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Abstract

Deposits taking SACCOs (DTS) play a key role in allocating loan products at comparatively lower interest rates to low-and middle-income class in the economy. They achieve their mandate by pooling members' deposits and occasionally borrowing from external sources for investment in capital projects and to satisfy members' loan demand. However, most deposit taking SACCOs face challenges in fulfilling their obligation due to variability in the interest rate drivers which negatively affect their financial performance. The influence of monetary policy, inflation, credit and liquidity risks on interest rates in the economy affect interest rate spread in DTS which in turn affect their financial performance. However, little is known regarding the extent to which the DT SACCOs size moderate the relationship between interest rate spread and financial performance. Arising from the fact that the major DTS have reported different financial performance over the recent past, this study purposed to investigate the role of the size of DTS on moderating the relationship between interest rate drivers and financial performance. The study used descriptive survey research. Secondary data ranging from 2013 to 2017 was collected. The data was obtained from 74 DTS which were sampled from 176 DTS using Krejcie and Morgan formula. The output before and after moderation revealed that DT SACCOs size moderated the relationship between interest rate drivers and the financial performance of DT SACCOs. The mean of regression coefficients before moderation was -0.105 which increased after moderation to 0.512. Thus, size of the DTS moderated the relationship between interest rate drivers and financial performance positively. The study recommended that DT SACCOs should leverage on economies of scale that emanate from size to enhance financial performance of deposit taking SACCOs.

Keywords: *Financial Performance, DT SACCO Size, Interest Rate Drivers*

1.0 INTRODUCTION

Financial performance in deposit taking Savings and Credit Co-operative Societies (DTS) is the extent to which a DTS is able to achieve its policies, financial and non-financial objectives (Gweyi & Karanja, 2014). Financial performance in deposit taking SACCOs assists the management in establishing if a SACCO is operating at break-even (Baraza, 2018). Well performing DTS attracts new membership which culminates to rise in amount of deposits (Njoki, 2018). Financial performance measurement is, therefore, key to successful management of any business (Franco-Santos, Lucianetti & Bourne, 2012). According to Nkuru

(2015) SACCOs' management should strive to enhance financial performance in order to maximize the members' benefits. Sustained growth in profitability and performance of DTS also ensures continued reward for investors which encourages increased investment that spurs economic growth.

Deposit taking SACCOs that partly fund members loan requirements through bank loans have their financial performance adversely affected when interest rate in the economy rises (Sebhatu, 2012). Since one of the major sources of income for lending firms is from interest income related activities, it is great importance that the deposit taking SACCOs understand the impact of interest rates on financial performance in order to maximize shareholders wealth (Waweru, 2018). Just like other investors, deposit taking SACCOs, therefore, search for answers for the key drivers of interest rates, as they affect many investment portfolios (Ngomo & No, 2012). Interest rate drivers of financial institutions are affected by factors like monetary policies, inflation rates, credit risk, and liquidity risks. The Kenyan banking sector has in the last decade witnessed drastic changes emanating mainly from variability of interest rates in the sector. According to Irungu (2012), interest rate charged to borrowers rose to highs of up to thirty percent and above in 2012 while interest rate earned by savers remained relatively low. The banking sector in Kenya continued to register increasing profitability while most sectors in the economy were either stagnating or declining.

Researchers have established that larger firms are not as affected by interest rate drivers as smaller firms because of their superior collateral structure. In contrast to smaller entities that apparently possess inferior tangible assets and therefore experience credit rationing, large firms easily access credit and therefore, are hypothetically expected to not only perform better, but have less financial distress (Muigai, 2016).

