INTEREST RATE DRIVERS AND FINANCIAL PERFORMANCE OF DEPOSIT TAKING SAVINGS AND CREDIT CO-OPERATIVE SOCIETIES IN KENYA

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Interest Rate Drivers and Financial Performance of Deposit Taking Savings and Credit Co-operative Societies in Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

This Thesis is dedicated to my family and fellow Doctor of Philosophy students whose cooperation was instrumental in the preparation of the document. Special dedication goes to my loving wife Diana whose continued encouragement and support motivated me to work harder towards achieving the tenets of PhD academic calling. My final dedication goes to my late parents Joshua and Mama Rodah for having instilled in me the value for education at an early age.

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ABBREVIATIONS AND ACRONYMS

BOSA	Back Office Services Activity
CBR	Central Bank Rate
CBK	Central Bank of Kenya
CGAP	Consultative Group to Assist the Poor
CPI	Consumer Price Index
CVI	Content Validity Index
CR	Credit Reference
CSR	Corporate Social Responsibility
COVID-19	Corona Virus Disease 2019
DTS	Deposit Taking SACCOs
DTMBs	Deposit Taking Microfinance Banks
ESG	Environmental Social and Governance
ECB	European Community Bank
EBIT	Earnings Before Interest and Tax
FSD	Financial Sector Deepening
FOSA	Front Office Services Activity
GMM	Generalized-Method- of- Moments
GRF	Global Financial Crisis
ICDC	Industrial and Commercial Development Corporation

IEA	Institute of Economic Affairs
ILO	International Labour Organization
ICA	International Co-operation Alliance
JKUAT	Jomo Kenyatta University of Science and Technology
KBA	Kenya Bankers Association
KES	Kenya Shilling
KNBS	Kenya National Bureau of Statistics
KUSCCO	Kenya Union of Savings & Credit Co-operatives
MFIs	Micro Financial Institutions
MRA	Micro-credit Reports Authority
MMR	Moderated Multiple Regression
NBE	National Bank of Ethiopia
OMO	Open Market Operation
PMCC	Product Moment Correlation Coefficients
ROA	Return on Assets
ROE	Return on Equity
SACCOs	Savings and Credit Co-operative Societies
SASRA	Sacco Society's Regulatory Authority
SAGAS	Semi-Autonomous Government Agencies

STOXX	Stock Exchange
SMEs	Small and Medium Enterprises
SAP	Structural and Adjustment Programmes
UN	United Nations
USD	United States Dollars
VIF	Variance Inflation Factor
WOCCU	World Council of Credit Unions

DEFINITION OF TERMS

Credit Risk Is the potential that a borrower or counter party will fail to meet its obligations in accordance with agreed terms (Musyoki & Kadubo, 2012).

Deposit Taking SACCOs Are SACCOs that conduct business of savings and credit and in addition, does business of accepting or withdrawing of money on daily basis across the counter (Ndungu & Wako, 2015).

Dividends This is a distribution made to SACCO members out of the profits remaining after deducting all expenses, providing for taxation, and transferring reasonable amount to reserve from the total income of the company (Olang & Grace, 2017).

Financial Performance Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business to generate revenues. The term is also used as a general measure of a firm's overall financial health over a given period. (Ombaka & Jagongo, 2018).

Interest Rates Drivers These are country specific variables that substantially affect interest rates in the economy, consequently affecting financial performance of credit firms whose substantial profitability is derived from interest income (Lins, Servaes & Tufano, 2010).

Inflation Is the sustainable increase in the general price of goods and Services in the economy over a period of time arising from the cost of funds (Jack & Suri, 2014).

Interest Rates Amount charged by a lender to a borrower for use of loan funds (De Blass & Russ, 2013).

Interest Rate Capping An interest rate that is allowed to fluctuate, but which cannot surpass a stated interest cap (Osiemo, 2019).

Liquidity Risk Liquidity in deposit taking SACCOs is considered as the ability of the SACCO to meet its financial obligations as they fall due(Drehmann & Nikolao, 2013).

Monetary policy Set of tools used by a Nation's Central Bank to control the overall money supply and promote economic growth and employ strategies such as revising interest rates and changing bank reserve requirements (Kuttner & Shim, 2016).

Non-performing Loans Are loans whose principal or interest repayments are past due dates (90 Days after due date for payment in the case of this study) (Agarwal, Chomsisengphet & Mahoney, 2014).

Savings and Credit Co-operative Societies Is a type of cooperative whose objective is to pool savings for the members and in turn provide them with credit facilities (Belk, 2014).

ABSTRACT

Deposit taking Savings and Credit Co-operative Societies in Kenya are important due to the role they play in financial intermediation. The deposit taking SACCOs pool members' deposits and issue loans to them at predetermined rate of interest. Financial performance of deposit taking SACCOs is highly dependent upon interest income they receive from loans. Interest rate levied on borrowers for use of money has in the recent past become a very sensitive factor in the operation of lending institutions. Borrowed funds from banks and MFIs attract interest cost which fluctuates depending on prevailing economic factors in the country. This is unlike in deposit taking SACCOs where the interest rate has for a long time been adopted at favorable rate of 12% annually on loans issued to members. The interest rate drivers in the market affect the cost of funds to financial intermediaries like banks, MFIs and hence financial performance of DT- SACCOs. The objective of this study was on interest rate drivers and the financial performance of deposit taking SACCOs in Kenya. Due to the competitiveness among financial intermediaries and the influence the interest rate has on financial intermediation, this study specifically sought to establish how monetary policy, inflation, credit risk and liquidity risk influence financial performance of deposit taking SACCOs in Kenya. The study used a descriptive survey research design. Stratified random sampling technique was applied on a population of 528 top managers in 176 deposits taking SACCOs in Kenya. Secondary data was obtained from books, reputable journals, annual audited financial reports of deposit taking SACCOs, the government and semi-autonomous government agencies (SAGAs). Primary data was collected through self-administered semi-structured questionnaires. Descriptive and inferential statistics were used to analyze the data. The descriptive analytical statistical methods employed were frequency tables, mean, variances and standard deviations. The inferential statistical tools used were product moment correlation coefficient and multiple regression analysis. The regression results revealed that credit risk and liquidity risk had negative coefficients of -1.49 and -0.139 respectively while monetary policy and inflation had a positive coefficients of 1.09 and 0.09 respectively. At 5% significance level, the coefficients of inflation, credit risks and liquidity risk were significant with their p-values being less than the critical value of 0.05 while the coefficients of monetary policy was insignificant with their p-values greater than the critical value. The outputs before and after moderation revealed that deposit taking SACCO size moderated the relationship between interest rate drivers and the financial performance of deposit taking SACCOs. The mean of regression coefficients before moderation was -0.105 which increased after moderation to 0.512. Following the running of t-test, the p-value of t was established to be 0.045 which is below the critical value of 0.05 hence the study found that Sacco Size was a significant moderator of the relationship between interest rate drivers and financial performance of deposit taking SACCOs. The study recommends that deposit taking SACCOs policy makers to come up with effective strategies on credit and liquidity risk management to ensure the sustainability. Additionally, since deposit rates are usually lower than the lending rates in an environment where loan demand is high, deposit taking SACCOs should come up with strategies to minimize their operational costs as this reduces their profit margin.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial performance in deposit taking Savings and Credit Co-operative Societies is the extent to which a deposit taking SACCO 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 deposit taking SACCO is operating at break-even (Baraza, 2018). Well performing deposit taking SACCO attracts new membership which culminates to rise in amount of deposits (Njoki, 2018). Deposit taking SACCOs with high deposits borrow at competitively lower rate of interest. Financial performance measurement is therefore key to successful management of any business (Franco-Santos, Lucianetti & Bourne, 2012).

According to Nkuru (2015) deposit taking SACCO management should strive to enhance financial performance in order to maximize the members benefits. Sustainable growth in profitability and performance of deposit taking SACCO also ensures continued reward for investors which encourages increased investment that spurs economic growth. It is well considered and understood that beyond financial intermediation; the performance of deposit taking SACCOs has got direct implications on performance and growth of economies. Interest income is the main revenue of the deposit taking SACCOs. Therefore, interest accruing from loans to members is one of the major indicators of financial performance of SACCOs (Gweyi & Karanja, 2014).

An entity with a high interest income, return on assets, large deposits that attract low cost funds and high dividend payout ratio is able to maximize wealth. A well performing deposit taking SACCO retains and attracts more members than one with poor performance. Dividends are distributable profits to shareholders as a return to their shareholdings (Crafton, 2015). Dividends payouts make the deposit taking SACCO to be attractive to current and potential members(Van Der Merwe & Verbeke, 2012). Interest rate is the price a borrower pays for use of money that they

borrow from a lender (Ng'etich, 2011). Interest rates have a direct influence on credit uptake because rise in interest rates leads to decrease in level of credit uptake. High interest rates increase probability of default because borrowers struggle to meet payment obligations under their loan facilities (Nyanyuki & Omar, 2016). High interest rates curb business investments, innovation, increase loan defaults and drive the cost push inflation due to medium term increase in prices associated with higher costs of business financing (Central Bank of Kenya, 2012). Expensive borrowing by deposit taking SACCO from banks to meet members loan demands affects interest rate spread of deposit taking SACCO and hence their financial performance. Additionally, Kahuthu (2016) avers that high interest rate spread is beneficial to the financial institutions but does not add value to the depositors. Interest rate spread is the difference between the average yield a financial institution receives from loans and other interest-accruing activities and the average rate it pays on deposits and borrowings (Mattingly, Harrast, & Olsen, 2009).

