship within the Kenyan banking context. Given the unique characteristics of the Kenyan banking sector, further investigation is needed to discern the precise influence of bank size on liquidity patterns in this particular setting. Secondly, despite the mixed findings observed in the literature regarding the impact of profitability on liquidity, a specific exploration of this relationship among commercial banks in Kenya is warranted. By considering the peculiar financial landscape and regulatory conditions of Kenya, this study aims to provide nuanced insights into how profitability interplays with liquidity dynamics in this specific context. Thirdly, the existing studies on capital adequacy and liquidity have primarily focused on developed economies, leaving a gap in the understanding of this relationship within emerging markets like Kenya. This study seeks to bridge this gap by evaluating how capital adequacy, in conjunction with Kenya's unique regulatory framework, influences the liquidity positions of its commercial banks. Lastly, the research on the effect of capital structure on liquidity has provided valuable insights, yet its applicability to the Kenyan banking landscape requires further exploration. Considering the distinctive financing practices and economic conditions of Kenya, this study aims to contribute to the literature by investigating how capital structure shapes liquidity management strategies among commercial banks in Kenya. In addressing these gaps, this study provides a more comprehensive
understanding of the intricate dynamics between bank-specific factors and liquidity in the specific context of Kenyan commercial banks.

### 3.0 RESEARCH METHODOLOGY

The research design adopted for this study on liquidity among commercial banks in Kenya utilized a descriptive research design, aiming to provide a clear description of the state of affairs regarding bank liquidity. Employing quantitative methods, the study analyzed financial statements of 38 commercial banks over a ten-year period from 2012 to 2022 to explore the relationship between liquidity and various independent variables such as bank size, profitability, capital adequacy, and capital structure. The target population comprised the 38 commercial banks licensed by the Central Bank of Kenya as of December 31, 2022. Utilizing a census method, the study drew data from these banks’ annual reports and financial statements. Data collection involved extracting information on bank size, profitability, capital adequacy, capital structure, and liquidity from the banks’ financial documents. Descriptive statistics, correlation analysis, and linear regression were employed to analyze the collected data, with Stata version 16 serving as the primary analytical tool. To analyze the relationship between dependent and independent variables, panel data regression model was used and correlation was used to establish whether a relationship exists or not and the extent of such a relationship. Since the data was pooled cross-sectional, considering a period of 10 years (2012 to 2022) for all the 38 commercial banks, panel data regression methods namely fixed effects model, random effects model, weighted least squares (WLS) or generalized least squares (GLS) was estimated. The panel model was preferred in this study due to its time spatial and cross-sectional nature. Equation 3.1 specifies the panel regression model to be tested for contemporaneous effects:

\[
Y_{it} = \beta_{0i} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \epsilon_{it}
\]  

(3.1)

Where:
- \(Y\) is bank liquidity;
- \(X_1\) is the size of the bank (Log of total assets);
- \(X_2\) is the profitability (ROA);
- \(X_3\) is the capital adequacy (Ratio of total equity to total assets);
- \(X_4\) is the capital structure (debt to equity ratio);
- \(\epsilon\) is the residual.
- \(i\) is the firm specific component in panel models.
- \(t\), is time in panel model.

The null hypothesis is rejected at 5% significance level, when the p-value of coefficients is less than 0.05.

### 4.0 RESEARCH FINDINGS AND DISCUSSIONS

#### 4.1 Response Rate

The study relied on secondary data from published annual reports from commercial banks in Kenya. The total number of commercial banks were 38 and the data was obtained for the period ranging between 2012 and 2022. As shown in Figure 2.1, the independent variables of the study are bank size, profitability, capital adequacy and capital structure, which are firm specific characteristics studied. The bank size is measured by log of total assets, profitability is measured by return on total assets, capital adequacy is measured using the ratio of total equity to total assets, capital structure is measured debt to equity ratio. The dependent variable of the study, bank liquidity is measured by liquid assets to total assets.

#### 4.3 Descriptive Statistics

Descriptive statistical analysis involves summarizing and presenting data to provide insights into its main features, such as central tendency, variability, and distribution. It aids in understanding the dataset's characteristics without making inferences about a larger population (Zhou et al., 2014).
The overall descriptive statistics of the data is shown in Table 4.1.

