



Liquidity and financial performance of deposit-taking savings and credit co-operative societies [SACCOs] in Nairobi City County, Kenya

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ABSTRACT

The financial health of deposit-taking savings and credit co-operative societies (DT-SACCOs) is critically dependent on liquidity because it enables member withdrawals, the settlement of short-term obligations and continued lending. This study examined the relationship between liquidity and financial performance of DT-SACCOs in Nairobi City County, Kenya. The study was anchored in the Resource-Based View (RBV), which emphasises the strategic use of internal resources to sustain organisational performance. A quantitative descriptive-correlational cross-sectional design was used with 2025 secondary financial data sourced from audited annual financial statements and Sacco Societies Regulatory Authority (SASRA) reports. The study adopted a census approach to the 46 licensed DT-SACCOs, with 34 institutions providing complete and internally consistent data for the adjusted model. Return on assets (ROA) was used as the indicator of financial performance, while liquid assets divided by total deposits measured liquidity. Capital adequacy, the non-performing-loan ratio and net interest margin were included as controls, and Pearson correlation and ordinary least-squares regression were estimated in Stata. Liquidity was positively correlated with ROA ($r = 0.5138$, $p = 0.0019$), and the adjusted liquidity coefficient remained positive and statistically significant ($b = 0.0778$, 95% CI $[0.0616, 0.0940]$, $p < 0.001$). The findings were robust to heteroskedasticity-robust standard errors and the exclusion of four influential observations. The results show a positive relationship between the study liquidity ratio and financial performance, but they do not constitute a direct test of statutory liquidity compliance. Therefore, DT-SACCO boards and managers should incorporate liquidity forecasting, withdrawal monitoring and contingency funding planning into regular financial management while avoiding unnecessarily idle liquidity.

Keywords: Deposit-Taking SACCOs, Financial Performance, Liquidity, Kenya, Financial Co-Operatives, Return on Assets

I. INTRODUCTION

Deposit-taking savings and credit co-operative societies (DT-SACCOs) are one major sector of the member-based financial system in Kenya which mobilises savings and provide credit facilities to enterprises and households. With the growth of deposit-taking services, the sector was gradually becoming more formal in its practices in terms of prudential supervision, and having higher expectations in governance (Muriuki & Ragui, 2013; Ochieng, 2017; Mwita, 2022). African SACCOs research further reveals that organisational resources, governance structures and management practices influence organisational resilience and development (Nassuna, et al., 2024). DT-SACCOs need to ensure that they operate in a liquid manner that is both resilient and effective in using their funds. Liquid assets insulate against withdrawals and short-term funding needs but if liquid assets are held in excess, they will lose value when they can be invested or lent (Berger & Bouwman, 2009; Bordeleau & Graham, 2010). Moreover, banking research has shown that banking liquidity decisions are linked with capital and deposit funding and balance sheet structure, thus, banking liquidity should be studied within the context of the overall financial configuration of the banking institution (Distinguin, et al., 2013; DeYoung & Jang, 2016; Chen, et al., 2018). The evidence on Kenya is mixed, not one way or the other. Prior research in Nairobi has suggested that liquidity has a positive impact on DT-SACCO performance (Muriuki, 2022), while national studies have concluded that liquidity has a positive effect or a positive correlation between the financial-soundness indicators and performance (Muhumed & Olando, 2024; Mwaura, et al., 2025; Tarus & Simiyu, 2024). There is also other national evidence that suggests that after adding other institutional characteristics to the model, liquidity becomes a variable that is statistically insignificant (Mirichii, et al., 2023). The evidence at the county level, however, remains liquidity as a relevant performance factor of SACCOs, even though it is a more recent occurrence (Wanjiru & Waweru, 2025).

1.1 Statement of the Problem



The empirical problem is whether a clearly defined liquidity position is associated with return on assets (ROA) in the 2025 Nairobi DT-SACCO cross-section after other financial indicators are taken into account. The studies on regulatory compliance capacity in Nairobi were earlier studies, while the most comparable study of liquidity in Nairobi was on an earlier financial period (Mwita, 2022; Muriuki, 2022). This induces a temporal and model-specification gap which will be filled by the current study with recent data on the financial situation of institutions.

1.2 Research Objectives

- i. Examine the bivariate relationship between the liquidity ratio and return on assets (ROA) among deposit-taking SACCOs in Nairobi City County, Kenya.
- ii. Determine whether the relationship between the liquidity ratio and ROA remains statistically significant after controlling for capital adequacy, the non-performing-loan ratio and net interest margin.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Resource-Based View (RBV)

The study is based on the theoretical framework of The Resource-Based View (RBV). RBV argues that performance is contingent upon the efficient use of internal resources and not just on ownership of resources (Barney, 1991). In financial co-operatives, liquidity, capital, managerial capability and member confidence can then be considered as resources that are valuable because they enable the co-operative to operate and achieve its goals. African SACCOs also point to the importance of internal resources and management strategies for their growth, with evidence highlighting how these resources and practices can enhance the sustainability and profitability of the sector (Nassuna, et al., 2024).