A study on degeneration theory and competition stated that deposit taking SACCO are in intense pressure to operate like financial institutions and particularly the banks (Kahuthu, 2016). Mathuva (2016) averred that BOSA and FOSA activities make deposit taking SACCO operate like commercial banks in the financial sector, hence making members enjoy quasi banking services. The deposit taking SACCO provide financial services that focus on provision of credit facilities and mobilization of funds to its members who are the users and owners (Mumanyi, 2014). Deposit taking SACCOs must seek innovative cost cutting strategies, diversify in products and strive to outsmart other dealers in interest earning products in order to retain their market share in a competitive credit market (Kahaso, 2012).

Due to the significance of interest income received by deposit taking SACCO from loans, Saunders and Cornett (2008) observed that drop-in interest rates enhances borrowing and spending. 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

behavior 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. 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 related activities, it is of 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 searches for answers for the key drivers of interest rates, as they affect many investment portfolios (Ngomo & No, 2012).

Interest rates in the economy are affected by factors like demand and supply of money, monetary policy, inflation rate, credit risk, liquidity risk and economic growth. The banking sector in Kenya has for the last decade witnessed drastic changes emanating mainly from variability of interest rates. 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. The high profitability in the sector was perceived to be increasing against a backdrop of decreasing access to credit or credit uptake which was further stifling economic growth (Rose-Ackerman & Palifka, 2016).

This situation resulted to the enactment of the Banking Act in September 2016 which temporarily capped the interest rates charged by banks on loans.The interest rate capping law-imposed restrictions on the interest rates at which banks charge on loans hence setting a cap on the lending rate and the rate at which banks levied on deposits, the success of a deposit taking SACCO business is dependent upon the health and prosperity of the economic environment. Economic influencers on interest rates can

positively or negatively influence performance of deposit taking SACCO. When interest rates rise, banks charge more for business loans (Berger, Klapper & Turk-Ariss, 2009). This implies that deposit taking SACCO will need to use more of their earnings to pay interest on borrowed loans from banks, which decreases their profits. Low-interest loans can fund growth of deposit taking SACCO and increase profitability because they are able to generate income from new ventures to pay for the loan interest and remain with surplus. The Global Financial Crisis (GFC) being experienced has resulted to many countries prioritizing stability by strengthening financial regulation (Blinder, 2010). Through the monetary policy, the Central bank controls either the cost of very short-term borrowing or the monetary base, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency.

Monetary policy is used by central banks to control the amount of liquidity in the economy (Stein, 2012).Expansionary monetary policy increases money supply with a resultant effect of lowering the rate of interest. Deposits taking SACCOs under this policy are able to access funds at low interest rates in the money market which they not only invest in profitable activities but also improve on their liquidity position (Sebhatu, 2012). In contractionary policy, the money supply decreases and hence loans become expensive, level of investment declines and bank deposits become attractive compared to deposit taking SACCO savings as they offer better returns on savings (Getachew, 2017). The contractionary and expansionary monetary policy drive the interest rates charged by the financial intermediaries.

Deposit taking SACCOs not only rely on members share deposits to service loan requirements of the members, but they also borrow from banks when the funds available to them is not adequate to meet their members loan demands (Mumanyi, 2014). Monetary policy transmission mechanism directly and indirectly impacts on the financial performance of deposit taking SACCOs (Watkins, 2012). The monetary policies in the economy are evaluated by the cash reserve requirement, central bank reference rate, open market operations, amount of funds invested in government securities, and selective credit control (Bhaumik, Dang &Kutan, 2011). Inflation is the persistent increase in the general price of goods and services in the economy over

a period of time (Denbel, Ayen & Regasa, 2016).Fall in value of money as result of inflation creates uncertainty in the value of gains and losses of borrowers, lenders, buyers and sellers (Guttmann, 2016).Globally, inflation affects lending rates in financial institutions. Deposits taking SACCOs borrow money for use with a promise to pay back later. According to Guttmann (2016), since inflation causes the value of currency to decline over time, cash now is worth more than cash in the future. Inflation makes debtors pay lenders back with money that is worth less than it was when they originally borrowed it. Inflation worsens the loans policy of deposit taking SACCOs which consequently affects their performance. This arises from withdrawals of depositors and from the lending institutions depository system (Tumwine *et al*, 2015), which then reduces resources thereby decreasing a large proportion of their profitability.

Inflation uncertainty on credit markets raises interest rates, decreases loan supply and affects loan demand (Taner, 2000). Although inflation is bad for those with cash on hand, it can be a good thing for borrowers. There is considerable support for ascertaining the relationship between inflation and performance of firms (Gikombo & Mbugua, 2018). Credit risk in business arises when one fails to fulfill their obligations towards their counter parties. Credit monitoring of entrepreneurs and small business enterprises has grown rapidly over the past years and relationship lending alone is not enough to reach optimal financing terms (Bauer & Esqueda, 2017).

Credit risk can be classified into sovereign risk and settlement risk. While sovereign risk usually arises due to difficult foreign exchange policies, settlement risk which is more relevant for DTS arises when one party makes the payment while the other party fails to fulfill the obligations. Loans are the largest source of credit risk to a financial institution (Fiordelisi & Marques-Ibanez, 2013). Credit risk is of great concern to most deposit taking SACCO authorities and government regulators. This is so because credit risk is a risk that can easily and most likely prompt deposit taking SACCO failure (Ebersole, Atherton& Belanger, 2016). Credit creation is the main income generating activity for the deposit taking SACCOs in Kenya. But this activity involves huge risks to both the lender and the borrower. The risk of a

member not fulfilling his or her obligation as per the loan terms can greatly jeopardize the smooth functioning of deposit taking SACCO business. Deposits taking SACCOs that are a credit risk are either denied funds by lenders or borrow on high interest rate terms. Borrowing on unfavorable terms or being unable to raise adequate funds to service members loans can disenfranchise members and hence lead to dismal financial performance of deposit taking SACCO. Operating and financial ratios have been used as tools for determining the condition and the financial performance of a firm (Ogilo, 2012).

The credit risk condition in deposit taking SACCOs in this study will be assessed by debt to assets ratio, debt to equity ratio, cash flow stability and the amount of non-performing loans **(**Kibui & Moronge, 2014). Liquidity risk is the potential that an entity will be unable to acquire the cash required to meet short or intermediate term obligations (Malmgren, 2015). Liquidity in deposit taking SACCOs is considered as the ability to meet financial obligations as they fall due. In deposit taking SACCOs, liquidity demands that there should be not only adequate cash flows to make payments, but there should be enough cash to enable recurrent operations (Osoro & Muturi, 2015). The degree to which deposit taking SACCO is exposed to liquidity risk varies across deposit taking SACCOs in the industry (Karuga, 2017). Liquidity risk tends to increase with the size and sophistication of the operations of a deposit taking SACCO.

Large deposit taking SACCOs establishes the Asset/Liability committee to proactively manage their assets and liabilities. As a minimum, deposit taking SACCO with total assets exceeding ten billion should establish Asset/Liability committee. A deposit taking SACCO with higher liquidity faces lower liquidity risk hence is likely to be associated with lower borrowing costs. Deposit taking SACCOs with high liquidity risk tends to borrow emergency funds at high costs (Kimathi, 2015).Deposit taking SACCOs uses a variety of ratios to measure liquidity position and trend. The ratios are classified into asset-based ratios (Cash Position Indicator, Capacity Ratio), liability-based liquidity measures (Total deposit ratio, purchased funds ratio, Core deposit ratio), and combined asset-liability liquidity ratios (Loan to deposit ratio, Net non-core funding dependence ratio) (SASRA, 2015). The cash

position indicator compares vault cash and demand deposits at other financial institutions to the total asset base of the institution (Olagunju *et al*., 2012). With a measurement range from 0 to 1, the higher the ratio the better the liquidity to fund immediate cash needs. According to Sacco Societies Regulatory Authority (2012), for capacity ratio with a measurement range of between 0 and 1, the higher the ratio the stronger the deposit taking SACCO's ability to meet immediate cash needs. Deposit taking SACCOs easily raise debt from commercial lenders when most of its business is not financed with short-term commercial borrowings.

Kimathi (2015) observed that a deposit taking SACCO should ideally rely on a large and diversified retail deposit base, which would be indicated by a high total deposit ratio. According to SASRA (2015), the higher the total deposit ratio, the lower the perceived liquidity risk is because contrary to purchased funds, retail deposits are less sensitive to a change in interest rates or a minor deterioration in business performance. While deposits are the primary source of funding for deposit taking SACCOs, loans are presumed to be the least liquid assets. A high loan to deposit ratio indicates illiquidity, because in this case a deposit taking SACCO is considered fully loaned-up relative to its stable funding (Njeri, 2017).

This implies that new loans must be financed with large purchased liabilities. Low ratio suggests that a deposit taking SACCO has additional liquidity; because it can grant new loans financed with stable deposits. A deposit taking SACCO institution should ideally rely on a large and diversified retail deposit base, whose indicator would be a high total deposit ratio. The higher the total deposit ratio, the lower the perceived liquidity risk is because contrary to purchased funds, retail deposits are less sensitive to a change in interest rates or a dismal deterioration in business performance (Authority, 2015). As argued by King (2013), a higher level of liquid assets would decrease net interest margins. Liquidity risk in deposit taking SACCOs in this study was measured by loans to deposits ratio, total members' deposits to total assets ratio, cash position indicator and capacity ratio.