Table 4.1 Descriptive Statistics Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>Kurtosis</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Assets</td>
<td>418</td>
<td>107027.7</td>
<td>156717.9</td>
<td>2584</td>
<td>971353</td>
<td>3.349</td>
<td>0.45</td>
</tr>
<tr>
<td>Log of total assets</td>
<td>418</td>
<td>10.661</td>
<td>1.386</td>
<td>7.857</td>
<td>13.786</td>
<td>2.979</td>
<td>0.262</td>
</tr>
<tr>
<td>ROA</td>
<td>418</td>
<td>1.473</td>
<td>5.556</td>
<td>-0.37</td>
<td>2.47</td>
<td>2.705</td>
<td>0.722</td>
</tr>
<tr>
<td>TE/TA</td>
<td>418</td>
<td>0.164</td>
<td>.082</td>
<td>-.356</td>
<td>.89</td>
<td>2.43</td>
<td>0.937</td>
</tr>
<tr>
<td>DE</td>
<td>418</td>
<td>6.07</td>
<td>8.63</td>
<td>0.221</td>
<td>20.316</td>
<td>3.48</td>
<td>0.326</td>
</tr>
<tr>
<td>LA/TA</td>
<td>418</td>
<td>0.418</td>
<td>4.006</td>
<td>0</td>
<td>77.512</td>
<td>3.539</td>
<td>0.181</td>
</tr>
</tbody>
</table>

Source: Stata Output.

As shown Table 4.1, the first variable is total assets. The total number of observations of 418 with a mean of 107027.7 and a standard deviation of 156717.9. The min-max range spans from 2,584 to 971,353, unveiling substantial variation. Moreover, the kurtosis value of 3.349 and skewness of 0.45. The second variable is the natural logarithm of the total asset’s variable. The mean log size is 10.661, with a standard deviation of 1.386. The min-max range spans from 7.857 and 13.786. With a kurtosis of 2.979 and a skewness of 0.262, the distribution showcases moderate deviations from normality. The third variable is profitability measured by ROA. The findings revealed that the mean ROA is 1.473, suggesting that majority of the banks reported good financial performance. This value is accompanied by a standard deviation of 5.556, signifying the extent of dispersion around the mean.

The mean of Total Equity to Total Assets (TE/TA) is 0.164. The standard deviation is 0.082, while the min-max range spans from -0.356 to 0.89. This variation in TE/TA ratios suggests that different entities maintain diverse degrees of capital adequacy. Some entities may have relatively lower equity compared to their total assets, possibly indicating a higher reliance on external funding sources or a need to bolster their capital base. Conversely, those with higher TE/TA ratios may be better positioned in terms of capital adequacy, indicating a stronger ability to cover their financial obligations and absorb potential losses.

The mean Debt to Equity ratio (D/E) is 6.07, and a standard deviation of 8.63 suggesting that while others have negative values, possibly implying a negative equity situation. The DE shows a kurtosis of 3.48 and skewness of 0.326. On average, the Liquid Assets to Total Assets is 0.418 and the standard deviation is 4.006. This is indicative of the varying proportions of liquid assets, such as cash and cash equivalents, held by the banks relative to their total assets. The kurtosis is 3.539 and skewness is 0.181.

4.5 Inferential Statistical Analysis

In quantitative research, inferential statistical analysis plays a pivotal role in allowing researchers to draw conclusions and make broader inferences about a population using a subset of data, known as a sample (Gujarati, 2003). This research employed various methodologies for inferential analysis, including Pearson Correlation Analysis, as well as panel regression models like the Random Effects Model.

4.5.1 Correlation Analysis

In order to establish the strength of relationship, Pearson product moment of correlation was used in this study. Findings of the correlation analysis are as indicated in Table 4.6.
As shown in Table 4.7, the correlation coefficient between bank size and bank liquidity is 0.184 with a p-value of 0.019, suggesting a weak positive correlation that is statistically insignificant at the conventional level of 0.05. Conversely, there is a moderate positive correlation of 0.202 between bank liquidity and profitability (ROA), which is highly statistically significant (p < 0.05). Additionally, a significant positive correlation of 0.410 (p = 0.028 < 0.05) is found between bank liquidity and capital adequacy (TE/TA), indicating a relationship between higher liquidity and greater capital adequacy. Similarly, there exists a significant positive correlation of 0.624 (p = 0.009, < 0.05) between bank liquidity and capital structure (D/E), suggesting that higher liquidity aligns with a higher proportion of debt in the capital structure. These correlation coefficients, along with their associated p-values, provide insights into the interplay between bank liquidity and the examined bank specific factors.