In terms of liquidity, RBV suggests that it is not necessarily best to have the highest liquidity ratio. A liquidity buffer not only ensures continuity of service and helps to relieve to some extent the pressure of emergency funding but can also have an opportunity cost if the liquidity is unnecessarily large given that the funds might otherwise have a prudent return. This liquidity-profitability trade-off is documented in empirical banking research, and empirical findings indicate that the performance impact of liquid assets varies with the quantity and type of liquid assets (Bordeleau & Graham, 2010; Chen, et al., 2018; Berger & Bouwman, 2009). In the case of DT-SACCOs, the question that should be asked is therefore whether or not the observed liquidity position is related to better accounting performance, and not whether liquidity should be maximised.

2.2 Empirical Review

2.2.1 Bivariate Relationship between Liquidity and Financial Performance

Liquidity-performance relationships can be interpreted using mechanisms found in evidence outside of the SACCO sector. When funding pressures arise from liquidity gaps and non-performing exposures, profitability suffers, and depository institutions can improve profitability by implementing effective liquidity management that matches their short-term obligations with their loans and stable funding sources (Arif & Anees, 2012; DeYoung & Jang, 2016). Liquidity also has an impact on regulatory capital, and this impact could have a different direction depending on the institutional environment and market conditions, consistent with the studies of commercial banks found in the literature (Distinguin, et al., 2013; Chen, et al., 2018). The evidence from the Kenyan commercial banks also shows that financial performance is responsive to liquidity-risk management (Amira, et al., 2023).

There are supportive and conditional effects cited in the literature in the context of Kenya's SACCO sector. The findings of this study support the arguments that liquidity-management practices relate financially to financial sustainability in the Mount Kenya region (Gatheru, et al., 2020) and that capital, asset quality, earnings and liquidity are linked to financial performance at national level (Mirichii, et al., 2023; Tarus & Simiyu, 2024; Muhumed & Orlando, 2024). Research that specifically addressed liquidity have found positive links between liquidity and performance at the national and county levels (Mwaura, et al., 2025; Wanjiru & Waweru, 2025). This will not be redundant because of differences in design, period and measurement across these studies, and because of the usefulness of a recent estimate for Nairobi.

2.2.2 Liquidity and Financial Performance after Financial-Soundness Controls

The following implications arise from the literature. Liquidity can have a positive impact on profitability in the first place because it reduces funding stress and ensures continuity of lending. Second, the correlation does not necessarily have to be positive over all possible ranges of values; with very high values of liquidity, it can be negative and still be considered an opportunity cost (Bordeleau & Graham, 2010; Berger & Bouwman, 2009). Third, the



liquidity coefficient may alter when adding capital structure, funding structure and other financial risks to the model (Distinguin, et al., 2013; DeYoung & Jang, 2016; Chen, et al., 2018). These points justify the reporting of an unadjusted liquidity model as well as an adjusted model, which incorporates selected financial-soundness controls.

III. METHODOLOGY

3.1 Research Design

The study adopted a quantitative descriptive-correlational, cross-sectional design using secondary financial data for the year 2025. The descriptive aspect summarised the study variables, while the correlational aspect examined relationships among the variables. The unit of analysis was the individual licensed DT-SACCO.

3.2 Study Area

The study was conducted in Nairobi City County, Kenya, and focused on licensed deposit-taking SACCOs operating within the county.

3.3 Target Population

The target population consisted of 46 licensed DT-SACCOs operating in Nairobi City County, consistent with the population reported for the study area.

3.4 Sampling and Sample Size

The study adopted a census approach to the 46 licensed DT-SACCOs because the target population was manageable. The final analysis was based on 34 usable observations (73.9% of the target population) with complete and internally consistent financial data. Institutions with incomplete or inconsistent financial details were excluded. This complete-case approach may create a selection limitation if excluded institutions differ systematically from those retained.

3.5 Data Collection Instruments and Procedures

The study relied on secondary data obtained from audited annual financial statements and SASRA supervisory reports for 2025; therefore, no questionnaire or interview schedule was used. Financial data were extracted systematically from the relevant reports and organised for analysis. Before analysis, the records were checked for missing values, implausible values and consistency in ratio construction, and only complete and relevant financial records were retained.