1.1 Problem Statement

Financial performance of DT SACCOs has been fluctuating over the years. Some DT SACCOs have performed better while others have almost run bankrupt while still owing their members deposits. The reason for this varied performance could be attributed to interest rate drivers and how the DT SACCO size help in mitigating the negative effects of interest rate drivers. Although interest rate drivers are important parameters in influencing the cost of funds and consequently in determining interest income in DTS, this phenomenon has not exhaustively been researched on by scholars. Failure to address the emerging cut-throat competition that arise from the influence of interest rate drivers on cost of funds, DTS are likely to experience reduced return on assets, decline in return on investment, fall in number of membership and reduction in the dividends. Besides, little is known regarding whether large DT SACCOs are impacted more than their smaller counterparts when interest rates spread increases or reduces. This study investigates how the DT SACCO size moderates the influence of interest rate drivers on financial performance. The interest drivers under study include monetary policy, inflation, credit risk and liquidity risk.

1.2 Research Objective

The objective of this research was to establish the moderating effect of DT SACCO size on the relationship between interest rate drivers and financial performance of DTS.

2.0 LITERATURE REVIEW

Most deposit taking SACCOs face challenges in fulfilling their obligation due to variability in the interest rates which negatively affect their financial performance. Arising from the fact that the main mandate of DTS is issuance of loans, interest rate drivers are key to their financial performance. Evaluating the effect of interest rate drivers is to ensure that DTS adjusts their operational strategies appropriately as a result of interest drivers to remain profitable amidst its

financial intermediation competitors (Muigai, 2016). The influence of monetary policy, inflation, credit and liquidity risks on interest rates in the economy affect interest rate spread in DTS when there exist mismatch between assets and liabilities.

Low interest rates provide firms with opportunities to borrow money at lower rates, which allows them to expand their operations and cash flows. Income of deposit taking SACCOs is generated mainly from credit creation through issuance of loans to members. Interest income is considered as the main revenue source for the deposit taking SACCOs in Kenya (Mathuva, 2016). The behaviour of the interest rate is crucial to agents making decisions about resource allocation over time in both public and private spheres (Santos, 2012). Ongore and Kusa (2013) observed that interest rate in an economy has a significant bearing on the level of profitability of organizations. As a result of high spread between the Central bank of Kenya reference rate and the rate the bank charges its customers, increase in interest rates makes profitability on loans to increase.

In Brazil, interest rate in capital markets, equilibrium prices and quantities are determined by the dynamic interaction between demand and supply. The level of interest rate is also viewed as a function of other economic variables such as inflation expectations and risk factors (Ongore & Kusa, 2013). The Brazilian Central bank formally adopts an inflation target system in which the monetary policy tool is the selic overnight rate. Traditional economic models in Brazil consider the market interest rate as a unique rate which arises from the interaction between demand and supply in capital markets. In United Kingdom, setting interest rates is done by the monetary policy committee of the Bank of England (Woodford, 2011). The bank receives intelligence information from its network of twelve regional agencies and is provided with a range of the bank's monetary, economic statistical and market expertise before making a decision on official interest rate (Brits & Veldsman, 2014). Bank rate is used to regulate the amount of money in circulation in the United Kingdom. An increase in bank rate makes borrowing more expensive and saving more rewarding while a decrease in bank rate makes borrowing cheaper and saving less rewarding (White, 2012).

Theoretical analysis on the link between fiscal deficit and interest rate in India assumes importance for various reasons. Firstly, in the context of growing global integration of financial markets, the macroeconomic effects of an increase in the domestic interest rate due to rise in the fiscal deficit can be spread globally (Cullis & Morley, 2017). Secondly, if the increase in fiscal deficit leads to an increase in the rate of interest, it may lead to a crowding out of the interest sensitive components of private spending especially the private corporate investment.

High interest increases the cost of credit and production resulting to high prices and services that consumers have to pay for. In Nigeria, the government strives to adopt policies that assist financial intermediaries to mitigate on financial crises (Chakrabarti, 2015). The benchmark interest rate in Nigeria was last recorded at 14% while it averaged 10.67% from 2007 until 2018, reaching on all time high 14% in July 2016 and a record low of 6% in July 2009. The government of Nigeria has developed a policy guideline that improves on the profitability of money lending firms, strengthen bank lending rate, inter-bank rate policy, Treasury bill rate and monetary policy rate through effective and efficient regulation and supervisory framework (Olagunju, David & Samuel, 2012).