1.1.1 Deposit Taking SACCOs

Alleviation of poverty is the biggest challenge to human society because half of the world's population lives on less than two dollars per day (Banerjee & Duflo, 2007). According to Fukuda-Parr and Hulme (2011), the global campaign against poverty has gained momentum with various development actors suggesting use of different instruments to reduce poverty. Emerging consensus among actors like United Nations, the International Labor Organization, the International Co-operative Alliance and the European Union consider the co-operative enterprise as one of the few forms of organization that can meet all dimensions of poverty (Borda- Rodriguez, 2016).

In recognition of the important role played by co-operatives in poverty reduction, the UN through ILO entered into partnership with ICA in an initiative of "Co-operating out of poverty". During the year ending June 2011, deposits and loans held by savings and credit cooperatives in Rwanda reportedly increased from USD 35 million to USD 60 million and USD 51 million to USD 54 million respectively (Martha, 2015). Deposit taking SACCOs in Rwanda give small loans to small investors at their level and also create big deposits that are given to big investors. The deposit taking SACCOs in Rwanda not only improved access to finance but also boosted wholesale deposits within the banking industry (Mumanyi, 2014).

The deposit taking SACCOs improve lending to the population and small investments around the country (Olando, Mbewa., & Jagongo, 2012). According to Birchall (2013) co-operatives have the advantages of identifying economic opportunities for the poor; empowering the disadvantaged and providing security by allowing the poor to convert individual risks into collective risks. Deposit taking SACCOs' segment of the sub sector is composed of those SACCOs which undertake both withdrawable and non-withdrawable deposits (Gweyi, 2018). Whereas the non-withdrawable deposits portion of the business may be used as collateral and not refundable unless on cessation of membership from SACCO Society, the withdrawable deposits portion of the business can be accessed by the members at any time, hence are demand deposits (Khan, 2004).

According to Aduda and Kalunda (2012) deposit taking SACCOs offer financial services focusing on provision of credit facilities and mobilization of funds to its members. Deposits taking SACCOs mobilize savings and advance credit on collateral of such savings to promote economic interests and general welfare of members (Belk, 2014). The principles of cooperatives as developed by the ICA include voluntary and open membership, democratic member control, member economic participation, autonomy and independence, education, training and information, co-operation among co-operatives and concern for community (Sacco Societies Regulatory Authority, 2012). The deposit taking SACCO system as a subset of the SACCO Societies sub-sector has continued to play a key role in the furtherance of the economic pillar of the country's vision as enshrined in the Kenya Vision 2030 economic policy blue-print.

Deposits taking SACCOs in Kenya implement the seven principles of cooperatives as developed by the international cooperative alliance (Olando, 2012). The Kenyan deposit taking SACCO system is represented in world council of credit unions (WOCCU) through their membership in Kenya Union of Savings & Credit Co-operatives (KUSCCO), which is also affiliated to WOCCU. By the year 2016, 176 deposit taking SACCOs in Kenya had been licensed to undertake deposit-taking SACCO business in accordance with the SACCO Societies Act. According to Mumanyi (2014), deposits taking SACCOs have continuously expanded their operations beyond their head office locations by opening branches in accordance with Section 32 of the Act as read with regulation 16 of the Regulations 2010.

1.1.2 Size of Deposit Taking SACCO

The total assets held by the deposit taking SACCO define the size of the deposit taking SACCO in this study. According to Swarajit and Saxena (2009), firm size is the production and turnover capacities possessed by a firm. Researchers have established that larger firms are less risky consumers of credit 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). Due to the role the total assets play in the asset structure of a firm, this study has assessed the moderating effect of size on the relationship between independent variables and the financial performance of deposit taking SACCOs.

1.1.3 Global Perspective of Interest Rates

In Brazil, interest rate in capital markets, equilibrium prices and quantities are determined by the dynamic interaction between demand and supply. In Brazil, 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 that arises from the interaction between demand and supply in capital markets. Micro-economic assessment of the capital markets in Brazil should also take into account other aspects such as the term structure and risk premium structure which might either affect demand or supply side of the market expectations of the future movement of the Singapore dollar (Cardenas, Franco & Dyner, 2016).United States and Singapore have experienced a low interest rate environment for many years.

The reasons for low interest rates in the US and Singapore are attributed to shifting demographics, slower productivity and economic growth and emerging markets seeking large reserves of safe assets. As international reserves grow, there is rise in liquidity which makes it hard for interest to rise, but it's the market in the US and Singapore through the forces of demand and supply that determines long term interest rates. The monetary policy in Singapore is controlled by the Central bank of Singapore through the monetary authority of Singapore (Hawkins, Nielson, & Tierney, 2006).However, according to Forbes and Warnock (2012), the monetary authority of Singapore does not control domestic rates, instead borrowing costs are largely driven by the US interest rates and investor's expectations of the future movement of the Singapore dollar. 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). Germany being a member of the European Union has adopted the euro currency. The European Community Bank (ECB) sets Germany's benchmark interest rate. The main role of the ECB is to manage the Euro, keep prices stable and conduct European economic and monetary policy (Scharpf, 2011).

European central bank's ultra-low interest rate policy on the corporate sector in Germany has resulted in almost one in five German companies being charged by their banks negative interest rate, meaning that they would have to pay the lender for the privilege of keeping their money on deposit. Financial institutions in German have been critical of a central bank policy that they say erodes their profit margins in trying to pass on the negative rates to their customers. Fewer than one in 10 of the companies that were threatened with a negative interest rate on their deposits ended up paying, with many shifting cash into other financial assets or changing their bank (Mishkin, 2011).

In India, the interest rate is affected by the reserve money changes, expected inflation and volatility in the capital outflows (Charkraborty, 2012). Theoretical analysis of 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.

1.1.4 Africa Perspective of Interest Rates

In South Africa financial reforms led to an increase in the number of banks and competition between banks and other financial intermediaries (Claessens, Dell' Ariccia, Igan & Laeven, 2010). Resurgence of many financial institutions has resulted to many financial intermediaries in South Africa making small profit margins and hence most financial institutions have consolidated in order to operate more efficiently (Noor & Ahmad, 2011). Thus, more concentration in the South Africa banking sector, South Africa official rate is the Repo rate.

When the repo rate is changed, the interest rates on overdrafts and other loans extended by the banks also tend to change. In this way, the South Africa reserve bank indirectly affects the interest rate in the economy. A Change in the South Africa Reserve Bank repo rate therefore affects the cost at which Banks, MFIs and deposit taking SACCOs procure funds in the money market. In Botswana, loans are the main asset class from which credit providers generate revenue (Hoshi & Kashyap, 2010). Loans signify the greatest risk to financial intermediaries like banks, MFIs and deposit taking SACCOs and hence affect revenue of credit providers. Due to the significance of credit facilities in economic development of a country, the Central bank of Botswana carefully monitors macro-economic variables to ensure economic stability of the country (Gilbert, Linyong & Divine, 2013).

The stability of banking and deposit taking SACCO industry is necessary for economic prosperity and resilience against financial crises in Botswana. In Ghana Interest rate spreads have been high, increasing marginally after 2009. The high interest rate spreads constrain development of small and medium enterprises (SMEs), banks and deposit taking SACCOs, necessitating the association of Ghana industries for efforts to be made in bringing the rate of spread down. According to Reinhart and Rogoff (2013), Ghana has been noted as a country having very high interest rate spread. They observed that a combination of low deposits and high lending rates to be detrimental to growth and job creation in Ghana. Rise of interest rates affect lending institution's profitability by increasing cost of funding, reducing returns from assets and lowering the value of equity (Claessens & Van Horen, 2012). The

investor's primary concern is how interest rates impact on financial intermediaries' revenues, cost and profitability (Lee, Hsie & Yang, 2014). High interest increases cost of credit and production resulting to high prices and service**s** 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). While the official interest rate in Nigeria is the monetary policy rate, the interest rate decisions are made by the Central Bank of Nigerian.

Lending rate in Nigeria is significantly related to profitability of credit providing institutions like banks &deposit taking SACCOs (Bosco & Faustin, 2016). Interest rate in Ethiopia is determined by the National bank of Ethiopia. In Ethiopia, interest rate decisions are taken by Monetary Committee of the National Bank of Ethiopia (Lavers, 2012), the official rate being the bank's savings rate. The National bank of Ethiopia (NBE) regulates supply of money and credit, applicable interest and other charges (Maimbo & Gallegos, 2014). While the lending rate on loans and re-discount facilities issued by the NBE to commercial banks and other financial institutions is determined by NBE from time to time, the NBE allows each bank to freely determine the lending rate on loans and advances. According to Disyatat (2011), the lending rate is fully liberalized and hence there is no lower or upper lending limit rate in the country.

