Sacco Based Financial Characteristics and Financial Performance of Deposit Taking Savings and Credit Co-operative Societies in Kenya

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

In Kenya, Deposit-Taking Savings and Credit Cooperative Societies have faced significant challenges that have adversely impacted their financial performance. While existing literature has linked financial performance to financial characteristics, there remain conceptual and contextual gaps in empirical research. These gaps prompted the current study to examine SACCO-based financial characteristics as a tool for enhancing the financial performance of DT-SACCOs in Kenya. The study employed a descriptive research design, targeting a population of 190 DT-SACCOs. Using purposive sampling, 181 SACCOs that had been operational since 2018 were selected for analysis. Secondary data from the period 2018 to 2023 were utilized, and a quantitative approach

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was applied to generate both descriptive and inferential statistics. Panel regression was used to estimate the direct relationship between SACCO-based financial characteristics and financial performance, while also appraising how the Sacco Societies Regulatory Authority risk regulations moderated this relationship. The study concluded that capital adequacy had a statistically significant positive effect on financial performance, indicating that stronger capital buffers enhance profitability. In contrast, asset quality and financial investments showed statistically significant negative effects, suggesting that poor loan quality and mismanaged investments negatively impact financial outcomes. Liquidity, however, was positively associated with financial performance, underscoring the importance of maintaining adequate liquidity reserves. Moreover, the relationship between SACCO-based financial characteristics and financial performance was significantly moderated by SASRA risk regulations, highlighting the critical role of regulatory oversight in shaping financial outcomes. Based on these findings, the study recommends that DT-SACCOs in Kenya should: maintain optimal capital adequacy levels to safeguard financial stability; prioritize careful asset quality management and regular loan monitoring to develop sound lending policies; optimize financial investments to ensure sufficient funding for operational expenses; and maintain adequate liquidity levels to meet financial obligations and improve overall performance.

1. INTRODUCTION

1.1 Background Information

Savings and Credit Cooperative Societies (SACCOs) play a crucial role in promoting socioeconomic development, particularly among impoverished populations [1]. While banks serve 14.2% of the banked population in Kenya, SACCOs serve 13.1%, and microfinance institutions (MFIs) serve 1.7% (Alliance for Financial Inclusion [2]. SACCOs contribute to poverty reduction and economic stimulation by providing their members with much-needed credit [3]. Among SACCOs, Deposit-Taking SACCOs (DT-SACCOs) are the most prominent financial intermediaries, striving to achieve sustainable growth through efficient resource management. To maintain a stable, robust, and resilient SACCO sector, it is essential to assess the financial health of DT-SACCOs in Kenya [4]. Financial reporting and analysis transform raw data into actionable knowledge, aiding decision-makers in determining the future trajectory of these organizations [5].

Extensive research has identified several financial attributes that significantly influence the performance of DT-SACCOs. These attributes serve as foundational elements for services such as currency exchange, payment processing, and risk management [6]. Many studies utilize frameworks such as PEARLS (Protection, Effective Financial Structure, Asset Quality, Rates of Return and Costs, Liquidity, Signs of Growth) or CAEL (Capital Adequacy, Asset Quality, Earnings, Liquidity) to assess SACCOs' financial performance [7-9].

SACCO-based financial characteristics are internal financial resources managed by SACCO leadership, and their effectiveness largely depends on the operational competence of managers (Okumu & Oyugi, 2016). While internal capacities have traditionally been emphasized, external regulatory measures, such as those introduced by the Sacco Societies Regulatory Authority (SASRA), increasingly influence these financial characteristics. The CAEL framework, encompassing capital adequacy, asset quality, financial investments, and liquidity, has been developed by SASRA to define the financial metrics unique to SACCOs [7]. Given that DT-SACCOs are regulated by SASRA, this study adopts CAEL as the basis for analyzing SACCO financial characteristics.

Capital adequacy is vital for protecting member deposits and creditors from financial losses [10]. To mitigate risks, SASRA mandates minimum capital ratios: a core capital ratio of 10% of total assets, a ratio of 8% of total deposit liabilities, and an institutional capital ratio of 8% of total assets (Chepkirui, Waweru, & Oboka, 2021). Additionally, each SACCO must maintain a minimum core capital of Kshs 10 million [11].

Asset quality assesses the health of a SACCO by evaluating the impact of non-productive and delinquent loans, as well as other non-income-

generating assets [12]. To minimize financing of idle assets, SASRA sets a maximum non-performing loans (NPL) ratio of 5% of gross loans [7].

Financial investments refer to the funds generated after taxes within a given period, often measured by the interest margin relative to gross income [1]. Effective management of financial investments is critical to ensuring that DT-SACCOs can finance growth initiatives and maintain financial stability. Poorly managed investments increase loan losses and exposure to market risks [13].

Liquidity management is crucial for DT-SACCOs to meet reserve requirements and withdrawal demands while minimizing idle cash balances [14]. SASRA regulations mandate that DT-SACCOs maintain a minimum liquidity ratio of 15% of total deposit liabilities and 10% of current liabilities [15,7].

Recent studies demonstrate that DT-SACCOs in Kenya have experienced substantial growth in market share and profitability. For example, the asset base of Kenyan DT-SACCOs increased from Kshs 442 billion in 2017 to Kshs 627.68 billion in 2020 [16]. However, the market share growth of smaller-tiered DT-SACCOs has slowed, impacting their viability and competitiveness [16].

Performance, as a complex construct, is influenced by various characteristics, including an organization's reputation, operational efficiency, economic goals, and long-term survival [17]. Financial performance is often evaluated using accounting-based metrics such as Return on Sales (ROS), Return on Equity (ROE), or Return on Assets (ROA), which provide readily accessible data for measuring success (Tomislava, Marko, & Damir, 2021; [17]. However, conflicting findings in the literature regarding the influence of SACCOs' financial characteristics on DT-SACCO performance in Kenya have prompted further investigation into SACCO-based financial characteristics as a framework for financial analysis.

1.2 Statement of the Problem

Deposit-Taking Savings and Credit Cooperative Societies (DT-SACCOs) in Kenya play a pivotal role in fostering rural development, reducing poverty, and enhancing citizen welfare (Bee, 2016). Despite their importance, these organizations have faced significant challenges that have negatively impacted their financial performance. This is evidenced by a decline in return on assets (ROA) from 2.45% in 2016 to 1.59% in 2021, which has resulted in the revocation of licenses for several DT-SACCOs. While existing research highlights a relationship between SACCOs' financial characteristics and the financial performance of DT-SACCOs, empirical studies reveal gaps in methodology, context, and conceptual frameworks. As a result, there is limited understanding of how SACCO-based financial characteristics influence the financial performance of DT-SACCOs specifically within the Kenyan context.

1.3 Objective of the Study

The main objective of the study was to assess the effect of SACCO based financial characteristics and financial performance of Deposit Taking Savings and credit co-operative societies in Kenya.

2. LITERATURE REVIEW

2.1 Theoretical Literature

The theories anchoring the research included; Financial Intermediation Theory, Liquidity Premium Theory, Bad Management Hypothesis and Pecking Order of Capitalization.