Mohamed *et al.*, (2016) observed that firm size is a primary factor in determining the profitability of a firm due to the concept of economies of scale in the neo classical view of the firm. DT SACCO size is very critical to the financial performance due to the phenomenon of economies of scale. Essentially, it means larger DT SACCOs can obtain cost leadership relative to smaller SACCOs. Thus while size has been accepted as a main feature in the firm performance, it is not clear how it affects the actual performance dynamics. Bisher (2012)

sought to determine the relationship between size and financial performance of commercial banks in Kenya. The study findings indicated a weak relationship between size and financial performance but the relationship was statistically significant. Kinyua (2013) study found strong relationship existed between financial performance and size of SACCOS in Kenya. However, this study did not investigate the moderating role of SACCO size.

Mutunga and Owino (2017) established that size moderated the relationship between micro factors and financial performance. Atsango (2018) analyzed the relationship between firm characteristics and profitability of DT-SACCOs in Kenya. The study concluded that firm size asset quality and operational efficiency had statistically significant effect on profitability while leverage and capital adequacy did not show significant effect on profitability. Mwaniki, Ndambiri and Oluoch (2018) conducted a study on the effect of financial structure on the financial performance of deposit taking SACCOs in Kenya. The study used size of the DT-SACCOs as a moderation variable of the relationship between financial structure and financial performance. The financial performance was measured by return on equity (ROE). The findings of the study showed that a positive and significant relationship existed between equity financing, long term debt financing, short term debt financing, member deposits and financial performance of DT-SACCOs in Kenya. Additionally, the study revealed that the size of the DT-Sacco had a significant moderating effect on the relationship between financial structure and performance of DT-SACCOs. However, the study specifically focused on financial structure while the current study focused on interest rate drivers.

2.1 Conceptual Framework

A conceptual framework provides an opportunity to specify and define concepts within the problem (Luse, Mennecke, & Townsend, 2012). In the conceptual framework of this study, the independent variables are interest rate drivers while the dependent variable is financial performance as presented in Figure 1.