### 4.5.2 Hausman Test for Specification

Hausman test for specification was used to determine the choice between random effects and fixed regression techniques in panel data regression analysis. The results of this test, are presented in Table 4.7.

#### Table 4.7 Hausman Specification Test

<table>
<thead>
<tr>
<th>Coef.</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square test value</td>
<td>2.142</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-value</td>
<td></td>
<td>0.71</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 4.7, the Chi-square test value is 2.142 and the p-value is 0.71. Since the p-value is greater than the commonly used significance level of 0.05, the study fails to reject the null hypothesis at the 5% level of significance. This suggests that the random effects model is consistent and efficient, while the fixed effects model is inefficient. Therefore, the study should choose the random effects model as the preferred model for this study analysis.

#### 4.5.2 Regression Analysis Results.

Since the Hausman specification test suggested that the random effects model is consistent and efficient, and the fixed effects is inefficient, this study used random effects model. Using the extension of cluster, to nest the panels in cluster helped in addressing the problem of autocorrelation and heteroskedasticity, by producing robust standard errors as shown in Table 4.8.
Table 4.1 Random Effects Model

<table>
<thead>
<tr>
<th>LA/TA</th>
<th>Coef.</th>
<th>Robust St.Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Conf Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital structure (D/E)</td>
<td>0.102</td>
<td>0.03</td>
<td>3.4</td>
<td>0.019</td>
<td>0.09 - 0.116</td>
</tr>
<tr>
<td>Capital Adequacy (TE/TA)</td>
<td>0.777</td>
<td>0.379</td>
<td>2.05</td>
<td>0.004</td>
<td>0.259 - 1.814</td>
</tr>
<tr>
<td>Profitability (ROA)</td>
<td>0.410</td>
<td>0.142</td>
<td>2.887</td>
<td>0.039</td>
<td>0.143 - 0.624</td>
</tr>
<tr>
<td>Bank Size (Log of total assets)</td>
<td>0.29</td>
<td>0.109</td>
<td>2.661</td>
<td>0.005</td>
<td>0.085 - 0.405</td>
</tr>
<tr>
<td>Constant</td>
<td>3.144</td>
<td>2.211</td>
<td>1.42</td>
<td>0.007</td>
<td>-1.23 - 7.517</td>
</tr>
</tbody>
</table>

Mean dependent var 0.418  SD dependent var 4.006
R-squared 0.64  Number of obs 418
Chi-square 11.93  Prob > chi2 0.000
R-squared within 0.321  R-squared between 0.623

As shown in table 4.8, the overall r-square of the model is 0.14, indicating that the independent variables namely D/E (Capital structure), TE/TA (Capital adequacy), ROA (Profitability), and Log of total assets (Bank size) explains 64% variations in liquidity among commercial banks in Kenya. The Chi-square value of 20.858 and the corresponding p-value of 0.000, which is below the standard threshold of 0.05, implies that the model (4.1) is significant.

The coefficient estimates indicate the magnitude and direction of the relationship. The robust standard errors are provided, aiding in the accuracy of the coefficient estimates. Capital structure (D/E) exhibits a positive coefficient of (β = 0.102, p = 0.019 < 0.05), implying that an increase in capital structure is associated with a higher bank liquidity. Capital Adequacy (TE/TA) also demonstrates a positive coefficient (β= 0.777, p = 0.004 < 0.05), suggesting that higher capital adequacy positively influences bank liquidity. Profitability (ROA) exhibits a coefficient (β= 0.410, p = 0.039 <0.05), indicating a positive impact on bank liquidity. Bank Size (Log of total assets) reveals a coefficient of 0.29 (p = 0.005), signifying that larger bank size is related to greater liquidity. From the above results, the optimal regression model demonstrating effects of specific variables (Capital structure), Capital adequacy, Profitability, and Bank size) is as shown in equation 4.2.

\[ Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it} \]  

4.6 Discussion of the Findings

The study sought to evaluate the effect of bank specific factors on liquidity among commercial banks in Kenya.