1.1.5 Kenya Perspective of Interest Rates

Kenya Government's commitment to a free-market economy is enshrined in the Sessional paper No.1 of 1986 on economic management for renewed Growth (Mwaura, Gathenya & Kihoro, 2015). However, the Central bank of Kenya as a financial regulator occasionally steps in to ensure sustainable economic growth and

controlled inflation. The Central Bank of Kenya uses monetary policy decisions to ensure that the supply of money in the economy is consistent with growth and price objectives set by the government (Languille, 2014). The Central Bank of Kenya has responsibility of formulating and implementing monetary policy to achieve and maintain low inflation (Musyoki & Kadubo, 2012). The government uses monetary policy as one of its instruments to achieve desired economic goals. Following the public concerns regarding the high cost of credit in Kenya, the government introduced interest capping law. High cost of credit was viewed as a hindrance to credit access by a large segment of the population (Njoroge, 2017). The implementation of the law, was therefore, expected to lower the cost of credit and increase access to credit.

Central bank of Kenya (2018) through its draft comments on the impact of the interest rate capping law in Kenya established how caps have produced undesirable outcomes such as reduced intermediation and transparency, decline in bank competition and increased risk to financial stability. Interest rate cap in Kenya has infringed on the independence of the central bank and complicated the conduct of monetary policy (Amuti, 2014). It reduced financial intermediation by commercial banks, as exemplified by the significant increase in the average loan size arising from declining loans accounts, mainly driven by the large banks, thus shunning the smaller borrowers (Doering, 2018). The interest rate capping has led banks to shift lending to Government and the large corporate. Whereas demand for credit immediately increased following the capping of lending rates, credit to the private sector has continued to decline (Fernández-Villaverde, Garicano & Santos, 2013). The Kenya Government has since then repealed the interest rate capping law and left interest rate to be determined by the forces of demand and supply.

1.2 Statement of the Problem

Deposits taking SACCOs 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 rates which affect their financial performance. Arising from the fact that the main mandate of a deposit taking SACCO is issuance of loans, interest rate drivers is key to their financial performance. Evaluating the interest rate drivers is to ensure that deposit taking SACCO adjusts their operational strategies appropriately so as to remain profitable amidst its financial intermediation competitors. The influence of monetary policy, inflation, credit and liquidity risks on interest rates in the economy and SACCOs affect interest rate spread in deposit taking SACCOs. This is more pronounced when there exists mismatch between assets and liabilities. Ndubuaku *et al*., (2015) examined the impact of monetary policy regimes on the performance of commercial banks in Nigeria while Kirimi, Simiyu and Murithi (2017) researched on effect of debt finance on financial performance of SACCOs in Maara Sub- County, Kenya where a strong positive relationship between debt financing and return on equity was established. Murugu (2010) assessed the effects of credit risk management practices on performance of SACCOs in Kenya. Shen *et al*., (2009) assessed the relationship between bank liquidity risk and performance. According to Mwangi and Genga (2019), commercial banks were the single principal lenders to deposit taking SACCOs where KES. 19 billion was lent during the year 2017. In the year 2017, it was observed that deposit taking SACCOs earned interest of KES. 52.60B of the total KES. 63B realized from loans and advances. Failure to address the emerging cut-throat competition that arise from the influence of interest rate drivers on cost of funds, deposit taking SACCOs are likely to experience reduced return on assets, decline in return on investment, fall in number of membership and reduction in amount of dividends. From the above studies, the combined effect of interest rate drivers on financial performance of deposit taking SACCOs was not addressed. This study therefore aimed at bridging the knowledge gap by assessing the interest rate drivers and financial performance of deposit taking SACCOs in Kenya.

1.3 Research Objectives

The study was guided by both general and specific objectives.

1.3.1 General Objective

The general objective of this study was to assess the interest rate drivers and financial performance of deposit taking SACCOs in Kenya.

1.3.2 Specific Objectives

The following were the specific objectives of the study.

i. To establish the effect of the monetary policy on financial performance of deposit taking SACCOs in Kenya
ii. To assess the effect of inflation on financial performance of deposit taking SACCOs in Kenya.
iii. To evaluate the effect of credit risk on financial performance of deposit taking SACCOs in Kenya.
iv. To establish the effect of liquidity risk on financial performance of deposit taking SACCOs in Kenya.
v. To establish the moderating effect of Size of the deposit taking SACCOs on the relationship between interest rate drivers and the financial performance of deposit taking SACCOs in Kenya.

1.4 Research Hypotheses

The study was guided by the following research hypotheses:

H_{01}: There is no significant relationship between monetary policy and financial performance of deposit taking savings and credit cooperative societies in Kenya.

H_{02}: There is no significant relationship between inflation and financial performance of deposit taking SACCOs in Kenya.

H_{03}: The **c**redit risk has no significant effect on financial performance of deposit taking SACCOs in Kenya.

H_{04}: There is no significant relationship between liquidity risk and financial performance of deposit taking SACCOs in Kenya.

H_{05}: There is no significant moderation effect of size of the deposit taking SACCOs on the relationship between interest rate drivers and financial performance of deposit taking SACCOs in Kenya.

1.5 Justification of the Study

The findings of the study were useful to the management and employees of deposit taking SACCOs in assessing the viability of the income they receive as salary in the context of each variable. Findings and recommendations assisted in the appraisal of the management and employees vis -a- vis other deposit taking SACCOs in the industry. Members of deposit taking SACCOs benefited from increased dividends that accrue from enhanced revenue stream arising from interest income. The findings also created awareness in deposit taking SACCOs, banks, micro- finance institutions who are the most active participants in financial intermediation industry. The study assisted each player in the credit market to assess its competitiveness vis-a-vis other credit industry participants.

The researchers, scholars and students were enlightened from the additional knowledge that the study has provided. The gaps identified in the study provided a basis for further research by scholars who may be interested in conducting study in a related area. The study was valuable to KUSCCO for it assisted them to predict the stability of the income they expected to receive from deposit taking SACCOs. The government of Kenya established SACCOs Societies Regulatory Authority (SASRA) under the Ministry of Cooperative Development and Marketing in an effort to reform SACCOs and ensured that there was public confidence in the SACCOs sector. The findings and recommendations of the study therefore assisted the regulator in providing appropriate quality advises emanating from interest rate drivers and financial performance of deposit taking SACCOs. Deposit taking SACCO members are interested in the security of their deposits and the annual dividends they receive from the SACCO. This study therefore was of importance to members especially to those who were interested in dividend income. The government not only gets tax

revenue from deposit taking SACCOs but also plays a major role of providing conducive environment for financial intermediation. The study was therefore of great assistance to the government in policy formulation.

1.6 Scope of the Study

The study covered five-year period that ranged from 2013 to 2017 in 176 SACCOs licensed for deposit taking business in Kenya. This period was significant to this study because it covered the time when the economy was experiencing high interest rates until 2016 when the interest rate cap was introduced. The study target population was 528 top managers in 176 deposits taking SACCOs. The top management have more information and a high understanding on factors that directly and indirectly influence financial performance of deposit taking SACCOs. The interest rate drivers the study focused on were monetary policy, inflation, credit and liquidity risks in relation to the financial performance of deposit taking SACCOs. Theories on which the study was based are monetary theory, quantity theory of money, credit risk model and Baumol and Tobin transactions demand for money model.

1.7 Limitations of the Study

While carrying out this study, a series of limitations were encountered. However, various mitigating strategies were adopted to ensure seamless navigation to the conclusion of the study. The deposit taking SACCOs are geographically dispersed throughout the five regions in Kenya. The distance coverage was quite challenging for the researcher to reach the respondents in deposit taking SACCOs in far flung areas. The deployment of research assistants in Kilifi, Nairobi, Karatina, Nakuru, Eldoret, Kisii and Busia was very instrumental in ensuring ease of reach to the deposit taking SACCOs. Some respondents were not able to understand the content and context of questions in the data collection instrument. However, the induction of the research assistants prior to dissemination of the instrument made it possible for them to clarify questions that were not clear to some respondents. Some respondents also took long to fill and return the questionnaires. The time lag in the administration of the questionnaire affected the projected data collection period. However, frequent

calls, follow ups with respondents and waiting as questionnaires were being filled guaranteed time saving which enhanced response rate.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses theoretical review, empirical review, conceptual framework, summary of the literature review and the research gaps.

2.2 Theoretical Review

A theoretical framework is a set of concepts, assumptions, and propositions that form the basis for someone's view on the world (Rudestam & Newton, 2014). Theoretical framework forms a foundation from which all knowledge is constructed for a research study. The use of theory is "central to the quest for ongoing knowledge development" (Fox, Gardner & Osborne, 2015). Theories of interest rate volatility explain the changes in interest rates and the reasons why interest is paid. Theories on interest rate relevant to this study are monetary theory, quantity theory of money, credit risk model and Baumol and Tobin transactions demand for money model.

2.2.1 Monetary Theory

The proponent of Monetary Theory was John Maynard Keynes, and his work on this theory was primarily published in the early 20th century, particularly in his book " The General Theory of Employment, Interest and Money," which was published in 1936. The theory provided foundation for models of economic fluctuations in which money was the fundamental driving factor behind movements in real output. The Monetary theory holds that changes in money supply are the main drivers in changes in economic growth. The monetary theory is more about how the nominal supply of money adjust to the real demand for money (Thornton, 2014). When the monetary theory works in practice, central banks which control the levers of monetary policy can exert much power over economic growth rates. The monetary theory assumes that velocity of circulation of money is constant and is not affected by the changes in the quantity of money or the price level. The monetary theorists ignored the velocity of money because they were concerned more with transaction and precautionary

motives for holding cash (Guttmann, 2016). The monetary theorists further assumed that price is a passive factor. Price is affected or changed by other factors in the economy but does not affect or cause changes in those factors. The monetary theory is based on the assumption that the supply of money is an exogenously determined constant and is applicable in the long run. Hence the theory does not consider short-run factors which influence the relationship between total quantity of money and price level. The theory is also based on the assumption of the existence of full employment in the economy. Monetary theory considers full employment as a special situation in the economy (Keynes, 2016). The monetary theory unrealistically assumes that the fundamental determinant of the price level is the quantity of money in circulation. In practice things keep changing in short as well as in the long period.