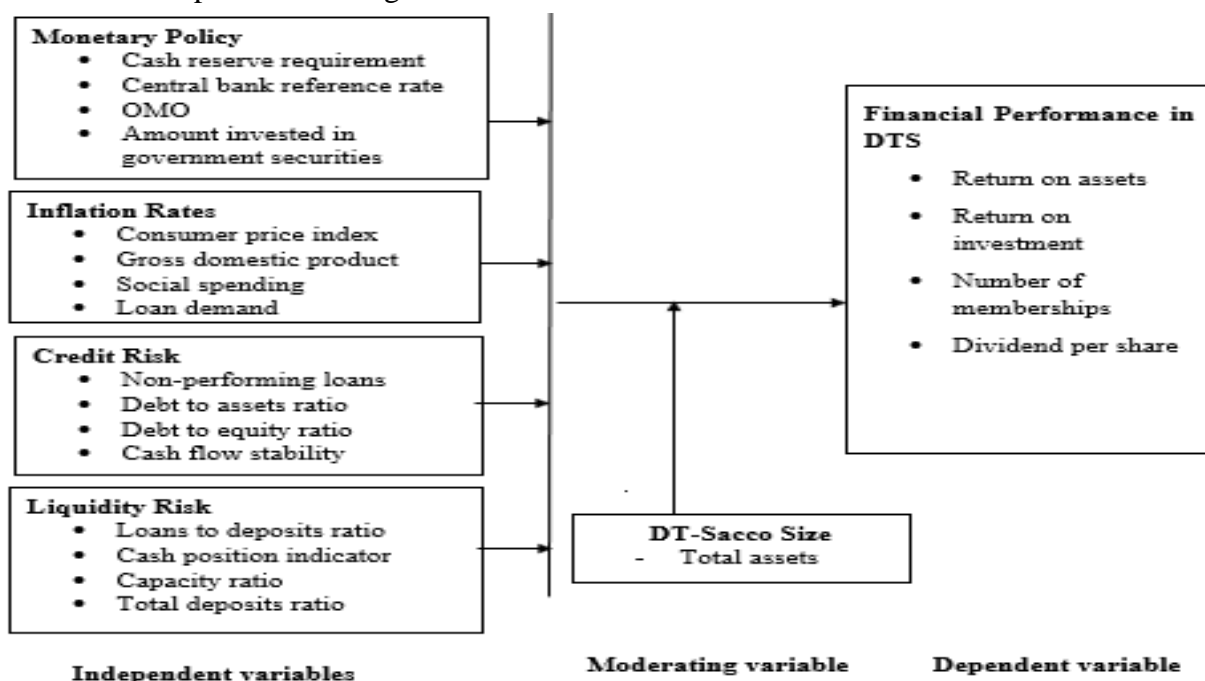


Figure 1. Conceptual Framework

Monetary policy, inflation rates, credit risk and liquidity risk are the independent variables and interest rate drivers. For the purpose of this study, amount invested in government securities was used as a proxy measure for monetary policy, consumer price index was used as proxy

measure for inflation rates, non-performing loans was used a measure of credit risk and loan to deposits ratio was used as a measure of liquidity risk. DT SACCO size was the moderating variable which was measured by total assets while financial performance of DT SACCOs was the dependent variable measured using Returns on Assets.

3.0 RESEARCH METHODOLOGY

The study used descriptive survey research design because it provides a knowledge base when little is known about a phenomenon. Sekaran and Bougie (2011) averred that descriptive research design helps in understanding the characteristics of a group in a given situation, assists in systematic thinking about aspects in a given situation, offers idea for further probe and helps in making certain simple decisions. Due to epistemological stance of finance studies, this study heavily relied on secondary data. A longitudinal methodology covering the data of DT-Saccos from 2013 to 2016 was adopted. Longitudinal studies are usually motivated either by the desire for precise comparisons of treatments or by intrinsic interest in time-related changes. Krejcie and Morgan formula was used to obtain a sample of 74 the population of 176 registered DT SACCOs. The study employed descriptive statistics mean and standard deviation. Inferential statistical tools used were panel regression analysis and Pearson Product Moment Correlation.

4.0 RESEARCH FINDINGS AND DISCUSSION

4.1 Descriptive Results

Secondary data was obtained from various sources such as SACCOs reports. The data was cleaned and organized in excel for further analysis. Table 1 shows the distribution of secondary data over the years.

Table 1: Distribution of Secondary Data over the Years

Year	2013	2014	2015	2016	2017	Overall (2013 to 2017)	
	Mean	Mean	Mean	Mean	Mean	Mean	Std
Total assets (Average)	2158.65	2684.78	3532.45	3895.120	3892.357	3198.121	2.29
Total cash and marketable securities (Average Kes'000')	126577.5	126577.5	188301.9	234311.2	233364.98	181826.6	1.21
CPI	140.11	149.74	159.60	169.53	183.23	160.6525	1.51
Loan to Deposit Ratio	0.756457	0.611756	0.635021	0.542052	0.974457	0.957601	0.90
Return on Assets	11.12%	9.05%	10.56%	11.19%	12.01%	10.786%	1.09
Returns on Investment	6.4%	5.46%	5.97%	6.81%	6.54%	6.236%	0.52