2.1.1 Financial intermediation theory

The Financial Intermediation Theory proposed by Gurley and Shaw (1960) states that the banking industry, as an intermediary in any economy, has a significant impact on its expansion and growth by means of saving, identifying prudent choices, and putting forth sound corporate control, especially in the early phases of economic development and in environments with weak institutional frameworks [18]. The financial intermediaries came into being specifically to remove these expenses, at least in part Diamond and Dybvig [19] for example, envision financial institutions essentially as an alliance of depositors shielding savers from risks that may endanger their liquidity. As a result, individuals who accumulate savings entrust these intermediaries with managing their available resources so that they can be invested in whatever ventures they deem feasible. Depositors are free to withdraw their money at any moment according to predetermined

guidelines [20,21]. Consequently, there is a need to guarantee that a lending institution maintains a satisfactory level of liquidity. With regards to the present study, the Financial Intermediation Theory is crucial for establishing a connection between capital adequacy as well as liquidity and DT-SACCO performance.

2.1.2 Financial growth theory

Bagehot first proposed the Financial Growth Theory in 1973, which claims that a positive and successful economic expansion is predicated on the existence of financial improvement. Pursuant to the theory, the establishment of a successful current financial system encourages and creates an atmosphere that is conducive to income development, including exceptional financial outcomes [22]. A DT-SACCO can, as noted by Bagehot [23] boost overall productivity, mobilise savings, create and expand liquidity, encourage investment, and reallocate resources from stagnant, outdated industries to thriving, contemporary ones. According to Sparatt [24] a company's financial performance, financial investments model level, and composition can all have an impact on how well it performs. According to Demirgüç-Kunt, Beck, and Honohan [25] financial participants should prioritise accounting-based business performance by utilising the financial investments model, which guarantees financial accessibility. It has been shown that obtaining inexpensive, easily available, and secure financing is necessary to improve business performance and reduce the gap between income and poverty. Based on the financial growth idea, DT-SACCOS financial performance is impacted by asset quality and financial investments.

2.1.3 Bad management hypothesis

The idea that people can act deliberately and that accomplishing so may culminate in managerial practices that are likely to foster such behaviour in people is the basis of the bad management hypothesis theory, from which its outcomes are derived [26] in accordance with the bad management theory, when it comes to tracking and supervising borrowers after loans have been granted to ensure that agreements are followed, they may not be as competent as they should be in valuing the collateral pledged against the loans. Additionally, they might choose an unusually high number of loans with negative or low net present values [27].

Low-cost efficiency is therefore anticipated to emerge either as a Granger cause or prior to the occurrence of more NPLs, given the bad management theory. Though they foresee a different temporal sequence, the bad luck hypothesis and this theory concur that NPLs will decrease cost effectiveness. To tackle the growing issue of non-performing loans, the company needs to ensure that an effective asset quality process is in place [28]. The Bad Management Hypothesis highlights the critical role of maintaining asset quality. Poor management practices can directly lead to the accumulation of subpar assets, which in turn can affect the financial health and regulatory compliance of a financial institution. This is particularly relevant in SACCOs, where asset quality is crucial for maintaining financial health and regulatory compliance.

2.2 Empirical Review

In this section, specific empirical research and corresponding investigations that were recognized as useful in linking financial performance of financial characterisers were carefully examined.

Studies on Capital adequacy and Financial Performance were conducted where that by Ojili' [10] investigated secondary panel data obtained from audited financial accounts using census sampling and descriptive and inferential statistics. A substantial inverse relationship between capital sufficiency and financial performance was shown by regression analysis. Mwangi [11] performed research on capital adequacy preservation adopting descriptive study design to show that DT-SACCO shad significant improvement in their financial performance when capital adequacy was present. Research by Onyango [29] discovered that capital adequacy has a substantial and detrimental effect on the financial performance. However, there were methodological issues with the study's extremely small sample size of 14 DT-SACCOs that could have prevented the results from being applied to a larger population. As a result, the current inquiry will make use of every DT-SACCO. The research investigation conducted in Kenya by Cheryoiti [30] demonstrated a robust relationship between capital adequacy and financial performance.

Effects of financial investments and financial performance was assessed by Mohamed et al. [13], in their research, to demonstrated that

financial investments had a major influence on Kenya's commercial banks' financial performance. Meanwhile research by Hakizakubana [31] concentrated on how Rwandan commercial banks' financial outcomes were affected by the CAMEL rating system. Financial investments were shown to be negatively correlated to financial performance. Denje and Olando [1] explored the relationship between Kenya's Islamic banks' financial performance and the CAMEL grading system to reveal financial investments as positively influencing n Islamic banks' financial performance, while liquidity had a significant negative impact.

In line with the findings of research by AL-Najjar and Assous's [32] asset quality ratios, based on CAMEL grading, had no bearing on the total quantity of deposits held by banks. The study conducted in by Thisaranga and Ariyasena [4] demonstrated that asset quality significantly and favourably affects competitive performance while research by Boateng [33] showed that asset quality had a significant influence on the performance of Ghanaian banks. Sile, Olweny, and Sakwa [34] found that financial performance and the standard of reserves were significantly correlated. In research by Lawal et al. [35]. the findings support earlier studies by showing that when banks have payment delays or when non-performing loans (NPLs) perform poorly, the quality of their assets is noticeably lower. In their research, Nyabaga and Matanda [36] showed that, albeit having a modest positive effect on ROA, leverage greatly raised ROE while that by Kimutai [37] demonstrated that SACCO management safeguards member deposits and considers collateral when determining loan eligibility. The results in research by Muriuki [38] show that DT-SACCO's financial performance is significantly and favourably impacted by liquidity while Shibutse, Kalunda, and Achoki's [39] showed that liquidity has a favourable and significant influence on the financial performance of DT-SACCOs. Masika [40] showed a clear and positive correlation has been shown between the business liquidity and the financial performance of Kenyan DT-SACCOs that take deposits as Ullah [41] demonstrated that liquidity improves performance. The study conducted by Onyekwelu, Chukwuani, and Onyeka [15] showed that bank profitability ratios and liquidity had a favourable randomassociation.

Using a descriptive study methodology, Buluma, Kung'u, and Mungai [42] evaluated the impact of SASRA regulations on the financial performance of the DT-SACCOs in Nyandarua County, Kenya to demonstrates that the application of SASRA laws improved the financial performance.

3. RESEARCH METHODOLOGY

3.1 Research Design

As explained by Kothari [43] a research design serves as a comprehensive roadmap, sometimes called a framework or blueprint, that directs the entire study. In order to successfully answer the study issues, this design is essential. Given the current study's emphasis on documenting a particular occurrence, a descriptive survey methodology was used. Creswell and Creswell [44] believe that a descriptive survey methodology is a good fit for the study's goals because it is especially useful for explaining specific phenomena or outlining the existing situation. To evaluate the impact of SACCO based financial characteristics on the financial performance of DT-SACCOs in Kenya from 2018 to 2022, panel data regression analysis was employed. This method was chosen because it accommodates both individual-specific variables and the integration of time series with cross-sectional data. The panel data approach offers several advantages: it provides increased degrees of freedom, reduces multicollinearity among variables, enhances variability, and improves the efficiency of the estimates. By accounting for individual-specific effects and temporal changes, panel data regression allows for a more nuanced and accurate analysis of the financial performance determinants for DT-SACCOs.

The assumption made was that random effects is appropriate. Thus individual-level effects were adequately modeled by a random-effects model (there is differences in the results to imply random effects is appropriate), thus the study tested the null hypothesis.

H_0: There is difference in the results (random effects is appropriate)

The results are Table 1.

The results indicate that the p-value was less than 0.01, which is below the conventional threshold of 0.05. This statistical significance ($p < 0.01$) leads to the rejection of the null hypothesis, suggesting that there is a significant effect or difference observed in the study. Consequently,

the fixed effects model is preferred in this analysis because it provides consistent estimates, accommodating the panel data structure and controlling for unobserved heterogeneity that could influence the results. This preference for the fixed effects model ensures robust and reliable findings.