It's also not right to always assume that increased spending does not raise the real output but raise prices only. According to Karanikolos *et al*.,(2013), if the increased spending occurs during a depression, when there is mass unemployment, then the input is likely to expand substantially without more increase in price. Monetary theory assumes that the volume of money is exogenously determined. The monetary theory assumption that velocity of circulation of money is constant and is not affected by the changes in the quantity of money or the price level is unrealistic. According to Kaytaz and Gul (2014), the velocity of money depends upon demographics, trade activities, and habits of people, interest rates and facilities of investments.

Monetary theory is relevant to this study because it relates amount of money in circulation with price level of goods and services. The variation in money supply leads to a proportionate change in the price levels which directly influence the purchasing power of the deposit taking SACCOs and the cost at which they can get funds in the money market (Haushofer & Shapiro, 2016). Thus, rise or fall in demand for money affects the cost credit in the economy and hence the financial performance of deposit taking SACCOs (Okiro & Ndungu, 2013).

2.2.2 Quantity Theory of Money

The quantity theory of money most notable adherent was Irving Fisher in 1911. This theory established a positive relationship between supply of money and the long-term price of goods (Tobin & Fisher, 2005). According to the theory increase in quantity of money supply would lead to a proportionate percentage increase in price of commodities. The theory asserts that a change in amount of money in circulation is the primary cause of general changes in price (Aityan, 2013). The quantity theory of money postulates that 3% increase in money supply will lead to exactly 3% increase in the rate of inflation. The quantity theory of money assumes that velocity of money is constant and is unresponsive to changes in price and the quantity of money.

However, the velocity of money in practice is dependent upon population, trade activities, and habits of people, interest rates and facilities of investments. The theory assumes that all these factors have nothing to do with changes in the velocity of money. The quantity of money theorists ignored the velocity of money because they were concerned more with transaction and precautionary motives for holding cash. The quantity theorists further assumed that price is a passive factor. Price is changed or affected by other factors in the equation but does not affect or cause changes in those factors. Quantity theory of money also bases on the assumption that the supply of money is exogenously determined and is applicable in the long run. Hence the theory does not consider short-run factors which influence the relationship between total quantity of money and price level (Opp & Harris, 2013).

The theory is also based on the assumption of the existence of full employment in the economy. It assumes full employment as a special situation in the economy. The quantity theory of money unrealistically assumes that the fundamental determinant of the price level is the quantity of money. In actual practice other things keep changing in short period as well as in the long period. It's also not right to assume always that increased spending does not raise the real output but raise prices only. If the increased spending occurs during a depression, when there is mass unemployment, input is likely to expand substantially without more increase in price. According to Bagus and Howden (2011), quantity theory of money is also defective because it

fails to explain the process by which changes in the amount of money affect the price level. In the quantity theory of money, it's assumed that quantity of money is exogenously determined. The variation in money supply leads to a proportionate change in the price levels which directly influence the purchasing power of not only the deposit taking SACCOs but also its members. Consequently, rise or fall in demand for money affects the cost of credit in the economy and hence the cost borrowing especially for the deposit taking SACCOs who are unable to fully finance their operations from members' shares. Members' credit uptake is also likely to decline in times of high supply money because of the perceived reduced purchasing power of money (Munene, Ndambiri & Wanjohi, 2019). The quantity theory of money is relevant to this study because the money in circulation affects not only the price level of goods and services but also volume of credit uptake by both deposit taking SACCO entities and its members.

2.2.3 Credit Risk Model

Credit risk models were first proposed by Merton (1974), Black and Cox (1976), and Schwartz (1995) (Hull, Nelken & White, 2004). They categorized credit risk models dealing with the term structure modeling and the pricing of credit derivatives into structural and reduced- form models. Structural models characterize corporate debt as a compound option on the underlying firm's assets, whereas reduced-form models characterize "default intensity", which is assumed to be determined by common as well as firm-specific factors (Christopoulos, 2017). In these models, the default intensities depend on explanatory factors through an intensity function that maps the explanatory variables into a default intensity process. Credit risk model assumes that credit losses are synonymous with loan default. According to the model, sustainability of the deposit taking SACCO operations is highly dependent on prudent management of default risk so that the book value of non-performing loans is minimized (Hesborn & Onditi, 2016). Proponents of credit risk models assume that the models could be used to create risk-weighting more closely aligned with actual credit risks and to capture the effects of portfolio diversification (Armour & Gordon, 2014).

The credit risk models could then be used to set credit risk capital requirements in the same way that value-at-risk models are used to set market risk capital requirements under market risk adjustment (Gauthier, Lehar & Souissi, 2012). The credit risk models aver that the quality of inputs to the models to any given credit and maintenance of internal consistency is in tandem with credit rating standards. Critique of the credit risk model is imbibed in the notion that the testing of the validity of the credit risk model components is limited because the historical data available on the performance of different types of credits do not span over sufficiently long time periods (Enyi, 2011).

The daily horizon underpinning market models guarantee a steady stream of observations over which to evaluate forecast. However, the yearly horizon commonly used for the credit risk models does not. Hence the qualitative methods such as stress-testing and sensitivity analysis will always be important in the evaluation of credit risk models. Credit risk model is relevant to this study because deposit taking SACCOs main business is provision of credit to members from their deposits. Deposit taking SACCOs source for credit facilities from KUSSCO and Cooperative bank of Kenya when the members' deposits are inadequate for loan applicants. The pricing of the funds applied for from lenders is to a large extent determined by the credit risk exposure of the deposit taking SACCOs (Siminyu, Mukanzi & Musiega, 2016).

2.2.4 Baumol and Tobin Transactions Demand for Money Model

Baumol's transaction demand for money model was developed by Baumol and Tobin in 1952. The model recognized that resources invested in one sector could be withdrawn from that sector and invested elsewhere to yield either a higher or lower rate of return (Holburn & Zelner, 2010). The model shows that there is a transaction need for money to smooth out the difference between income and expenditure streams, and that the higher the interest rate on holding bonds instead of money, the smaller the transactions demand balances should be. Baumol and Tobin (1952) recognized that transactions demand for money is sensitive to rate of interest (Laina, 2018).On recognition that the discount rate performs the function of allocating

resources between the private and the public sectors, a discount rate that properly indicate when resources should be transferred from one sector to another should be chosen. The Baumol model is based on the economic order quantity, whose objective is to determine the optimal target cash balance an organization should hold (Ragen, 2015). According to Goddard *et al*.,(2007), the major assumption of this model is that money being the medium of exchange, there is some cost involved in transforming interest-earning assets into money, that there is a brokerage fee, which can be denoted as the number of trips to the banks. The model also assumes that in the economy as a whole, the demand for money depends on the distribution of income as well as upon its level. Finally, the model predicts that the demand for money will increase less proportionately to the volume of transactions and that there are economies of scale in money holding for the individual (Gao, Harford & Li, 2013).

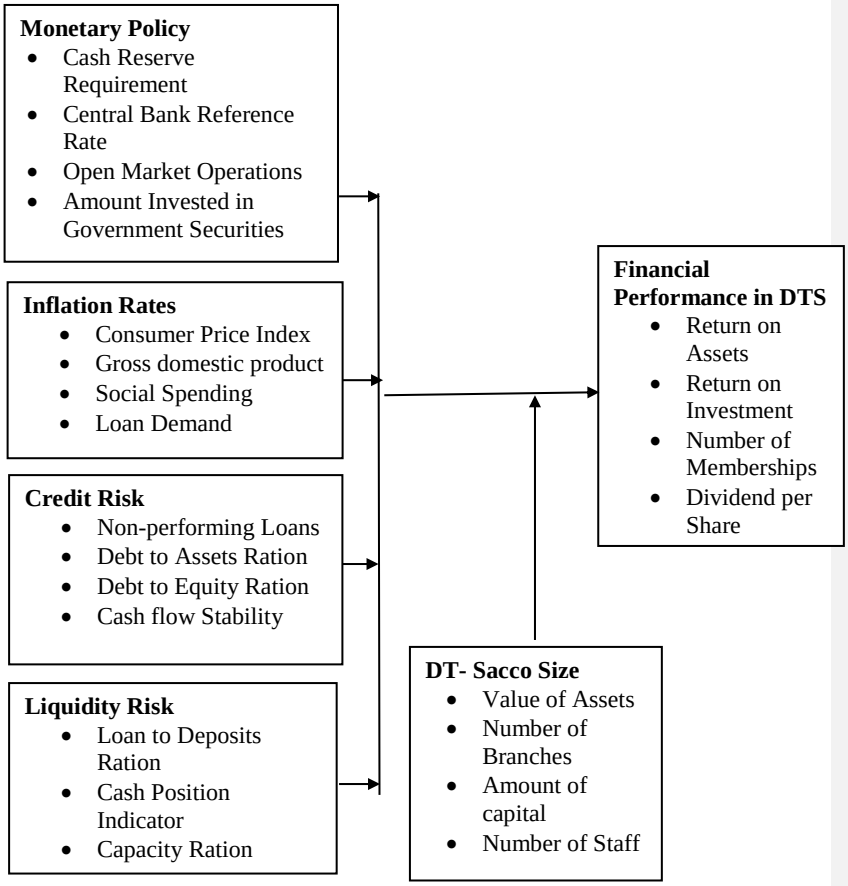
Baumol model assumed that the firm is able to forecast its cash requirements with certainty and receive a specific amount at regular intervals. Baumol model is relevant to this study in that deposit taking SACCOs will be unwilling to hold all risky assets such as bonds unless they expect to obtain a higher average return on them. In view of the desire of deposit taking SACCOs to have both liquidity and reasonable return, they strike a balance between them and hold a mixed and balanced portfolio consisting of money and risky assets such as bonds and shares though this balance or mix varies between various deposit taking SACCOs depending on their attitude towards risk and hence their trade-off between risk and return.