3.6 Data Analysis

3.6.1 Measurement of Variables

The financial performance was analysed in terms of ROA (Net Surplus after tax/Total Assets). The explanatory variable of focus – *liquidity* – was defined as liquid assets divided by total deposits. The financial controls that were added to the adjusted model included capital adequacy, the NPL ratio and NIM. All variables were coded as decimal ratios and not rounded percentages. The operational definitions are included in Table I.

Table 1

Study variables and operational measures

Variable	Operational measure	Role	Interpretation of higher value
Return on assets (ROA)	Net surplus after tax / total assets	Dependent	Higher accounting return
Liquidity (LIQ)	Liquid assets / total deposits	Focal explanatory	Larger analytical liquidity buffer
Capital adequacy (CAP)	Core capital / total assets	Control	Stronger capital position
NPL ratio (NPL)	Non-performing loans / gross loans	Control	Higher credit risk / poorer asset quality
Net interest margin (NIM)	(Interest income - interest expense) / average earning assets	Control	Higher intermediation margin

Note. The study liquidity ratio differs from the statutory liquidity-compliance ratio and is therefore not interpreted as a direct regulatory compliance test. Higher NPL values indicate poorer, not better, asset quality.



3.6.2 Model Specification and Estimation

The analysis proceeded in four stages. First, descriptive statistics summarised the central tendency, dispersion and distribution of the study variables. Second, Pearson correlation coefficients assessed bivariate relationships. Third, ordinary least squares (OLS) regression estimated the unadjusted liquidity association and the adjusted specification. Fourth, diagnostic and sensitivity checks assessed whether the regression findings were unduly dependent on assumption violations or influential observations. These procedures are consistent with standard cross-sectional econometric practice (Wooldridge, 2020). The unadjusted model was specified as

$$ROA_i = \beta_0 + \beta_1 LIQ_i + \varepsilon_i.$$

The adjusted model was specified as

$$ROA_i = \beta_0 + \beta_1 LIQ_i + \beta_2 CAP_i + \beta_3 NPL_i + \beta_4 NIM_i + \varepsilon_i.$$

Because ROA is continuous, the coefficients are interpreted as linear partial associations rather than odds ratios or binary-response marginal effects (Wooldridge, 2020). All ratio variables were analysed in decimal form. Variance inflation factors (VIFs) were used to assess multicollinearity. The Breusch-Pagan/Cook-Weisberg test assessed heteroskedasticity, the Ramsey RESET test assessed functional-form specification and the Shapiro-Wilk test assessed residual normality. Cook's distance, using 4/N as the screening threshold, was used to identify influential observations. Robustness was evaluated by re-estimating the adjusted model with heteroskedasticity-robust standard errors and by estimating a sensitivity model after observations above the Cook's-distance threshold were excluded. The analysis was conducted in Stata.

3.7 Ethical Considerations

The study used secondary institutional financial data obtained from audited financial statements and SASRA reports; therefore, direct participant involvement, informed consent and interviews were not applicable. The data were used solely for research purposes and handled responsibly. To protect institutional confidentiality and avoid ranking individual SACCOs, no institutions were named in the statistical models or results; findings were reported in aggregated or analytical form and the analysis focused on relationships across the sample.

IV. FINDINGS & DISCUSSION

4.1 Descriptive Statistics

Table II reports the descriptive statistics for the 34 DT-SACCOs. Mean ROA was 0.0747, equivalent to 7.47%, with values ranging from 4.17% to 11.92%. Mean liquidity was 1.1147, indicating that liquid assets averaged 111.47% of total deposits under the study definition. Capital adequacy averaged 17.89%, the NPL ratio averaged 5.57% and NIM averaged 14.05%. The reported skewness and kurtosis values do not indicate severe univariate distributional abnormalities.

Table 2

Descriptive statistics

Variable	N	Mean	SD	Min.	Max.	Skew.	Kurt.
ROA	34	0.0747	0.0214	0.0417	0.1192	0.3318	2.4683
Capital adequacy	34	0.1789	0.0498	0.1000	0.2889	0.4698	2.8078
NPL ratio	34	0.0557	0.0445	0.0000	0.1374	0.1847	1.6615
NIM	34	0.1405	0.0190	0.1000	0.1764	-0.1696	3.1714
Liquidity ratio	34	1.1147	0.1582	0.8182	1.4755	0.4212	2.9292

Note. Ratios are expressed as proportions. SD = standard deviation; NPL = non-performing-loan ratio; NIM = net interest margin.