3.2 Empirical Model

Using a panel data regression model, the study produced an empirical model (Hue, 2015). Employing multiple regression analysis (MRA), this investigation aims to develop a model to estimate the Dependent Variable (DV) in terms of its predictors. Among these are the moderated effect and the direct effect models.

3.2.1 Direct effect model

The study estimated a direct effect model on relationship between SACCO based financial characteristics and financial performance of DT-SACCOS in Kenya using; capital adequacy, effective financial structure, and liquidity as the IVs.\as expressed below.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \ldots\ldots$$
Equation 3.1

Where:

Y = Financial performance of DT-SACCOS in Kenya , is the dependent variable,

X_1 = Capital adequacy of DT-SACCO,
X_2 = Asset quality of DT-SACCO,
X_3 = Financial Investments of DT-SACCO,
X_5 = Liquidity of DT-SACCO,

β_0 is a constant (which is the value of dependent variable when all the independent variables; IVs are 0).

β_{1-6} is the regression coefficients or change induced by X_1, X_2, X_3, X_5 and X_6
ε_{it} is the normal error term.

3.2.2 Moderation effects model

The significance of one variable in the analysis dictate the effects of the other variable, and this is how moderation effects are typically explained, as an interaction between variables or factors [45] Given that they can vary the direction or intensity of the association between an outcome and a predictor, moderator variables have the power to raise, decrease, or modify the influence of the predictor. The study will assess the moderating effect of SASRA risk regulations on relationship between SACCO based financial characteristics and financial performance of DT-SACCOS in Kenya. The estimates of model had SASRA risk regulations denoted by M_t as moderating variable at time t. Moderating effect was modelled by getting the product effect of independent variables and moderating variable.

Table 1. Hausman tests

| | Coefficients | | | |
| | (b) | (B) | (b-B) | sqrt(diag(V_b-V_B)) |
	fe	re	Difference	S.E.
capadequcy	.0970341	.3098262	-.2127921	.0145415
assetquality	-.2298649	-.0813728	-.1484921	.0114563
earningrat	-.0659736	.0791526	-.1451261	.0113879
liquidity	.2885948	.486652	-.1980572	.0165995

```
                b = consistent under Ho and Ha; obtained from xtreg
        B = inconsistent under Ha, efficient under Ho; obtained from xtreg

  Test:  Ho:  difference in coefficients not systematic

        chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                =        227.38
        Prob>chi2 =      0.0000
```

This is the expression for the reduced model, also known as the direct effect model, in which the independent variable directly influences the dependent variable:

Step one direct model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \ldots\ldots \text{ Equation 3.2}$$

Where:

Y_{it} = Financial performance of DT-SACCOS in Kenya, is the dependent variable,

X_1 = Capital adequacy of DT-SACCO,
X_2 = Asset quality of DT-SACCO,
X_3 = Financial Investments of DT-SACCO,
X_4 = Liquidity of DT-SACCO,

β_0 is a constant (which is the value of dependent variable when all the independent variables are 0).

β_{1-6} is the regression coefficients or change induced by X_1, X_2, X_3, and X_4
ε_{it} is the normal error term.

Step two inclusion of the moderator as independent variable

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \varepsilon \ldots \quad \text{Equation 3.3}$$

Step three interaction effect

as captured in model ii

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_1(X_1 * M) + \beta_2(X_2 * M) + \beta_3(X_3 * M) + \beta_4(X_4 * M) + \varepsilon \ldots \ldots \quad \text{Equation 3.4.}$$

Where

$\beta_1(X_1 * M) + \beta_2(X_2 * M) + \beta_3(X_3 * M) + \beta_4(X_4 * M)$ = interaction of moderator and independent variables

Threshold: if the r^2 of the moderating model is more than the r^2 of the direct effect model, then the moderator has an effect.

3.3 Target Population

The 190 DT-SACCOs that had been functioning in Kenya between 2018 and 2022were the study's target population [46,47,16,7].

3.4 Sample Design

Purposive sampling was used in this study despite the target population being larger than 100, and SACCOs that have been operational since 2018 was included in the inclusion criteria. As a result, all 181 Kenyan DT-SACCOs that were included in the target population served as respondents in the study.

3.5 Data Collection Instrument

Owing to the essence of financial research, secondary data was used in the research. This data came from statistics SASRA, the regulatory authority in charge of DT-SACCO supervision. The data was gathered using the institutional tool. Due to the fiscal significance of the research variables, past data was mainly employed to inform the selection of secondary data.

3.6 Data Analysis

Descriptive statistics were produced using a quantitative method in accordance with the objectives of the research, utilizing means, minimum, maximum, and standard deviation. Tables were used to display the results, which were then explained in narrative. In this research, the financial performance, which was DV, was measured as net income (gross income)/total assets. The IVs were; capital adequacy, asset quality, financial investments and liquidity. Capital adequacy was assessed by computing the ratio of core capital to total assets, which measures the proportion of a financial institution's core capital relative to its total assets. Asset quality was evaluated using the ratio of non-performing loans (NPLs) to gross loans, which indicates the proportion of loans that are not generating income compared to the total amount of loans issued. Financial investments were analysed by calculating the ratio of interest margin to gross income, reflecting the proportion of income derived from interest margins relative to the total gross income. Liquidity was determined by the ratio of total loans to total assets, which indicates the proportion of total loans relative to the institution's overall assets, providing insight into the organization's liquidity position.

Based on the model below, Pearson correlation and a panel regression model was used to investigate the relationship between a number of independent factors and a dependent variable. The panel regression model was used because it

allows for the investigation of interactions between IVs, which took into consideration a greater number of factors that can affect the DV.

4. RESULTS AND FINDINGS

4.1 Descriptive Analysis

Analysing the data using quantitative analysis, the research produced descriptive statistics. Subsequently descriptive statistics were availed for each variable to explain it and how it relates to SACCOs as shown in Table 2.

In light of these considerations, a total of 873 observations were collected. The results encompass detailed information regarding the financial performance of Kenyan DT-SACCOs for the period from 2018 to 2022, as well as data on the CAEL indicators. Each of these metrics was presented as a percentage, providing a standardized measure of performance across the various indicators. This approach facilitates a clear understanding of the financial health and operational effectiveness of the DT-SACCOs during the specified timeframe.

The results show that financial performance for the period, which was measured using ROA, was ranging between 0%(Min) and 50% (Max) while the average financial performance was 14.27% and the variation for the mean was 4.67% (M = 14.27%; SD = 4.67%). Based on these results, the lowest deviation from the mean was high at 9.90%. On, average, the level of financial performance was registered at 14.27%, meaning that for every Kshs. 1 invested in the SACCO asset, the DT-SACCOs lost 14 shillings and 57 cents on average. Financial performance that deviated significantly from the mean was indicated by a SD of 4.67% and a MIN variance of 9.90%. A positive ROA indicated good financial performance in the management of the available assets for DT-SACCOs. This suggests that returns on their own assets were obtained by Kenyan DT-SACCOs.