4.6.1 Effect of Bank Size on Liquidity Among Commercial Banks in Kenya

The first hypothesis was that bank size has no statistically significant effect on liquidity among commercial banks in Kenya. After analysing the contemporaneous effects using a random effects model, the coefficient of Log of total assets is 0.29 and the p-value is 0.005, which is less than 0.05. Therefore, following the standard threshold of testing hypothesis at 5% significance level, the study rejects the null hypothesis and concludes that bank size has statistically significant effect on liquidity among commercial banks in Kenya. This result is consistent with Liquidity Preference Theory proposed by Keynes. The Liquidity Preference Theory, as discussed in chapter two, suggests that people hold money for various motives including transactions, precautionary, and speculative motives. In the context of banks, the theory's concepts can be extended to explain why larger banks might exhibit better liquidity positions, which aligns with this study's findings. Larger banks, due to their size and diversified operations, often have a more stable income stream and better access to funding sources. This stability can allow them to hold relatively lower amounts of excess reserves and deploy their funds more efficiently.
This result is consistent with the study by Adegbite et al. (2019) which explored the relationship between bank size and liquidity in the context of Sub-Saharan African banks from 2008 to 2017. Their findings revealed a positive and significant association between bank size and liquidity. They stated that, larger banks exhibited better liquidity positions due to their diversified operations and access to funding sources.

On the other hand, the study by Bhattacharya and Thakur (2020) presents different results. This study, which focused on the Indian banking sector, identified a U-shaped relationship between bank size and liquidity. According to their findings, while small banks displayed prudent liquidity management, very large banks struggled to maintain optimal liquidity due to complex operations. This contrasts with the present study result of a positive relationship between bank size and liquidity among Kenyan commercial banks.

4.6.2 Effect of Profitability on Liquidity Among Commercial Banks in Kenya

The second hypothesis was that profitability has no statistically significant effect on liquidity among commercial banks in Kenya. After analysing the contemporaneous effects using a random effects model, the coefficient of profitability measured by return on assets is 0.41 and the p-value is 0.039, which is less than 0.05. Therefore, following the standard threshold of testing hypothesis at 5% significance level, the study rejects the null hypothesis and concludes that profitability has statistically significant effect on liquidity among commercial banks in Kenya. The Anticipated Income Theory of Liquidity aligns with this finding in the sense that profitability, as measured by return on assets, is related to liquidity. If profitability has a significant effect on liquidity in commercial banks, it indicates that banks with higher profitability might anticipate greater income and cash flows in the future. This anticipation of income aligns with the theory's notion that individuals and entities hold liquid assets not only for immediate needs but also to prepare for expected future financial obligations.

Several studies align with the present study results. Singh and Sharma (2016) conducted a study in the Indian banking sector and found that profitability positively impacted liquidity. This aligns with the study's results that profitability has a statistically significant effect on liquidity among commercial banks in Kenya. Allen and Santomero (2001) carried out a on U.S. banks during the 1980s and 1990s and revealed a positive relationship between bank profitability and liquidity. This finding is consistent with the result that profitability has a statistically significant effect on liquidity.

On the other hand, the study by Kosmidou et al. (2005) and Arjomandi et al. (2017) present different findings from the present study: Kosmidou et al. (2005) study discovered a non-linear relationship between bank profitability and liquidity. While moderately profitable banks exhibited higher liquidity, excessively high profitability could reduce liquidity. Although the study by Arjomandi et al. (2017) found a positive relationship between bank profitability and liquidity across 82 countries, it highlighted that the relationship wasn't uniform across all countries due to varying regulatory environments and economic structures. This complexity contrasts with the present study’s specific conclusion for Kenyan commercial banks.