4.1.1 Bivariate Relationship between Liquidity and ROA

The correlation matrix in Table III shows that liquidity was moderately and positively associated with ROA ($r = 0.5138$, $p = 0.0019$). NIM also had a positive significant bivariate association with ROA ($r = 0.5685$, $p < 0.001$). The bivariate correlations of capital adequacy ($r = 0.2940$, $p = 0.0915$) and the NPL ratio ($r = 0.3098$, $p = 0.0746$) with ROA were positive but did not reach the 5% significance level. Correlations among the explanatory variables were low; the largest absolute pairwise correlation was 0.1988, suggesting little risk of severe multicollinearity.

**Table 3***Pearson correlation matrix*

Variable	ROA	CAP	NPL	NIM	LIQ
ROA	1.0000				
CAP	0.2940 (0.0915)	1.0000			
NPL	0.3098 (0.0746)	0.1239 (0.4851)	1.0000		
NIM	0.5685 (<0.001)	-0.1988 (0.2597)	-0.0350 (0.8441)	1.0000	
LIQ	0.5138 (0.0019)	0.0131 (0.9416)	-0.0656 (0.7124)	-0.0635 (0.7212)	1.0000

Note. Two-sided *p*-values are shown in parentheses. CAP = capital adequacy; NPL = non-performing-loan ratio; NIM = net interest margin; LIQ = liquidity ratio.

4.1.2 Adjusted Relationship between Liquidity and ROA

In the unadjusted model, liquidity was positively associated with ROA ($b = 0.0695$, $SE = 0.0205$, $t = 3.3879$, $p = 0.0019$, 95% CI [0.0277, 0.1113]). The model explained 26.4% of the observed variation in ROA ($R^2 = 0.2640$; adjusted $R^2 = 0.2410$) and was statistically significant, $F(1,32) = 11.4777$, $p = 0.0019$. Thus, the positive liquidity-performance relationship was evident before other financial characteristics were introduced. The full adjusted results are reported in Table IV. The model was statistically significant, $F(4,29) = 66.7404$, $p < 0.001$, and explained 90.2% of the observed variation in ROA ($R^2 = 0.9020$; adjusted $R^2 = 0.8885$). Liquidity remained positive and statistically significant after adjustment ($b = 0.0778$, $SE = 0.0079$, $t = 9.8325$, $p < 0.001$, 95% CI [0.0616, 0.0940]). Because all ratios were entered as proportions, a one-percentage-point increase in the liquidity ratio is associated with an estimated 0.0778-percentage-point increase in ROA, holding the control variables constant.

The controls were also statistically significant in the adjusted model. Capital adequacy had a positive coefficient ($b = 0.1652$, $p < 0.001$), NIM had a positive coefficient ($b = 0.7809$, $p < 0.001$), and the NPL ratio had a positive coefficient ($b = 0.1561$, $p < 0.001$). The positive NPL coefficient is counter to the usual interpretation of credit quality because a higher NPL ratio indicates poorer asset quality. It should therefore not be interpreted as evidence that deteriorating credit quality improves performance. The result is treated as a sample-specific conditional association that may reflect reporting, model interaction or omitted institutional characteristics and warrants further investigation.

Table 4*OLS regression of return on assets*

Predictor	b	SE	t	p	95% CI	Standardised β
Constant	-0.1600	0.0148	-10.8174	<0.001	[-0.1903, -0.1298]	-
Capital adequacy	0.1652	0.0257	6.4284	<0.001	[0.1126, 0.2177]	0.3840
NPL ratio	0.1561	0.0283	5.5202	<0.001	[0.0983, 0.2140]	0.3241
NIM	0.7809	0.0670	11.6539	<0.001	[0.6439, 0.9179]	0.6926
Liquidity ratio	0.0778	0.0079	9.8325	<0.001	[0.0616, 0.0940]	0.5740

Note. $N = 34$; $R = 0.9497$; $R^2 = 0.9020$; adjusted $R^2 = 0.8885$; $F(4,29) = 66.7404$, $p < 0.001$; root MSE = 0.00716. NPL = non-performing-loan ratio; NIM = net interest margin.

4.2 Diagnostics and Robustness

The diagnostic results supported the use of the adjusted specification. VIF values ranged from 1.0088 to 1.0563, with a mean VIF of 1.0327, indicating no material multicollinearity. The Breusch-Pagan/Cook-Weisberg test did not reject constant error variance ($\chi^2 = 2.53$, $p = 0.1117$). The Ramsey RESET test provided no evidence of functional-form misspecification ($F = 0.74$, $p = 0.5395$), and the Shapiro-Wilk residual test did not reject residual normality ($W = 0.97295$, $p = 0.5473$).