The capital adequacy statistics (M=10.01%, SD=10.75%) indicate that, on average, capital adequacy was 10.01 percent with an SD of 10.75%; the minimum variation from the mean was -0.64%. The analysis indicates that, on average, DT-SACCOs allocated Ksh 10.01 for every Ksh 1 of loss incurred due to risks and other liabilities. This reflects a cautious approach to risk management and financial stability. The capital adequacy ratios observed in the study ranged from -49.22% to 75.29%, showing a substantial variation of 124.21%. This wide range highlights significant differences in how DT-SACCOs manage their capital relative to their total assets. These findings show an average of 10.01% which was above the threshold of 10% surged by SASRA [7]. According to the guidelines set by SASRA [7]. the minimum required capital adequacy ratio is 10%. The capital adequacy maintained by the DT-SACCOs in this study generally met or exceeded this requirement, suggesting that these organizations have maintained sufficient capital to support their operational stability and resilience.

It was found that the asset quality which was measured using NPL ratio, NPLs to gross loans was between 0.00% and 92.88% (Min=0.00%; Max = 92.88%). On average, the value of asset quality was high (M=11.13%). When expressed as a function of the ratio of NPLs to gross loans, the maximum level of suggested value asset quality was 5% [7]. As a result, the average asset quality of 11.13% for the SACCOs in the study exceeded the established threshold, indicating a relatively high level of asset quality compared to regulatory standards. Asset quality, in this context, refers to the proportion of non-performing loans (NPLs) relative to the total gross loans, and a ratio of 11.13% signifies that a

Table 2. Analysis by descriptive statistics

	Financial Performance	Capital Adequacy	Asset Quality	Financial investments	Liquidity	SASRA Risk Regulation
N	873	873	873	873	873	873
Mean (M)	14.27%	10.01%	11.13%	44.61%	69.36%	35.87%
Std. Deviation (SD)	4.67%	10.75%	12.49%	24.11%	17.33%	7.22%
Minimum (Min)	0.00%	-49.22%	0.00%	-52.08%	0.00%	8.55%
Maximum (Max)	50.00%	75.29%	92.88%	98.08%	170.27%	75.14%

Source: Field data (2024)

notable portion of the loans were classified as non-performing. With an asset quality ratio of 11.13%, the Kenyan DT-SACCOs allocated Ksh 11.13 for every Ksh 1 spent on non-performing loans. This allocation represents the amount set aside as a loss provision to cover potential losses from these non-performing loans. Essentially, for each unit of currency invested in loans that are not generating expected returns, the SACCOs reserved Ksh 11.13 to mitigate the financial impact of these NPLs. This provisioning reflects a proactive approach by the SACCOs to manage and cushion the financial risks associated with non-performing loans. By setting aside this amount, the SACCOs aim to safeguard their financial stability and ensure that they have sufficient reserves to absorb potential losses from loans that are not performing as expected. This practice is crucial for maintaining the financial health of the DT-SACCOs and for ensuring their ability to continue lending and supporting their members, even in the face of adverse loan performance.

Overall, the higher asset quality ratio and the substantial provisioning demonstrate that the Kenyan DT-SACCOs are implementing effective risk management strategies to address the challenges posed by non-performing loans, thereby enhancing their resilience and operational sustainability. For each Khs. 1 in NPL, Ksh. 11 and 13 cents were set aside for loan loss. The lowest separation from the mean was -1.36%, according to the standard deviation of 12.49% (SD=12.49%). Since it was higher than 5%, the asset quality was essentially inadequate or inappropriate [48-49]. These events indicate that Kenyan DT-SACCOs have a high level of non-performing loans. In accordance with SASRA [7]. DT-SACCOs are required to maintain their NPL ratios below 5%. The data indicates that the amount of high-level non-performing loans is increasing. It is frequently connected to DT-SACCO's failures.

The findings for financial investments (Min=-52.08%; Max=98.08%, M=44.61%; SD=24.11%) indicate that 98.08% was exhibited as the best financial investments, with an average rating of 44.61% and a standard deviation of 24.11%. The lowest financial investments were -52.08% with 20.50% was the least amount of deviation from the mean. In accordance to the findings, the DT-SACCOs could have earned 44 shillings and 61 seven cents for every Ksh. 1 they invested. These SACCOs' operations might be adequately supported by such financial investments, which

would also sustain appropriate levels of capital and allowances. The financial investments of 44.61% indicated a moderate level of financial investments in all respects.

The average liquidity was found to be 69.36% (M=69.36%; SD=17.33%; Min=0.00%; Max=170.27%) in the results. On average, 69.36% of the cash equivalent assets were available for use. As such, the DT-SACCOs were obligated to repay short-term debt. The DT-SACCOs were able to use their liquid assets to pay Kshs 69.36 towards the Ksh.1 short-term liability. The SD was 17.33%%, the lowest value was 0.00%, and the highest value was 170.27%. Liquidity, in this context, refers to the availability of liquid assets and the ability to meet short-term obligations without incurring substantial costs [50,51]. Muriuki's research highlights that higher liquidity enables DT-SACCOs to manage their operational needs more effectively, thus improving their overall financial performance. By maintaining sufficient liquid assets, DT-SACCOs can respond swiftly to financial demands and capitalize on opportunities, leading to better profitability and financial performance. In contrast,

Based on the results, the SASRA Risk Regulation level was at an average of 35.87% with a minimum variation of 7.22% from the mean while the minimum value being 8.55% with a maximum of 75.14%.

The subsequent section illustrates the precise relationships between the independent variables (IVs) and the dependent variable (DV). These relationships are depicted in detail through appropriate graphical representations, as shown in the figures. In these graphs, the X-axis represents the independent variables: capital adequacy, asset quality, financial investments, and liquidity. The Y-axis displays the financial performance of Kenyan DT-SACCOs, highlighting how each independent variable influences the dependent variable. The results are in Fig. 1

These results capital adequacy increased from 8.50% in the year 2018 to 10.63% in the year 2019 before reducing to 11.39% in 2020 and further reducing to 9.12% in the year 2021. It then increased to 10.42% in 2022. This was when financial performance, which was 14.74% in 2018 increased to 14.90% in 2019 before reducing to 14.46% in the year 2020 and then increasing to 14.53% in the year 2021. The financial performance then reduced to 14.50% in
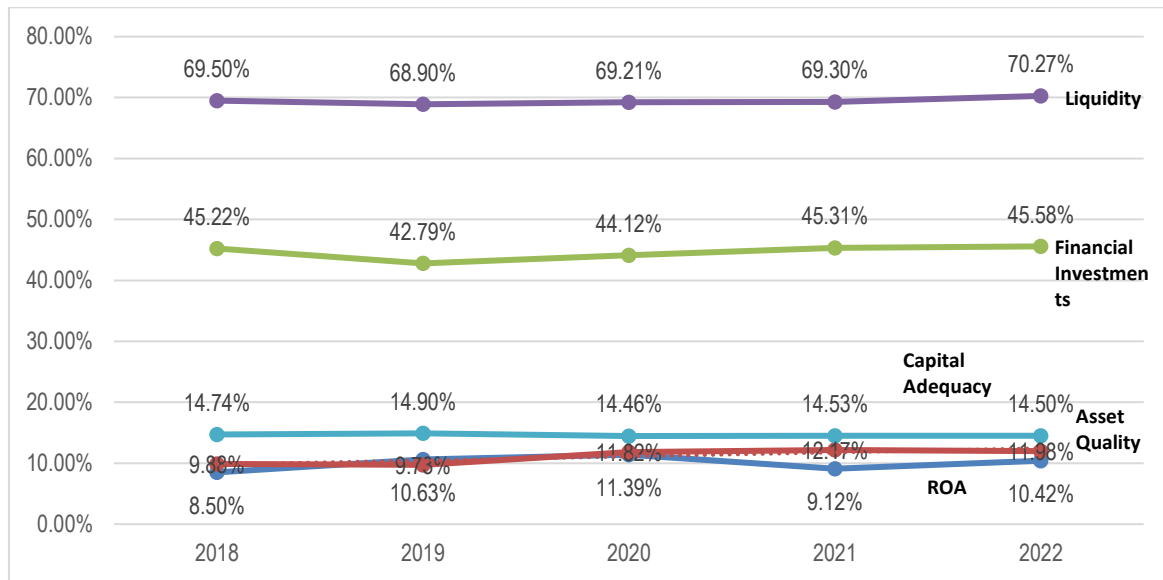
Fig. 1. Trends of IVs and financial performance
Source: Field data (2024)