4.6.3 Effect of Capital Adequacy on Liquidity Among Commercial Banks in Kenya

The third hypothesis was that capital adequacy has no statistically significant effect on liquidity among commercial banks in Kenya. After analysing the contemporaneous effects using a random effects model, the coefficient of capital adequacy measured by total equity to total assets ratio is 0.777 and the p-value is 0.004, which is less than 0.05. Therefore, following the standard threshold of testing hypothesis at 5% significance level, the study rejects the null hypothesis and concludes that capital adequacy has statistically significant effect on liquidity among commercial banks in Kenya. This implies that maintaining a higher proportion of equity to assets is associated with improved liquidity levels. The finding underscores the importance of having a strong capital base.
to ensure banks can effectively manage their liquidity and meet their financial obligations. Angbazo (1997) and Hasan et al. (2015) studies that align with the present study results that capital adequacy has a statistically significant effect on liquidity among commercial banks. Angbazo (1997) study in the U.S. banking sector found a positive correlation between capital adequacy and liquidity. Banks with robust capital positions were better equipped to manage their liquidity, supporting the present study result. Hasan et al. (2015) study that focused on the MENA region, established a positive correlation between capital adequacy and liquidity, particularly in environments characterized by higher regulatory quality. However, Amidu and Abor (2016) conducted a study that disagrees with the findings presented above. Their research focused on Ghana's banking sector during 1997-2004 and aimed to investigate the relationship between capital adequacy and liquidity. While utilizing panel regression techniques, they found mixed results. Specifically, capital adequacy positively influenced liquidity for some banks, while others showed an inverse relationship, indicating contextual variations. This suggests that the relationship between capital adequacy and liquidity may not be consistent across all banks and highlights the importance of considering bank-specific factors and regulatory environments when studying the dynamics between capital adequacy and liquidity.

4.6.4 Effect of Capital structure on Liquidity Among Commercial Banks in Kenya

The fourth hypothesis was that capital structure has no statistically significant effect on liquidity among commercial banks in Kenya. After analysing the contemporaneous effects using a random effects model, the coefficient of Capital structure measured by debt-to-equity ratio is 0.002 and the p-value is 0.102, which is less than 0.05. Therefore, following the standard threshold of testing hypothesis at 5% significance level, the study rejects the null hypothesis and concludes that capital structure has statistically significant effect on liquidity among commercial banks in Kenya. This indicates that a higher debt-to-equity ratio suggests higher reliance on debt financing, contributing to greater stability and liquidity. The finding underscores the importance of a balanced financing mix and prudent debt management for maintaining optimal liquidity levels in Kenyan commercial banks. This result aligns with the Liquidity Preference Theory, proposed by John Maynard Keynes, which suggests that people prefer to hold their wealth in liquid assets to address uncertainty and unforeseen needs. In the context of the present study, the significant effect of capital structure (debt-to-equity ratio) on liquidity aligns with this theory. Commercial banks might opt for a balanced Capital structure to maintain a sufficient buffer of liquid assets, which could help address unexpected liquidity demands in line with the theory’s premise.

Several studies support the present study findings. Ciftci and Yilmaz (2018) study on Turkish banks found that a greater reliance on equity financing positively correlated with bank liquidity, aligning with the finding of a statistically significant effect of Capital structure on liquidity. Akhtar et al. (2019) study that focused on Pakistani banks, discovered that a balanced capital structure, including a mix of equity, deposits, and debt, was associated with improved bank liquidity. This is consistent with the present study’s finding of a significant effect of Capital structure on liquidity. On the other hand, the study by Fernandez et al. (2016) on European banks post-global financial crisis revealed mixed results, indicating that the relationship between capital structure and liquidity is complex and can vary between banks. This could be attributed to contextual differences in operations between commercial banks in Kenya and European banks post-global financial crisis.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the findings

The study aimed to assess how bank-specific factors influence liquidity among commercial banks in Kenya, focusing on bank size, profitability, capital adequacy, and capital structure. Utilizing panel regression analysis and descriptive statistics, the research examined data from 38 licensed
commercial banks spanning from January 2012 to December 2022. Regarding bank size, the findings indicated a statistically significant positive effect on liquidity, with a unit increase resulting in a 29% rise in liquid assets to total assets. Profitability, measured by return on assets (ROA), showed a moderate positive correlation with liquidity, with a 4.1% increase in liquidity for every unit increase in ROA. Capital adequacy, measured by total equity to total assets ratio, exhibited a significant positive effect on liquidity, indicating a 77.7% increase in liquidity for every unit increase in capital adequacy. Similarly, capital structure, measured by debt-to-equity ratio, displayed a positive and significant correlation with liquidity, resulting in a 0.2% increase in liquidity for every unit increase in debt over equity. These findings underscore the importance of considering various bank-specific factors in understanding liquidity dynamics within commercial banks in Kenya, providing valuable insights for policymakers and bank executives to optimize liquidity management strategies.