Source: Data Processed

As shown in Table 1, there was an upward trend in DT-SACCOs' total assets. The average total assets trend increased from KES 2,158 ('000000') in 2013 to KES 3,892,356.97 ('000000') in 2017. The increase was explained by aggressive marketing by the DT-SACCOs

which increased loan portfolio and bank balances from increased members deposits. The results also indicated an upward trend of the DT-SACCOs total cash and marketable securities. The sum of total cash and marketable assets increased from KES 126,577.5 ('000') in 2013 to KES 233,364.98 ('000') in 2017. The steady rise of total cash and marketable securities in DT-SACCOs was attributed to the increase in volume of deposits from members and loan uptake which generated funds that were partly invested in marketable securities and others held in form of bank balances. However, from year 2016 to year 2017, there was a slight decline in the total cash and marketable securities which could partly be due to conversion of marketable securities into cash for political campaign activities. Additionally, there was an upward trend of consumer price index over the period of five years. The CPI increased from 140 in year 2013 to 183 in year 2017. The consumer price index was included in the study to show the trend in inflation over the period of 5 years. Loan to deposits ratio has been varied from year 2013 to year 2017. This could be attributed to different strategies of managing interest rates and as well as loan products intake over the period of study.

Similarly, there was an upward trend of deposit taking SACCOs return on assets. The ROA values increased from 11.12% in 2013 to 12.01% in 2017. The results also showed that except for year 2014, there was an upward trend in return on investments. The ROI decreased from 6.4% in 2013 to 5.46% in 2014 and then increased gradually to 6.81% to 2016 before slightly falling to 6.54% in 2017. A drop in return on assets in 2014 was attributed to slight decline in business activities in deposit taking SACCOs immediately after the electioneering period in 2013. Though the number of members increased in 2014 and 2017, the observed decline in return on investment in those years was partly attributed to political environment preceding electioneering period which dampened deposit taking SACCOs' core business activities. Moreover, the results also revealed an upward trend in DT-SACCOs number of membership except for the year 2015.

4.2 Correlation Analysis Results

The study conducted a correlation analysis between DT-SACCO Size and financial performance of SACCOs as shown in Table 2.

Table 2: Correlation between DT-SACCO Size and Financial Performance of SACCOs

		Size
Financial Performance of DT SACCOs	Pearson Correlation	0.501**
	Sig. (2-tailed)	0.02
Valid N		74

Source: Data Processed

From Table 2, the firm size at 95% confidence level had coefficient of correlation of 0.501 with financial performance. This correlation coefficient value lied between 0.3 and 0.5 indicating that there was a positive linear association between firm size and financial performance. The results further showed that at 95% confidence level, firm size had p-value of 0.001 with financial performance. The relationship was tested at 95% level with a 2-tailed test where the probability value was established to be less than 0.05 indicating that there was a significant relationship between firm size and financial performance. The influence of firm size on financial performance is particularly due to benefits of economies of scale derived from a large asset base.

4.3 Regression Model Prior to Moderation

The study employed fixed effects panel regression method to run the model prior and after moderation. Table 3 shows the fixed model regression prior to moderation.

Table 3: Regression Results Prior to Moderation.

Number of Observation		370				
Number of Panels		74				
R-sq – within		0.2231				
Between		0.0227				
Overall		0.1534				
F (4,74)		17.24				
Prob>F		0.000				
Financial Performance	Coef.	Std.err	T	p> t 	[95% Conf. Interval]	
Monetary Policy	1.096	.8982103	1.22	0.226	-.6936103	2.885836
Inflation	-0.139	.034616	-3.942	0.001	-.0274146	.3051869
Credit Risk	0.092	.022227	4.16	0.000	.0482491	.1368258
Liquidity Risk	-1.490	.4733325	-3.15	0.002	-2.433458	-.5471872
Cons.	-0.812	4.959465	-0.16	0.040	-10.69389	9.070011