Cook's distance identified four observations above the prespecified $4/N$ threshold of 0.1176. Excluding these observations reduced the sample to 30 but did not alter the direction or statistical significance of the liquidity estimate. The liquidity coefficient in the sensitivity model was 0.0733 ($SE = 0.0066$, $p < 0.001$), while the adjusted model with robust standard errors retained the baseline coefficient of 0.0778 with a robust SE of 0.0065 ($p < 0.001$). Table V summarises the stability of all model coefficients. The consistency of the estimates across the baseline, sensitivity and robust specifications indicates that the principal liquidity finding is not driven solely by the identified influential observations or by conventional standard-error estimation.

**Table 5***Baseline, sensitivity and robust regression comparison*

Predictor	Baseline b (SE)	Sensitivity b (SE)	Robust b (SE)
Capital adequacy	0.1652 (0.0257)	0.1619 (0.0297)	0.1652 (0.0362)
NPL ratio	0.1561 (0.0283)	0.1104 (0.0263)	0.1561 (0.0321)
NIM	0.7809 (0.0670)	0.8211 (0.0616)	0.7809 (0.0764)
Liquidity ratio	0.0778 (0.0079)	0.0733 (0.0066)	0.0778 (0.0065)
Constant	-0.1600 (0.0148)	-0.1577 (0.0142)	-0.1600 (0.0175)

Note. Baseline $N = 34$, $R^2 = 0.9020$. Sensitivity $N = 30$, $R^2 = 0.9227$, after observations above the Cook's-distance threshold were excluded. The robust model retained $N = 34$ and used heteroskedasticity-robust standard errors.

4.3 Discussion

With respect to Objective One, liquidity was positively associated with ROA at the bivariate level. With respect to Objective Two, the association remained positive and statistically significant after capital adequacy, credit risk and net interest margin were controlled for. The stability of the coefficient under robust standard errors and the influence-based sensitivity analysis strengthens confidence that the finding is not an artefact of a single estimation choice. The result should nevertheless be interpreted as an association because the study uses one cross-section and does not establish temporal ordering or causal identification.

The positive relationship is economically plausible. The DT-SACCOs have ongoing obligations to disburse loans and a commitment to withdrawals. An institution that has enough liquidity buffer can satisfy the short-term demands without reducing the supply of credit, selling assets under stress or borrowing at high interest rates to cover short-term obligations. Those mechanisms can ensure business continuity as well as income generation. The result is thus in line with the RBV hypothesis that liquid resources can be used to maintain performance when they are managed and applied in a manner that ensures the institution's core activities. Simultaneously, this does not rule out increasing liquidity to the limit; there is still a trade-off between liquidity and the opportunity cost of idle liquid assets and the present linear model does not have a threshold for liquidity.

The positive liquidity result is consistent with earlier Nairobi evidence and with studies that link liquidity management to SACCO sustainability or performance (Muriuki, 2022; Gatheru, et al., 2020; Mwaura, et al., 2025; Wanjiru & Waweru, 2025). It is also compatible with recent national evidence in which liquidity forms part of a broader set of financial monitoring and performance indicators (Muhumed & Olando, 2024). The result differs from research in which liquidity became statistically insignificant after other SACCO characteristics were incorporated (Mirichii, et al., 2023). Differences in financial period, sampling frame, liquidity definition and model specification provide plausible reasons for the divergence.

The article contributes to this literature in three ways. First, it provides recent 2025 evidence from Nairobi City County rather than relying on an earlier or national sample. Second, it separates the unadjusted relationship from the conditional relationship after other financial soundness indicators are introduced. Third, it reports diagnostic, robust-standard-error and influence-based sensitivity checks rather than relying on a single coefficient. These features improve the transparency of the empirical result. The contribution, however, is evidence on an analytical liquidity measure, not proof that compliance with a statutory liquidity threshold causes higher profitability.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusion

This research summarizes that liquidity has a positive and statistically significant link with the financial performance of DT-SACCOs in Nairobi City County. This is before and after controlling for capital adequacy, credit risk and net interest margin. This suggests that maintaining adequate liquidity enables SACCOs to meet short-term obligations while sustaining lending and other income-generating activities. However, the finding represents an association rather than a causal effect, and excessive liquidity may involve opportunity costs.

5.2 Recommendations

DT-SACCOs need to bolster liquidity management via maintaining adequate liquidity buffers. This will enable them to meet withdrawal and other short-term obligations while avoiding excessive idle liquid assets. Management should therefore regularly monitor liquidity levels and balance them with lending and other productive investments to support profitability. Given that the study does not establish causality or an optimal liquidity threshold, SACCOs should base liquidity decisions on their operational needs, risk exposure and regulatory requirements.



Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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