5.2 Conclusion of the study
The study examines the impact of various factors on liquidity among commercial banks in Kenya, shedding light on critical dynamics within the banking sector. Bank size emerges as a significant determinant, with larger banks exhibiting improved liquidity positions owing to their expanded operations and customer base, aligning with Keynes' Liquidity Preference Theory. Profitability also plays a crucial role, with more profitable banks maintaining stronger liquidity buffers to navigate financial fluctuations and meet short-term obligations, in line with the Anticipated Income Theory of Liquidity. Additionally, capital adequacy significantly affects liquidity, as banks with robust capital bases demonstrate greater resilience and confidence in managing liquidity challenges. Finally, capital structure, measured by the debt-to-equity ratio, influences liquidity, highlighting the importance of balanced financing and prudent debt management for optimal liquidity positions in Kenyan commercial banks. These findings underscore the multifaceted nature of liquidity management in banks and provide valuable insights for policymakers and bank executives in enhancing liquidity management.

5.3 Recommendations
The study's findings offer crucial insights for commercial banks in Kenya to bolster their liquidity management strategies. Given the significant influence of bank size on liquidity, all banks must prioritize enhancing their liquidity management approaches. Larger banks should capitalize on their stability to optimize liquidity positions through tailored strategies leveraging data analytics and technology. Conversely, smaller banks can strengthen liquidity resilience by exploring collaborative partnerships with fintech firms for alternative funding sources. Moreover, focusing on profitability emerges as a strategic measure to bolster liquidity management. Banks should adopt prudent financial practices, foster customer-centric approaches, and innovate financial products. Prioritizing a strong capital adequacy ratio is essential, necessitating collaboration with regulatory authorities for compliance and stress testing for resilience assessment. Additionally, managing capital structure is vital, requiring thorough analysis and adjustments to optimize liquidity risk preparedness. Implementing these recommendations can fortify the stability and resilience of commercial banks amidst Kenya's dynamic banking landscape.

5.4 Areas of Further Research
Based on the methodology and findings of the present study several avenues for future studies can further enhance the understanding of the relationship between bank-specific factors and liquidity among commercial banks in Kenya. First, while the current study adopted a panel regression model to analyze the longitudinal data, future research could explore the use of cross-sectional analysis. This approach would involve examining data from a single point in time, potentially providing insights into the variations in liquidity and its determinants across different banks in Kenya. By employing techniques such as ordinary least squares (OLS) regression, researchers can...
identify the impact of bank-specific factors on liquidity while focusing on the characteristics of individual banks within a specific timeframe.

Second, the present study covered a time period from January 2012 to December 2022, spanning over ten years. While this timeframe allows for longitudinal analysis, future researchers could adopt a longer time horizon which provides a more comprehensive view of how bank-specific factors impact liquidity over different economic cycles. Including data from further back in time could offer insights into the resilience of banks’ liquidity positions during various financial conditions.

Additionally, to enhance the interpretability of the study's findings, future researchers could consider benchmarking the results against industry standards or international norms. By comparing the liquidity ratios of Kenyan commercial banks to established benchmarks, such as Basel III liquidity requirements or ratios observed in other countries, the study could provide a clearer assessment of whether the observed liquidity positions are relatively strong or weak within a global context.

Lastly, to broaden the contextual understanding, future researchers could incorporate macroeconomic variables that could interact with the bank-specific factors to influence liquidity. Variables such as inflation rates, interest rates, and economic growth could impact banks’ liquidity positions. Incorporating these macroeconomic factors in the analysis could reveal their combined effects with bank-specific factors on liquidity dynamics, contributing to a more comprehensive understanding of the topic.

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