the year 2022. These findings indicate that capital adequacy generally exhibited behaviour that was similar to financial performance. As a result, when capital sufficiency rose and vice versa, the DT-SACCOs' financial performance improved. This corroborates the results of Cheryoiti's [30] investigation, which demonstrated a robust relationship between financial performance and capital structure. The DT-SACCOs' decision to raise their stock holdings is based on this. Mwangi [11] discovered that when capital sufficiency was present, DT-SACCO's financial performance showed a beneficial and notable improvement. Financial performance was generally directly connected with capital sufficiency; in other situations, there was an indirect correlation. In other words, a change in capital adequacy typically caused a change in financial performance.

These results show that asset quality which was 9.88% in 2018 reduced to 9.73% in 2019 before increasing to 11.82% in the year 2020 then to 12.17% in 2021 before reducing to 11.98% in 2022. The analysis revealed a nuanced relationship between asset quality and the financial performance of Kenyan DT-SACCOs. Specifically, the findings indicated variability in how asset quality affects financial performance. In some cases, asset quality demonstrated a directly proportional relationship with financial performance, meaning that improvements in asset quality were associated with enhanced

financial outcomes. Conversely, there were instances where the relationship appeared to be inversely proportional, suggesting that deteriorations in asset quality might negatively impact financial performance. Despite these variations, the majority of empirical studies, including those conducted by Lawal et al. [35,52] identified a significant positive correlation between asset quality and financial performance. These studies underscore that higher asset quality generally contributes to improved financial performance. The positive influence observed is attributed to the assets' quality, which enhances the DT-SACCOs' ability to generate revenue and manage risks effectively. High-quality assets reduce the likelihood of non-performing loans and other financial issues, thereby supporting better overall financial performance. Additionally, the research conducted by Thisaranga and Ariyasena [4] supports Cheruiyot's (2016) finding that asset quality positively affects financial performance as determined by profitability by showing a substantial association between asset quality and financial performance.

Pursuant to the cluster diagram, financial investments stood at 45.22% in 2018, dropped to 42.79% in 2019, grew to 44.12% in 2020, soared to 45.31% in 2021, and then rose to 45.58% in 2022. The findings agree with those on the study by Hakizakubana [31,53] which found that financial investments are negatively correlate with financial performance. But the findings did not agree with those in the research by

Mohamed et al. [13] provided compelling evidence that financial investments have a substantial impact on financial performance. Their study highlighted how the ability to generate financial investments plays a crucial role in determining the financial stability of organizations. The research found that robust financial investments contribute significantly to the financial stability of institutions by enhancing their capacity to absorb shocks and manage financial risks. Higher financial investments enable organizations to maintain a strong financial position, as they can better withstand economic fluctuations and unforeseen financial pressures. This stability is achieved through consistent revenue generation and effective management of income streams, which in turn supports sustainable operations and long-term financial health Furthermore the study emphasized that organizations with strong financial investments are better equipped to navigate periods of financial uncertainty. They are less likely to experience severe financial distress because their ability to generate income provides a buffer against potential losses. This positive impact on financial stability underscores the importance of focusing on financial investments as a key factor in maintaining and improving financial resilience. According to the study findings, larger financial investments are positively correlated with financial stability, so commercial banks may want to think about other profitable business ventures in addition to their usual intermediation activities.

Liquidity which was 69.50% in 2018 reduced to 68.90% in 2019 before increasing to 69.21% and to 69.30% in the year 2020 and then growing to 70.27% in the year 2022. These graphs show the liquidity and the financial performance as behaving correspondingly. This is consistent with research by Onyekwelu et al. [15] which found that liquidity positively and significantly affects bank profitability measures and ROCE. The findings showed that financial performance (profitability ratios) and liquidity had a favorable association. Liquidity levels are impacted by public confidence as it keeps the financial sector from going into panic. Therefore, policies that would enhance the country's cash usage by the general population and the banking industry's capacity to efficiently manage liquidity must be formulated in Nigeria. The study by Masika [40] showed that financial success of SACCOs that accepted deposits was due to liquidity. Additionally, a strong and beneficial association

has been demonstrated between the financial performance of Kenyan DT-SACCOs. Liquidity consequently has a major influence on the financial performance of the DT-SACCOs.

In the year 2018, the SASRA risk regulation was at 35.86% before reducing in the year 2019 to 35.29% and the increasing in 2020 to 35.61%. This then increase in 2021 to36.13% before increasing in the year 2022 to 36.45% The results show that most of the times SASRA risk regulation was inversely proportional to the financial performance.

4.2 Inferential Analysis

Using inferential statistics, the study investigated the relationship between SACCO based financial characteristics and the financial performance of DT-SACCOs in Kenya, with a significance level set at 5%. Correlation analysis determined the nature and strength of relationships between the study variables, while multiple regression analysis (MRA) was utilized to construct a predictive model for estimating future financial performance based on the identified relationships. This comprehensive inferential approach enabled a thorough examination of the interactions between the financial characteristics of SACCOs and their financial performance outcomes.

4.2.1 Pearson's' correlation analysis

Before performing the (MRA, the study conducted a correlation analysis to determine whether there were statistically significant relationships between the IVs), capital adequacy, asset quality, financial investments, and liquidity and the DV, which is financial performance. The findings of this preliminary correlation investigation are presented in Table 3.

Table 3 presents the significant relationships between the independent variables (IVs) and the dependent variable (DV). Specifically, the correlations observed are as follows: capital adequacy with financial performance ($p<0.01$; $r=0.4866$), asset quality with financial performance ($p<0.01$; $r=0.1938$), financial investments with financial performance ($p<0.01$; $r=0.2451$), and liquidity with financial performance ($p<0.01$; $r=0.5958$). All p-values are below 0.05, indicating statistically significant relationships. However, SASRA Risk Regulation was nor correlated to financial performance ($p=0.230$; $r=0.0407$). These results corroborate

Table 3. Analysis by correlation

	Financial performance	Capital adequacy	Asset quality	Financial investments	Liquidity	SASR Risk Regulation
Financial performance	1					
Capital adequacy	0.4866	1				
	0.0000					
Asset quality	0.1938	0.1266	1			
	0.0000	0.0002				
Financial investments	0.2451	0.1578	0.4483	1		
	0.0000	0.0000	0.0000			
Liquidity	0.5958	0.4001	0.4153	0.3190	1	
	0.0000	0.0000	0.0000	0.0000		
SASRA Risk Regulation	0.0407	-0.0338	0.0707	0.0749	0.0337	1
	0.2301	0.3182	0.0367	0.0270	0.3205	

Source: Field data (2024)

findings from previous research. Mwangi [11] found a significant positive impact of capital adequacy on financial performance, highlighting that adequate capital contributes to improved financial outcomes. The positive relationship between asset quality and financial success was also supported by studies conducted by Boateng and Denje [33] and Olando [1], which demonstrated a strong association between asset quality and financial performance. Similarly, Muriuki [38] found that liquidity has a substantial and beneficial impact on the financial performance of DT-SACCOs. Among the variables, liquidity exhibited the highest correlation with financial performance (r=0.5958), which is classified as moderate, given that

correlation coefficients in this range (0.3 to 0.6) indicate a moderate association. Capital adequacy also showed a moderate correlation with financial performance (r=0.4866). In contrast, financial investments (r=0.2451) and asset quality (r=0.1938) demonstrated weaker correlations, as their values did not reach the moderate threshold of 0.3.