According to Nyanamba *et al*., (2013), the model implies that deposit taking SACCOs should strive to maintain a target liquidity that optimizes trade-off between risk and return. The Baumol model has been criticized on its assumption that there exists a constant disbursement rate; in reality cash outflows occur at different times. Autio *et al*., (2014) observed that considering the dynamics of innovation, the Baumol model can be criticized as it does not consider institutional diversity and a case of open innovation. This implies that the model may not apply in every economy although it will help to identify what feature the economy has that differs from others. It also falls short in identifying reasons why some firms do not innovate

and others do why some innovate inefficiently and why the best innovation may not succeed **(**Barczak, Griffin & Kahn, 2009). Deposit taking SACCOs issue loans to their members from their deposits and to limited extent from external sources. The deposit taking SACCOs are required to maintain optimal cash holding to guard against the risks of unpredictable changes in members loan demands. A deposit taking SACCO should consider the costs involved in sourcing for external funds, cost of holding excess deposits and cost of the inability to service members' loans. Baumol's transaction demand for money model is therefore relevant to this study because it emphasizes on optimal quantity of funds a deposit taking SACCOs should maintain to sustain sound financial performance.

2.3 Conceptual Framework

A conceptual framework offers a logical structure of connected concepts that help provide a picture or visual display of how ideas in a study relate to one another within the theoretical framework (Ngumi, 2014). It also 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 2.1**.**



Independent Variables **Moderating Variable** **Dependent Variable**

Commented [S1]:

Figure 2.1: Conceptual Framework

2.4 Empirical Review

This section presents empirical research findings from relevant literature on monetary policy, inflation, credit risk and liquidity risk on financial performance.

2.4.1 Monetary Policy and Financial Performance

Zaman, Arslan, Sohail and Malik (2014) carried out a study on the impact of monetary policy on financial performance: evidence from banking sector of Pakistan. The study highlighted the monetary policy effect on banking sector stability and performance by investigating the causal relationship between interest rate imposed by the state bank of Pakistan and banks financial performance measured by ROA and ROE. By using correlation analysis and ordinary least square regression, the study revealed that interest rate as measure for monetary policy had a significant inverse relationship on firm financial performance.

Ndubuaku *et al*., (2015) examined the impact of monetary policy regimes on the performance of commercial banks in Nigeria. The paper used descriptive and ex-post facto research design and time series data collected from central bank of Nigeria bulletin. The study was divided into SAP Period (1986-1999) and post SAP Period (2000 -2013). The data was analyzed using regression and Pearson product moment correlation technique. The study established that monetary policy rate during the SAP period did not have significant impact on the total assets value, deposit mobilization, loans and advances and credit to the private sector while the monetary policy rate had significant impact on same variables during the post SAP period.

Laopodis (2013) examined from the 1970s dynamic linkages between monetary policy and the stock market during the Burns, Volcker and Greenspan distinct monetary regimes. The major findings were: First, in the 1990s it appeared that there was a disconnection between Federal Reserve actions and responses by the stock market. Second, the impact of inflation on the stock market did not surface as significant in the later parts of 1980s and the 1990s. Third, significant asymmetric effects of monetary policy on the stock markets were observed throughout each monetary regime but these were more pronounced during bear markets than bull markets. These results suggested that there was no consistent dynamic relationship between monetary policy and the stock market and that the nature of such dynamics was different in each of the three monetary regimes. The study established that while stock markets were positively affected contemporaneously by their respective

monetary policy through the interest rate channel, there was no evidence of the reverse action. Negative supply of money affects stock market positively because positive market shock negatively affects growth in money supply. The findings were in line with Tobin and Modigliani's life cycle models' explaining the stock market as monetary policy transmission channel. From the evidence, it was concluded that there is a bidirectional relationship between monetary policy and stock market performance (Singh, 2010).

In a related study, Gertler and Karadi (2011) established that monetary policy actions affect stock prices which are linked to the real economy through their influence on consumption and investment spending in a multi-country study of Stock market response to monetary and fiscal policy shocks in Germany, UK and US.The study developed a quantitative monetary DSGE model with financial intermediaries that face endogenously determined balance sheet constraints. The model was then used to evaluate the effects of the central bank using unconventional monetary policy to combat a simulated financial crisis.

The unconventional monetary policy was interpreted as an expanding central bank credit intermediation to offset a disruption of private financial intermediation. It was established that within the framework the central bank is less efficient than private intermediaries at making loans but it has the advantage of being able to elastically obtain funds by issuing riskless government debt. Chatziantoniou, Duffy and Filis (2013) using a structural VAR model investigated the effects of monetary and fiscal policy shocks on stock market performance in Germany, UK and the US. The results of the study found that both fiscal and monetary policies influence the stock market, via either direct or indirect channels. More importantly, the study established the evidence of the interaction between the two policies as very important component in explaining stock market developments. Thus, investors and analysts in their effort to understand the relationship between macroeconomic policies and stock market performance should consider fiscal and monetary policies in tandem rather than in isolation. In that regard, stock market performance not only responds to monetary policy decisions, but also provides feedback to Central banks regarding the private sector's expectations about the future course of key macroeconomic variables. Mulwa

(2015) using descriptive research design did a study on the effect of monetary policy on the financial performance of commercial banks operating in Kenya and regulated by the Central Bank of Kenya as at 31st December 2014.

The study used secondary data from websites of financial statements of commercial banks and publications from the Central bank of Kenya. Descriptive and inferential statistics were used to establish the relationship between monetary policy tools and the financial performance of commercial banks in Kenya. The study observed that the monetary policy is one of the principal economic management tools that the government uses to shape economic performance. The study concluded that monetary policy tools employed by the central bank of Kenya do not have a significant effect on the financial performance of commercial banks in Kenya.

2.4.2 Inflation and Financial Performance

Boyd, Levine and Smith (2001) investigated the impact of inflation on financial performance sector in the United States of America. Basing on pure cross-sectional regression and using the panel Generalized-Method- of- Moments (GMM) estimator to exploit the time-series dimension of the data and to control for possible endogeneity and omit variable bias associated with cross-sectional estimator, the paper evaluated theoretical predictions regarding the impact of inflation on financial system. The study examined cross-sectional relationship between inflation and financial sector conditions. The results of the study indicated that at low-to-moderate rates of inflation, there was a strong negative association between inflation and lending by the financial sector to private sector as was the quantity of bank assets and volume of liabilities issued by the bank.

Basnet and Upadhyaya (2015) analysed the impact of oil price shocks on real output, inflation and the real exchange rate in Thailand, Malaysia, Singapore, the Philippines and Indonesia (ASEAN-5) using a Structural VAR model. The study conducted cointegration tests which established that the macroeconomic variables of these countries are cointegrated and share common trends in the long run. The impulse response functions revealed that oil price fluctuations do not impact the ASEAN-5 economies in the long run and much of its effect is absorbed within five to six

quarters. The study established that there was evidence of a threshold on inflation-finance relationship. The association between inflation and financial development at moderate inflation rates was found to be strong.

Ade-Tweneboah (2018) used Using causal research design to examined the impact of inflation rate and interest rate on financial sector development in Ghana from 1980-2015. The study also employed time series data and secondary data obtained from the World Bank development indicators and Dynamic OLS regression technique in analyzing the data. The study reviewed finance-inflation theory, McKinnon-Shaw hypothesis and credit rationing theories where it was established that inflation has a negative and statistically insignificant relationship with financial sector development. Interest rate on the other hand also yielded a negative statistically significant relationship with financial sector development. As part of policy recommendation, this study maintained that, efforts should be made by the government and other monetary institutions to keep inflation rates low and stable. Finally, interest rates should also be low and stable to induce deposit at the banks.

Tsaurai (2017) in Nigeria investigated the impact of inflation on financial sector performance in the sub-Saharan African region. Dynamic panel data was employed, and the cross section covered 45 countries in the region between the periods 1980 - 2011. Three measures of financial sector performance (domestic credit to private sector, liquidity ratio, and market capitalization) were used for the study. Inflation was disaggregated to anticipated and unanticipated inflation, and the results showed that both anticipated and unanticipated inflation had a negative effect on the financial sector performance. The study, therefore, concluded that high inflation rate is inimical to financial sector performance, irrespective of the economy involved, and the government should employ necessary measures to control inflation as a way of improving the performance of the financial sector. Irungu, S. M., & Muturi, W. (2015) using descriptive correlation research design determined the relationship between macroeconomic variables and financial performance of firms quoted in the energy and allied sector in the Nairobi Securities Exchange. The period of study was six years from 2009 to 2014. The data was analysed using descriptive analysis, correlation analysis and multiple regression analysis.