Source: Data Processed

The regression result presented in Table 3, the F-statistic which shows the model significance was 17.24 and its respective p-value was 0.000 which is less than 0.05 hence the model was significant at 95 percent confidence levels. The results indicated that the independent variables are significant predictors of dependent variables and could therefore be used for prediction purposes. The R-square of 0.1534 indicated that 15.34% changes in dependent variable (ROA) can be explained by variations in the independent variables. Since the four independent variables in the study explained only 15.34 % variation of financial performance, other factors not studied in this research contributed 84.66% variation of financial performance of DT-SACCOs. A further research should therefore be conducted to investigate factors other than interest rate drivers that could affect financial performance of DT-SACCOs. Further, the result indicated that monetary policy and inflation had positive coefficients while credit risk and liquidity risk had negative coefficients. The coefficients address the regression model which relates the predictors (independent) and dependent variables. The regression model became;

$$Y = -0.811 + 1.096 X_1 - 0.139X_2 + 0.092X_3 - 1.49X_4$$

At 95% level of significance, only the coefficients of inflation, credit risk and liquidity risk were less than the 0.05. Hence their coefficients explained significant influence of independent variables to the financial performance of deposit taking SACCOs. The coefficients value of monetary policy was insignificant because their p values at 95% level of significance were greater than 0.05. Therefore, monetary policy had an insignificant influence on the financial performance of deposit taking SACCOs.

4.4 Regression after Moderation

A moderating variable is a variable which is thought to influence the magnitude of the effect of an independent variable on a dependent one. The direction and the magnitude of the relationship between the dependent variable and the independent variable is dependent on the value of a moderator (Saunders, Lewis & Thornhill, 2016). In this study, size of the DT

SACCO was hypothesized to be a moderator affecting the relationship between financial performance and the interest rate drivers. The null hypothesis (H_0) was that DT-SACCO size does not significantly affect the relationship between interest rate drivers and financial performance of deposits taking SACCOs in Kenya. Table 4 shows the summary of results after moderation.

The model after the moderation became;

$$Y = 3.07 + 0.1322 X_1 + 0.0129 X_2 - 0.260 X_3 - 0.025 X_4$$

The results from the summary of regression output in Table 4 showed the moderating effect of DT SACCO size. Monetary policy had a positive but insignificant ($\beta_1 = 0.1322$, $p = 0.332$) relationship with financial performance of the DT- SACCOs after moderation. Inflation had a positive and significant ($\beta_2 = 0.0129$, $p = 0.000$) relationship with financial performance of DT-SACCOs after moderation as indicated by the regression output. Both credit risk ($\beta_3 = -0.26$, $p = 0.000$) and liquidity risks ($\beta_4 = -0.0252$, $p = 0.003$) had a negative and significant relationship with financial performance after moderation.

Table 4: Regression Output as Moderated by Size of DT SACCO.

Number of Observation		370				
Number of Panels		74				
R-sq – within		0.2210				
Between		0.0140				
Overall		0.1490				
F (4,74)		17.58				
Prob>F		0.000				
ROA	Coef.	Std.err	T	p> t	[95% Conf. Interval]	
MP*z	0.132	.1080006	1.22	0.332	.3447826	.4020763
I*z	0.013	.0034211	3.77	0.000	.006094	.0197275
CR*z	-0.260	.0697272	-3.73	0.000	-.3991441	-.121275
LR*z	-0.025	.0092685	2.80	0.003	-.001175	.0517014
Cons.	3.072	3.646324	0.84	0.402	-4.19381	10.3371

Source: Data Processed

Table 5 shows the comparison of regression coefficients before and after moderation.

Table 5: Regression Coefficients before and after Moderation

Predictors before moderation	B
(Constant)	-0.811
Monetary policy	1.096
Inflation	-0.139
Credit risk	0.093
Liquidity risk	-1.49
Predictors after Moderation	B
(Constant)	3.0716
MPZ	0.132
IZ	0.013
CRZ	-0.26
LRZ	-0.025

Source: Data Processed

As shown in Table 4 before moderation the regression coefficients for monetary policy, inflation, credit risk and liquidity risk were 1.096, -0.139, 0.093 and -1.49 while after moderation the regression coefficients were 0.132, 0.013, -0.26 and -0.025 respectively. Independent t-test was conducted to investigate whether there was significant change in value of coefficients prior and after moderation. The independent t-test checks for the mean differences to establish if there is any significant changes. Table 6 shows the independent t-test model summary.