4.2.2 Regression analysis

To aid in the creation of a model that explains financial performance Using each of these variables in combination, a model for explaining financial performance needed to be created, this research evaluated the association between all

Table 4. Analysis by regression coefficients

Source	SS	df	MS	Number of obs = 873		
				F(8, 864) = 151.13		
Model	0.4844	8	0.0606	Prob > F = 0.000		
Residual	0.3462	864	0.0004	R-squared = 0.5832		
				Adj R-squared = 0.5794		
Total	0.8306	872	0.0010	Root MSE = .02002		
Financial performance	**Coef.**	**Std. Err**	**t**	**P>|t|**	**[95% Conf**	**Interval]**
Capital adequacy	0.0970	0.0287	3.3900	0.001	0.0408	0.1533
Asset quality	-0.2299	0.0277	-8.2900	0.000	-0.2843	-0.1754
Financial investments	-0.0660	0.0265	-2.4900	0.013	-0.1180	-0.0140
Liquidity	0.2886	0.0299	9.6400	0.000	0.2299	0.3473
year						
2019	-0.01276	0.00218	-5.850	0.000	-0.0170	-0.0085
2020	-0.00366	0.00215	-1.700	0.089	-0.0079	0.0006
2021	0.00249	0.00219	1.140	0.256	-0.0018	0.0068
2022	0.04229	0.00333	12.680	0.000	0.0357	0.0488
_cons	-0.00351	0.00160	-2.100	0.028	-0.0066	-0.0004

Source: Field data (2024)

of the IVs; and financial performance using MRA with Table 4 for the corresponding outcomes.

The results indicate that the model used for estimating financial performance, which incorporates capital adequacy, asset quality, financial investments, and liquidity, is statistically robust, as evidenced by a p-value of less than 0.05 ($p < 0.01$). This analysis, guided by the beta values from equation 3.1, was designed to test the null hypothesis (H0: $\beta_i = 0$), which posits that the coefficients for capital adequacy, asset quality, financial investments, and liquidity are zero. Conversely, the alternative hypothesis (Hα: $\beta_i \neq 0$) suggests that at least one of these coefficients is non-zero. The rejection of H0 in favour of Hα occurs when the p-value is below 0.05. In this case, the p-value does not exceed 0.05, indicating that at least one of the beta coefficients is significantly different from zero, as supported by the results ($p < 0.01$, F = 151.13). Consequently, Hα is accepted and H0 is rejected, demonstrating that the data is sufficient to affirm that one or more of the independent variables—capital adequacy, asset quality, financial investments, and liquidity, significantly influence the financial performance of Kenyan DT-SACCOs at a significance level of $\alpha < 0.05$.

The coefficient of determination (R^2) is 0.5832, indicating that the combined effects of capital adequacy (p = 0.001), asset quality ($p < 0.01$), financial investments (p = 0.013), and liquidity ($p < 0.01$) account for 58.32% of the variance in financial performance. This implies that the model, which includes these variables, explains a substantial portion of the variability in the financial performance of Kenyan DT-SACCOs. Therefore, the financial performance of these SACCOs can be predicted with considerable accuracy based on changes in capital adequacy, asset quality, financial investments, and liquidity.

The study investigated the hypothes1s listed below;

H$_{01}$: Capital adequacy does not have a statistically significant effect on financial performance of DT-SACCO in Kenya.

The capital adequacy statistics (β=0.0970; p=0.001) show a p-value of less than 0.05. Therefore, capital adequacy is crucial for assessing Kenyan DT-SACCOs' financial performance, and H0 shows that there is sufficient evidence to conclude that capital adequacy was not zero at the $\alpha = 0.05$

significance level. The results show that capital sufficiency has a major positive effect on DT-SACCO's financial performance in Kenya. These results corroborate those of Cheryoiti's (2016) study, which discovered a substantial and favourable impact of capital adequacy on financial performance. A current financial economics-based capital structure percentage takes into account capital adequacy, which is derived from market securities, and capital level management. The organization decides to purchase more stocks based on this. However, the findings differ with those in the research by Ojili [10]. Research by Ojili [10] demonstrated a negative association between capital sufficiency and financial performance, suggesting that DT-SACCOs with higher capital ratios are more profitable than those with lower levels since they require less external investment. Consequently, the research came to the conclusion that capital adequacy negatively affected financial performance. To evaluate the effect of asset quality, the following hypothesis was used;

H$_{02}$: Asset quality does not have a statistically significant effect on financial performance of DT-SACCOs in Kenya.

The analysis of asset quality data reveals a coefficient (β) of -0.2299 with a p-value less than 0.01. This p-value is well below the 0.05 threshold, leading to the rejection of the null hypothesis (H0) which posits that the coefficient for asset quality is zero. Consequently, at a significance level of $\alpha = 0.05$, there is substantial evidence to affirm that asset quality has a significantly effect on the financial performance of DT-SACCOs in Kenya. The negative coefficient suggests a detrimental impact of asset quality on the financial performance of these SACCOs. Specifically, poor asset quality, as indicated by a high level of non-performing loans (NPLs), is associated with lower financial performance. These findings are aligned with the research by Lawal et al. [35] which demonstrated that subpar performance of NPLs results in very low asset quality, thereby adversely affecting financial outcomes. Additionally, they imply that operating efficiency is significantly positively impacted by capital asset quality. Reducing costs can lead to increased bank profits because it improves bank fortunes and increases efficiencies. On the other hand, the outcomes differed from the study conducted by Thisaranga and Ariyasena [4] which discovered that asset quality had a positive and significant impact on competitive performance. However, Sile et al.'s

[34] research demonstrated a statistical correlation between asset quality and financial performance, whereas Boateng's [33] study discovered that asset quality had a substantial impact on financial performance. Nevertheless, this study's results were different from Thisaranga and Ariyasena's [4] finding that asset quality positively and significantly impacted competitive performance. Sile et al.'s [34] study, on the other hand, found a statistical association between asset quality and financial performance, while Boateng's [33] investigation found that asset quality significantly influenced Ghanaian banks' success.

The study tested the way financial performance of affected by financial Investments using the hypothesis;

H_{03}: Financial investments do not have a statistically significant effect on financial performance of DT-SACCOs in Kenya.

The analysis of financial investments indicates a coefficient of ($\beta = -0.0660$; $p = 0.014$), with the p-value falling well below the 0.05 significance threshold. Given that the p-value is less than 0.05, the null hypothesis (H0), which asserts that the coefficient for financial investments is zero, is rejected. Thus, at a significance level of $\alpha = 0.05$, the evidence strongly supports the conclusion that asset quality significantly influences the financial performance of DT-SACCOs in Kenya. The negative coefficient suggests that financial investments have an adverse impact on the financial performance of these SACCOs. The study conducted by Mohamed et al. [13] highlighted a significant relationship between financial Investments and financial performance of commercial banks in Kenya. Their findings suggest that increased financial Investments have negative effect on financial performance, underscoring the importance for lending institutions to explore additional profitable ventures beyond their traditional intermediation activities. However, the findings imply that lending institutions should explore new profitable business ventures beyond their traditional intermediation activities, as higher financial investments are positively correlated with enhanced financial stability. In relation to hypothesis testing, the study investigated the impact of liquidity on financial performance, assessing how this variable interacts with established financial hypothesis.