The study revealed that indeed macro-economic factors have significant influence on the financial performance of firms quoted in the energy and allied sector in the Nairobi Securities Exchange. The study concluded that lagging macroeconomic indicators have a significance influence on among companies listed in Energy and petroleum segment of NSE. Oganga and Oyugi (2015) researched on effects of inflation volatility on financial performance of SACCOs in Kisumu City, Kenya. The study adopted a descriptive research design where data was collected from seven SACCOs in Kisumu City. Both secondary and primary data were used in the study. The secondary and inflation related data on SACCOs' performance was collected from audited financial statements and CBK web-site respectively for nine-year period that ended 2014.

Primary data was collected from two key officers from each deposit taking SACCO by use of semi-structured questionnaires. By using regression analysis the study found a strong negative correlation coefficient between annualized inflation rates and the SACCOs financial performance. This implied that incremental inflationary forces had a diminishing effect on the SACCOs' financial performance. Mwaniki (2017) examined the effect of macroeconomic variables on average financial performance of deposit taking savings and credit cooperatives in Nairobi Kenya. The study based on international Fisher effect theory, classical theory of inflation and Baumol-Tobin approach to transaction demand for money to establish the effect of interest rate, inflation rate and money supply on the average financial performance of deposit taking SACCOs in Nairobi, Kenya. The study used a descriptive design and targeted population of 35 deposit taking SACCOs registered by SASRA to operate up to December 2017 in Kenya. The results showed that there was no statistically significant relationship between return on assets and lagged values of either themselves or of other variables at the 5% level of significance. Kiptoo and Wanyoike (2015) assessed the effect of cost push inflation on financial performance of SACCOs in Eldama Ravine Sub County, Kenya. The study employed descriptive design and used stratified sampling to obtain 107 respondents. Primary data collected was analyzed using descriptive and inferential statistics. From the analysis, the study found that cost push inflation had an influence on the financial performance of deposit taking SACCOs. However, the study found a weak relationship between

financial performance of SACCOs and cost push inflation. From the analysis it was revealed that a unit increase in cost push inflation would lead to a slight increase in financial performance implying that there was a positive weak relationship between financial performance of deposit taking SACCOs and cost push inflation.

2.4.3 Credit Risk and Financial Performance

Formal empirical evidence on the relationship between interest rates and credit risk is recent and still scarce. Maddaloni and Peydró (2011) provided evidence that reductions in interest rates are followed by a deterioration of bank lending standards, an increase in lending volumes, and, with some additional lag, abnormally high default rates on loans. However, there are studies that support the more traditional view that high short-term interest rates increase credit risk, at least in the short run and certainly for the most indebted borrowers.

Kargi (2011) evaluated the impact of credit risk on profitability of banks in Nigeria. Financial ratios as a measure of performance and credit risk were obtained from annual reports and accounts of sampled banks from 2004 to 2008.The collected data was analyzed by descriptive, correlation and regression techniques. The study findings revealed that credit risk management had a significant impact on profitability of Banks in Nigeria. In Ethiopia, Awoke (2014) examined the impact of credit risk on financial performance of commercial banks. Eight banks were sampled and secondary data from annual reports of the same banks used in data analysis. Descriptive statistics, trend analysis and econometric techniques were used to ascertain the impact of credit risk on financial performance of banks in Ethiopia. The study found out that selected variables: provision for total loans, loan to total assets, and cost to total loans had significant effect on performance of Banks. Based on the study, it was recommended that Ethiopian banks need to develop their credit risk management capacity, control overheads costs related to lending and increase loan book size without compromising sound credit planning. In Kampala Uganda, Shieler, Emenike and Amu (2017) evaluated whether there exists a relationship between credit risk management techniques and financial performance in microfinance institutions.

The study examined whether there is a relationship between credit risk identification, credit risk appraisal, credit risk monitoring, credit risk mitigation and financial performance of microfinance institutions in Kampala. Descriptive statistics were used to analyze the population, while inferential statistics' Pearson linear correlation coefficient was adopted to examine relationship between credit risk management techniques and financial performance. The findings indicated that credit risk identification and appraisal had a strong positive relationship on financial performance, while credit risk monitoring and mitigation had moderate significant positive relationship on financial performance of MFIs.

The study concluded that MFIs should continually emphasize effective credit risk identification, appraisal, monitoring, and mitigation techniques to enhance maximum financial performance. Shieler *et al*., (2017) recommended that credit risk appraisal process should identify, quantify and analyze all loss exposures. According to Beaudrie and Kandlikar (2011) credit risk appraisal guides in selection of technique or combination of techniques to handle each risk exposure. Muriithi, Waweru and Muturi (2016) investigated the effect of credit risk on financial performance in commercial banks in Kenya. The study assessed the effect of credit risk on financial performance of commercial banks in Kenya. The research used the balance sheet components and financial ratios for 43 commercial banks registered in Kenya by the year 2014. Panel data techniques of fixed effects estimation and generalized method of moments were used to purge time–invariant unobserved firm specific effects and to mitigate potential endogeneity problems. While using the F- test to determine the significance of the regression and the coefficient of determination to ascertain how the variation in dependent variable is explained by independent variables, the study established that credit risk had a negative and significant relationship with bank profitability. Based on the study findings, it was recommended that management of commercial banks in Kenya should enhance their capacity in credit analysis and loan administration. Lagat *et al.,* (2013) analyzed the effect of credit risk management practices on lending portfolio among savings and credit cooperatives in Kenya using data on risk identification, analysis, monitoring, evaluation and mitigation from 59 SACCOs in Nakuru County. By use of regression models in the analysis, the results of the study indicated that there was significant effect of all the risk management

practices on loan portfolio except risk evaluation which did not register significant effect on the lending portfolio of the SACCOs.

The findings further indicated that 99% of the respondents who participated in the study observed that monitoring was part of the credit management activities that was influencing the lending portfolio to a great extent. The study concluded and concurred with Sebhatu (2012) that the majority of the SACCOs have adopted risk management practices as a means of managing their portfolio. Maina, Kinyairo and Muturi (2016) assessed the influence of credit risk management practices on loan delinquency in SACCOs in Meru County, Kenya. The study adopted a descriptive research design with a population of all the 44 credit officers of SACCOs in Meru County. Questionnaire was used to collect data and the data collected analyzed by multiple regression models. The study revealed that there exists a strong relationship between credit risk controls, collection policy and loan delinquency in SACCOs.

The study concluded that credit risk management practices significantly influenced loan delinquency of SACCOs in Meru County. Murugu (2010) analyzed the effect of credit risk management practices on the performance of SACCOs. The study used descriptive research design with a target population of 1,926 active SACCOs based in Nairobi. A sample size of 193 SACCOs was selected using the systematic random sampling technique. The study found that SACCOs had heavily relied on credit risk techniques which were not adequate to mitigate against loan losses in a dynamic and competitive lending environment. It was also established that credit risk monitoring and control mechanisms were lacking in majority of SACCOs which resulted in late detection and determination of non-performing and defaulted loans.

2.4.4 Liquidity Risk and Financial Performance

Shen Chung-Hua *et al*., (2009) investigated the relationship between bank liquidity risk and performance in Taiwan. The study investigated the causes of liquidity risk in commercial banks using an unbalanced panel dataset of 12 advanced economies. Panel data instrumental variables regression, using two-stage least squares estimators were used to estimate bank liquidity risk and performance model. Liquidity risk was found to be the endogenous determinant of bank performance. As was also observed

by King (2013), the study of Shen Chung-Hua *et al*., (2009) established that liquidity risk lowers bank profitability because of higher cost of funds but increases bank's net interest margins.

The results of the study established that liquidity risk was negatively related to bank performance in market-based financial system, however it had no effect on bank performance in bank-based financial system. Khan and Sattar (2014) investigated factors that affect banks operating in Pakistan between 2007 and 2016. The study revealed that internal factors such as capital adequacy ratio, cost of funds and bank size were statistically significant but differently related to the liquid assets to total assets ratio and to the total loans to deposits ratio respectively. The study found that external or macro factors like GDP were statistically significant but affected liquidity of the banks differently.

The study further revealed that profitability is insignificantly related to liquidity. After the large-scale growth since 2008, Khan and Sattar (2014) observed that the banking sector of Pakistan encountered certain level of pressures like liquidity and solvency problems which exerted significant impact on the performance of banking sector and financial system. Musa, Erasmus, Kwazi and Dodzi (2018) examined the effect of interest rate spread on the profitability of commercial banks in Ghana. The study using panel data sampled 24 banks over a ten-year period. The results showed a positive and statistically significant association between interest rate spread and bank profitability in Ghana. The findings of the study were interpreted within the context of the loanable funds theory to suggest that the demand for loans exceed the supply of the same allowing banks to charge higher interest on lending relative to deposits to increase profitability. The results of the study had significant implications on interest rate spread and more specifically on government policy to reduce interest rate spread in Ghana. Similarly, Marozva (2015) investigated the effect of liquidity on bank performance in South Africa for the period between 1998 and 2014.The study used autoregressive distributed lag bound testing approach and the ordinary least square methods to examine the nexus between net interest margin and liquidity. The study established that there was negative significant deterministic relationship between net interest margin and liquidity risk.