Table 6: Model Summary before and after Moderation

Model	Within	Between	Overall
Before	0.2231	0.0227	0.1534
After	0.2210	0.0140	0.1490

Source: Data Processed

As observed in Table 6, the model summary after moderation also changed. Overall R-square changed from 0.1534 before moderation to 0.1490 after moderation while the R-squared between panels changed from 0.0227 before moderation to 0.0140 after moderation. Additionally, the R-squared within panels changed from 0.2231 prior to moderation to 0.2210 after moderation. This implied that there was a decline in variation of financial performance of DT-SACCOs emanating from the independent variables. Independent t-test was used to test the significance of the change after moderation and hence reject or accept the null hypothesis for moderation. Table 6 showed the summary of results.

Table 7: Independent t-tests

B	N	Mean	Df	T	Sig. 2-tailed	Mean difference	Std. error difference
Before	4	-0.105	6	-0.783	0.045	-0.61783	0.789191
After	4	0.5134					

Source: Data Processed

As shown in Table 7 the mean of regression coefficients before moderation was -0.105 which increased after moderation to 0.513. Following the running of t-test, the p-value of t was 0.045 which was below the critical value of 0.05 hence there was significant difference between the regression coefficients before and after moderation. Therefore, the null hypothesis of moderation effect which stated that there is no significant moderation effect of size on the relationship between interest rates drivers and financial performance of DT SACCOs in Kenya was rejected. The study established that DT SACCOs size had a moderating effect on the relationship between the interest rate drivers and financial performance of DT SACCOs. This was supported by the regression coefficients and coefficients of determination of the regression outputs before and after moderation, which established that size had a significant moderating effect and had an impact on the effect of interest rates drivers on financial performance of DT-SACCOs.

4.5 Discussion of the Findings

This study used DT SACCO size as the moderating variable. It was established that after moderation, the effects of monetary policy, inflation, credit risk and liquidity risk on financial performance of DT SACCOs were reduced. The study established that size of the DT SACCO was a significant moderator of interest rate drivers' influence on financial performance hence, the SACCO management should leverage size in order to generate higher profit margins and

returns on assets. A strong relationship was found to exist between financial performance and size of SACCOS in Kenya. The findings were consistent with those of Mwaniki, Ndambiri and Oluoch (2018) who established that the size of the DT SACCO had a significant moderating effect on the relationship between financial structure and performance of DT SACCOS.

5.0 CONCLUSION

The correlation results revealed that the size DT SACCO had a positive and significant correlation with financial performance. The size of a DT SACCO influences performance particularly because a large asset base of a firm enables it to obtain funds in the market on competitive terms. Therefore, the higher the amount of the total assets held by the DT SACCO, the more likely will there be an increase in returns on assets. Additionally, the study revealed that after moderation, the effects of monetary policy, inflation, credit risk and liquidity risk on financial performance of DT SACCOS reduced. The study established that size of the SACCO was a significant moderator on interest rate drivers influence on financial performance hence, the SACCO management should lay emphasize on building a large asset base in their strategic plans in order to enjoy economies of scale for assets influence many parameters that impact on financial performance of firms.

6.0 RECOMMENDATION

Basing on the study findings, this analysis opines that small and struggling DTS should consider acquisition, consolidation and merger options in order to enhance their accessibility to assets accruing from an expanded size and hence reap economies of scale benefits of efficiency and sustainability. The study also indicated that DT-SACCOS received considerable funds for their loaning activities from borrowings. It is recommended that deposit taking SACCOS should take proactive measures by maintaining large asset base that could enable them borrow funds from the market at competitive rates.

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