H_{04}: Liquidity does not have a statistically significant effect on financial performance of DT-SACCOs in Kenya

Given that the p-value was less than 0.05 and the results ($\beta=0.2886$; $p<0.01$) align with this observation, the null hypothesis (H0) was rejected. At a significance level of $\alpha = 0.05$, there is sufficient evidence to support the assertion that liquidity significantly affects the financial performance of Kenyan DT-SACCOs. The study revealed a significant positive impact of liquidity on the financial performance of these institutions. This finding corroborates Muriuki's [38] research, which also indicated that liquidity has a significant and positive influence on the financial performance of DT-SACCOs. Furthermore, Kimutai [37] highlighted that SACCO management carefully considers collateral and protects member savings when making lending decisions, underscoring the importance of liquidity in maintaining the financial stability and operational efficiency of SACCOs. The analysis underscored the critical role of favourable repayment terms and stringent financial reporting criteria in enhancing loan repayment rates. Effective internal controls, which have a profound impact on SACCOs' financial performance, must therefore be rigorously implemented. These findings are consistent with Shibutse et al.'s [39] research, which highlighted the substantial effect of liquidity on the financial performance of DT-SACCOs. The study's results are notably significant and positive, reinforcing the notion that liquidity plays a crucial role in the financial stability and success of Kenyan deposit-taking SACCOs. This is further supported by Masika's [40] investigation, which identified a strong positive correlation between firm liquidity and financial performance. Additionally, Ullah [41] corroborates these findings, emphasizing the substantial impact of liquidity on the financial outcomes of SACCOs.

The regression model is;

$$Y = -0.00351 + 0.0970X_1 - 0.2299X_2 - 0.0660 + 0.2039X_4 \qquad 4.1$$

Such that

Financial performance = - 0.00351 + 0.0970 (capital adequacy) - 0.2299 (asset quality) - 0.0660 (financial investments) + 0.2886 (liquidity).

Financial performance decreases by 0.00351 when all of the f IVs are zero. Therefore, before SACCO based financial characteristics, the consistent amounts of financial performance of Kenyan DT-SACCOs are -0.00351. The coefficients for asset quality ($\beta 1$ = -0.2299) and financial investments ($\beta 1$ = -0.0660) in the regression model reveal a negative influence on the financial performance of DT-SACCOs in Kenya. Specifically, a one-unit increase in asset quality results in a decrease of 0.2299 units in the financial performance of Kenyan DT-SACCOs. Similarly, a one-unit increase in financial investments corresponds to a decrease of 0.0660 units in financial performance.

In contrast, the coefficients for liquidity ($\beta 1$ = 0.2886) and capital adequacy ($\beta 1$ = 0.0970) demonstrate a positive impact on financial performance. A one-unit increase in liquidity leads to a 0.2886-unit improvement in the financial performance of Kenyan DT-SACCOs. Likewise, a one-unit increase in capital adequacy results in a 0.0970-unit improvement in financial performance. Conversely, a reduction of one unit in either liquidity or capital adequacy results in a proportional decrease in financial performance by 0.2886 and 0.0970 units, respectively. Overall, while asset quality and financial investments are associated with negative changes in financial performance, liquidity and capital adequacy contribute positively to the financial outcomes of DT-SACCOs in Kenya.

The analysis reveals that capital adequacy and liquidity exhibit a positive relationship with the financial performance of Kenyan DT-SACCOs, as indicated by their positive coefficients. Specifically, improvements in capital adequacy or liquidity are associated with enhanced financial performance. An increase in either factor leads to a corresponding increase in the financial performance of Kenyan DT-SACCOs. Thus, strengthening capital adequacy or liquidity directly benefits the financial stability and success of these institutions.

Conversely, asset quality and financial investments show negative coefficients, indicating a negative relationship with financial performance. This implies that any increase in asset quality or financial investments is associated with a decline in the financial performance of Kenyan DT-SACCOs. Conversely, a decrease in asset quality or financial investments would be linked to an improvement in financial performance. Hence,

while capital adequacy and liquidity positively influence financial performance, asset quality and financial investments have an adverse effect.

4.2.3 Moderating effect of SASRA risk regulations

The research then used SASRA risk regulations as a moderator variable the effect of SACCO based financial characteristics on financial performance and then tested the hypothesis;

H_5: SASRA regulations do not have a moderating effect on relationship between SACCO based financial characteristics and financial performance of DT-SACCOs in Kenya

The results for tested first stage were as captured in Table 4. Based on those results, there was a significant effect of o relationship on SACCO based financial characteristics (p<0.01) and the effects was 58.32% (r^2= 0.5832). The confirms a that there was relationship moderate.

The study then set to confirm whether moderator variable, SASRA risk regulations was an explanatory variable to obtain Table 5.

These results show that the SASRA risk regulations had a significant effect of n financial performance (p=0.048). More so, the relationship between the IVs in addition to SASRA risk regulations with financial performance was significant (p<0.01) where the effects of capital adequacy; asset quality, financial investments and liquidity in addition to SASRA risk regulations on financial performance was 58.51% ((r^2= 0.5851). So, SASRA risk regulations was explanatory variable which caused an increase of 0.19% from 58.32% to 58.51%. So, step three was done after confirming that there was relationship to moderate and that SASRA risk regulations was explanatory variable. This yielded Table 6.

In this study, R^2 measure in Table 5 and Table 6 were important for explaining the moderator effect where change in R^2, was 0.0026 given that from Table 6, R^2 was 0.5858 and 0.5832 in Table 4 (0.5858 – 0.5832 = .00026). This indicates a 0.26% increase in variation on the impact of SACCO based financial characteristics on financial performance initiated by SASRA risk regulations. Hence, the variation of the SACCO

based financial characteristics' influence on financial performance, which was controlled by SASRA risk regulations, was 0.26%. According to statistical analysis, there is no significant difference (p <.0.01) between the financial performance of SACCOs and the moderating influence of SASRA prudential norms. The association between SACCO based financial characteristics and financial performance is thus found to be significantly moderated by SASRA risk regulations, according to the evidence (p=0.040).

Table 5. SASRA risk regulations as independent variable

Source	SS	df	MS	Number of obs = 873		
				F(9, 863) = 135.23		
Model	0.4860	9	0.0540	Prob > F = 0.000		
Residual	0.3446	863	0.0004	R-squared = 0.5851		
				Adj R-squared = 0.5808		
Total	0.8306	872	0.0010	Root MSE = .02002		
Financial performance	**Coef.**	**Std. Err**	**t**	**P>|t|**	**[95% Conf**	**Interval]**
Capital adequacy	0.0950	0.0286	3.32	0.001	0.0388	0.1512
Asset quality	-0.2270	0.0277	-8.19	0.000	-0.2815	-0.1726
Financial investments	-0.0627	0.0265	-2.36	0.018	-0.1147	-0.0106
Liquidity	0.2904	0.0299	9.72	0.000	0.2318	0.3491
SASRA risk regulations	-0.0383	0.0193	-1.98	0.048	-0.0763	-0.0004
cons	-0.0033	0.0016	-2.040.	0.042	-0.0064	-0.0001

Source: Field data (2024)

Table 6. Moderating effect SASRA risk regulations

Source	SS	df	MS	Number of obs = 873		
				F(9, 863) = 135.23		
Model	0.4860	9	0.0540	Prob > F = 0.000		
Residual	0.3446	863	0.0004	R-squared = 0.5858		
				Adj R-squared = 0.5795		
Total	0.8306	872	0.0010	Root MSE = .02002		
Financial performance	**Coef.**	**Std. Err**	**t**	**P>|t|**	**[95% Conf**	**Interval]**
Capital adequacy	0.0940	0.0288	3.26	0.001	0.0375	0.1506
Asset quality	-0.2271	0.0279	-8.15	0.000	-0.2817	-0.1724
Financial investments	-0.0597	0.0267	-2.14	0.026	-0.1121	-0.0073
Liquidity	0.2898	0.0300	9.65	0.000	0.2309	0.3488
SASRA risk regulations	-0.0407	0.0198	-2.05	0.040	-0.0796	-0.0018
Capital Adequacy x SASRA risk regulations	0.4768	0.7557	0.63	0.528	-1.0064	1.9600
Asset Quality x SASRA risk regulations	0.7195	0.7815	0.92	0.357	-0.8143	2.1533
Financial investments x SASRA risk regulations x	-0.4166	0.7319	-0.57	0.569	-1.8532	1.0200
Liquidity x SASRA risk regulations	-0.6286	0.7036	-0.89	0.372	-2.0096	0.7523
Year						
2019	-0.0131	0.0022	-5.98	0.000	-0.0174	-0.0088
2020	-0.0041	0.0022	-1.87	0.061	-0.0083	0.0002
2021	0.0021	0.0022	0.94	0.349	-0.0023	0.0064
2022	0.0416	0.0034	12.38	0.000	0.0350	0.0482
_cons	-0.0031	0.0016	-1.89	0.059	-0.0062	0.0001

Source: Field data (2024)

5. CONCLUSIONS AND RECOMMENDA-TIONS

5.1 Conclusions

According to the study, capital sufficiency has a major and favourable impact on Kenyan DT-SACCOs' financial performance. With capital sufficiency explaining 10.42% of the difference in financial performance, this influence is statistically significant. In particular, the financial performance of Kenyan DT-SACCOs varies by 0.1042-units for every unit change in capital adequacy. Sufficient capital is essential for maintaining and overseeing institutional assets. Capital adequacy in the combined regression model contributed 9.70% ($\beta=0.0970$) to the model's overall explanatory power.

Given the prevalence of NPLs, the study arrived at the conclusion that asset quality has a statistically significant negative influence on Kenyan DT-SACCOs' financial performance. For every Ksh. 1 cost of non-performing loans, Kenyan DT-SACCOs with asset quality of 11.13% allotted a loss provision of Ksh. 11 and 13 cents. Considerable reserves are made to protect non-performing loans (NPLs) in the event that provision loan losses above a predetermined threshold. This negatively impacts the DT-SACCOs' financial performance and leads to subpar results. The challenges with the NPL have adversely affected the cost of shareholders' equity in this case. Asset quality contributes for 22.99% ($\beta=0.2299$) of the variance in the financial performance of DT-SACCOs in Kenya, suggesting a statistically significant negative effect on the group's financial performance.

In conclusion, financial investments have a statistically significant negative effect on the financial success of Kenyan DT-SACCOs; for every Ksh 1 invested, the DT-SACCOs were able to earn 44 shillings and 61 seven cents. These SACCOs' operations could be adequately funded and acceptable levels of capital and allowance could be maintained with such financial investments. The findings demonstrated that financial investments explain 6.60% ($\beta=0.0660$) of the variation in financial performance and has a statistically significant negative impact on Kenyan DT-SACCO financial performance. This indicates that Kenyan DT-SACCO's financial performance would fall at a rate of 0.0660 when financial investments increased by a single unit.

The study concludes that there is a considerable positive association between the liquidity and the financial success of Kenyan DT-SACCOs. Liquidity accounts for 28.86% ($\beta=0.2886$) of the fluctuation in Kenya's financial performance. DT-SACCOs had an average of 69.36% cash on hand in their financial assets. The DT-SACCOs can utilise their liquid assets to pay Kshs 69.36 for every Ksh1 in short-term liabilities because they are required to repay short-term commitments.

Based on the study's findings, Kenyan DT-SACCOs have shown a lot of reason for concern regarding their application of SASRA prudential principles. It is clear that these organisations must act swiftly in order to meet the requirements of sufficient capital, the calibre of their assets, potential for profit, liquidity, and strict oversight of their lending function. Consequently, the SACCO based financial characteristics are appropriate for assessing the financial performance of DT-SACCOs in Kenya and supporting these entities in complying with SASRA prudential rules.

5.2 Recommendations

These institutions should implement quality financial investments strategies to enhance their financial performance and reduce the amount of high-performing loans that are non-performing. These tactics ought to prioritise cautious lending, efficient loan disbursement and recovery procedures, and successful collection of disbursed monies.

The study recommends that in order to manage capital adequacy and develop institutional capital (core capital), Kenya's DT-SACCOs should employ the optimal investing strategy. Since the capital adequacy is already over the required level, it is necessary to increase the value of the asset portfolio while keeping the capital adequacy at the optimal institutional capital value. It should be mentioned that utilising the best institutional capital investment plan is necessary to improve financial performance.

The investigation additionally suggests that the DT-SACCOS practise careful asset management and regularly monitor loan management in order to build sound lending policies that don't hurt the company's bottom line. They should be aware of how the credit policy will impact their business beforehand to make sure that shareholder equity deposits are used wisely and that value is maximised. the calibre of its holdings as well as

the development of NPLs and credit losses, which may result in monetary losses. The DT-SACCOs ought to be less passionate about making riskier loan awards.

The study also recommends for the DT-SACCOS to conduct a detailed analysis of the financial metrics used to evaluate their financial investments; focusing on identifying the metrics which most accurately reflect financial investment success and how these metrics would positively correlate with DT-SACCOs' overall financial performance. They should importantly evaluate how financial investments affect liquidity and cost management.

The study additionally recommends that DT-SACCOS stick to the suggested liquidity levels. They should concentrate on loan recovery, loan monitoring, and liquidity management to make sure their lending methods are effective.

Additionally, this research suggests that DT-SACCOS employ interest gap analysis to assess the profitability of their investments by balancing rate-sensitive and interest-sensitive assets. Utilizing Financial Intermediation Theory, DT-SACCOS can better evaluate liquidity risk and align cash flows and asset availability with liability repayment schedules.

Finally, the study recommends that Kenyan DT-SACCOs utilize financial characteristics to identify areas requiring particular focus. This approach will assist management in complying with SASRA risk regulations.

6. RECOMMENDATIONS FOR FURTHER STUDY

The investigation found that the DT-SACCOs have maintained steady liquidity despite their inadequate financial performance. This unexpected incident has an unidentified cause. Further investigation is therefore necessary to ascertain the peculiar liquidity and financial performance patterns of Kenyan DT-SACCOs, which may be connected to the guiding principles of the DT-SACCOs.

The analysis revealed an inverse relationship between financial performance and financial investments, as measured by interest margin/gross revenue, despite the obvious contrary. Given that SASRA recommends a number of financial investments indicators, this study recommends further research be

conducted on the financial investments and financial performance of Kenyan DT-SACCOs in order to explain this anomaly.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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