Mucheru, Shukla and Kibachia (2017) determined the effects of liquidity management on performance of commercial banks in Rwanda. The study used descriptive research design, primary quantitative data from self-administered structured questionnaires and secondary data from audited financial statements from the commercial banks for period between 2014-2016. The findings revealed that liquidity risk management had a negative relationship with financial performance of commercial banks in Rwanda. In Uganda, Muheebwa (2018), established the relationship between liquidity and financial performance of savings and credit cooperatives in Fort Portal. The study guided by the modern portfolio theory used correlation research design on a target population of 135 SACCOs. Stratified and simple random sampling techniques were used to obtain a sample of 19 SACCOs.

The questionnaires and analysis guide were used to collect data in the study. The data collected was analyzed using both descriptive and inferential statistics. The results showed that there was a significant relationship between liquidity of portfolio and financial performance of SACCOs in Fort Portal, Uganda. The study concluded that liquidity not only helps the SACCOs to ensure that the business always has a reliable cash supply, but is also a powerful tool in determining the financial health of future investments. The study recommended that deposit taking SACCOs should concentrate more on portfolio management in order to realize improved financial performance. Makaa and Ondigo (2013) in their research sought to establish the relationship between liquidity risk and financial performance of commercial banks in Kenya. The study adopted correlation research design using secondary data from the balance sheets, income statements and notes of 33 Kenyan banks during 2008-2012. Multiple regressions were applied to assess the impact of liquidity risk on banks' profitability. The study found that profitability of the commercial banks in Kenya was negatively affected by increase in liquidity gap and leverage. It was observed that with significant liquidity gap, banks may have to borrow from the repo market even at a higher rate thereby pushing up the cost of funds. Gweyi, Olweny and Oloko (2018**)** determined the influence of liquidity risk on financial performance of deposit taking SACCOs in Kenya using descriptive research design. The study targeted 164 deposit taking SACCOs licensed to undertake deposit-taking SACCO business in

Kenya. The census study was done and secondary data collected from 135 deposit taking SACCOs' audited financial statements.

The data was analyzed using both descriptive and inferential statistics. The results of the study indicated that liquidity risk had negative and significant influence on financial performance. The recommendations of the study were that deposit taking SACCOs should manage liquidity risk by reinforcing its own resources since depositors could at any time and under unexpected reasons, withdraw their deposits to seek elsewhere investments with higher returns. Muriithi and Waweru (2017) used quantitative research design to examine the effect of liquidity risk on financial performance of 43 registered commercial banks in Kenya for the period 2005 and 2014.The secondary data was collected from commercial banks' financial statements filed with the Central Bank of Kenya. Panel data techniques of random effects estimation and generalized method of moments were used to purge time-invariant unobserved firm specific effects and to mitigate potential endogeneity problems.

Wald and F-tests were used to determine the significance of the regression while the coefficient of determination was used to determine how variation in dependent variable is explained by independent variables. The study found that liquidity risk had a negative effect on financial performance. The study recommended that the banks' management should pay appropriate attention to liquidity management. Osoro and Muturi (2015) using descriptive survey design examined the effects of liquidity risk management practices on the financial performance of SACCOs in Kisii County. The target population was 20 respondents from five licensed SACCOs operating in Kisii County. Primary data was collected using structured questionnaires while secondary data was sourced from financial reports prepared by the SACCOs and SASRA. The objectives of the study were to determine the effect of asset quality management, capital adequacy and capital leverage practices on financial performance of SACCOs in Kisii County. The study found out that capital adequacy significantly affected ROA in SACCOs. Asset quality and capital leverage did not have a significant impact on savings mobilization. Kamau and Njeru (2013) carried out a study on effect of liquidity risk on financial performance of listed insurance companies in Kenya using descriptive research design. The target population was six

listed insurance companies for the period 2012-2015. A comparison of performance indicators observed in the financial statements of these companies over those years found out that operational, market and credit risks had negative effect on the financial performance of these companies. The study recommended that measures should be put in place to hedge against these risks and hence maintains a healthy financial performance.

Song'e (2015) conducted a study on the effect of liquidity management on the financial performance of a sample of 27 deposit taking SACCOs licensed by SASRA in Nairobi County. Secondary data was collected from published financial statements for period between 2010 and 2014. The study found that financial performance as measured by profit before tax over total assets was positively related to liquidity risk, operational efficiency, quick ratio and log of total assets.. Njeri (2014) carried out a study on the effects of liquidity on financial performance of deposit taking microfinance institutions in Kenya for the period 2009 to 2013. The data was extracted from the published annual audited reports, association of micro finance institutions reports and CBK's supervision annual reports for the five years under study. It was found that there was a positive relationship between liquidity risk and financial performance.

2.4.5 Size of the DT SACCOs and Financial Performance

Measurement of financial performance of deposit taking SACCOs with multiple objectives of profitability, members and employee satisfaction, corporate social responsibility and sustainability is a complex phenomenon. 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. Deposit taking SACCOs size is very critical to the financial performance due to the phenomenon of economies of scale. Essentially, it means larger deposit taking SACCOs can obtain cost leadership relative to smaller ones. 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. Deposit taking SACCOs size was used in this study as a moderator in determining its interactive effect in the relationship between

monetary policy, inflation, credit risk and liquidity risk with financial performance of deposit taking SACCOs. Bisher (2012) sought to determine the relationship between size and financial performance of commercial banks in Kenya. The study was carried out in 43 banks from 2000 to 2011 using multiple regression and correlation analysis. The study findings indicated a weak relationship between size and financial performance but the relationship was statistically significant.

Kinyua (2013) undertook a study to establish whether the size of the SACCOs as measured by total assets, deposits, and, turnover affects the financial performance as measured by the return on asset ratio. While adopting a descriptive survey design and a population of all the deposit-taking SACCOs in Kenya licensed by SASRA as at December 2012 using stratified sampling method, the study picked a sample of 30 SACCOSs consisting of all the three categories of SACCOSs namely, large, medium and small based on the value of the assets. The study concluded that a strong relationship existed between financial performance and size of SACCOS in Kenya. Mutunga and Owino (2017) examined the moderating role of firm size on the relationship between micro factors and financial performance of manufacturing firms in Kenya. The study used descriptive research design and self-administered questionnaires from 180 manufacturing firms.

The study also found that size moderated the relationship between micro factors and financial performance. The study concluded that there was a positive relationship between the moderating role on micro factors and manufacturing firms' financial performance. 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 deposit taking SACCOs as a moderating variable of the relationship between financial structure and financial performance. The financial performance was measured by return on equity (ROE). The study adopted a descriptive research design and involved a sample size of 18 deposit taking SACCOs in Kenya. Secondary data obtained from the annual reports and financial statements of the 18 sampled deposit taking SACCOs was used for analysis. The collected data was converted into panels and fed into Strata version 12. The data was analyzed and hypotheses tested by use of descriptive, correlation and regression analysis models.

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 deposit taking SACCOs in Kenya. Additionally, the study revealed that the size of the deposit taking SACCOs had a significant moderating effect on the relationship between financial structure and performance of deposit taking SACCOs.

Zaiane & Ellouze (2022) investigated the influence of corporate social responsibility on firm performance by integrating simultaneously the moderating effects of the firm size and its industry profile. The study used annual environmental, social and governance (ESG) data on 407 European firms listed in STOXX Europe 600 Index during the period 2002–2018. Results of the study revealed that the moderating effect of size is positive for environmentally sensitive industries and negative for environmentally non-sensitive industries. The study concluded that in environmentally non-sensitive industries, large firms engage in symbolic CSR practices, while smaller ones implement substantive CSR actions. However, in environmentally sensitive industries, in order to meet stakeholders' requirements, large firms engage in effective CSR initiatives, while smaller ones, being forced to involve in costly CSR practices, would be harmed and lose all interest in CSR implementation.

2.4.6 Financial Performance in Deposit Taking SACCOs

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business to generate revenues. According to (Ombaka & Jagongo, 2018), the term is also used as a general measure of a firm's overall financial health over a given period. It is the results of many different activities undertaken by an organization. Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business to generate revenues. Financial performance measures how well a firm uses its assets to generate revenues (Mangesti, 2019). It evaluates the efficient and effective utilization of resources available to a firm aiming at maximizing capital returns of an organization. Evaluating the financial performance of a business enables managers and decision-

makers to measure the results of business strategies and activities in objective and unbiased monetary terms (Siminyu, Mukanzi & Musiega, 2016). Prudent financial management can be argued to be the solid influencing factor on the shareholders and the investors' loyalty to ensure the ideal financial performance of SACCOs (Njenga & Jagongo, 2019). Further, Orlando (2012) contends that dividends and rebates paid from SACCOs` surpluses to shareholders are indicators of growth of SACCOs` wealth. The SACCO surpluses results from accumulated loan interest, returns from investments, registration fees, fines and penalties imposed on members for various reasons. Financial performance in this study was measured by return on assets, return on investments, growth in number of members of the deposit taking SACCOs and dividend payout.

2.5 Critique of the Existing Literature

In the study carried out by Zaman *et al* (2014) on the impact of monetary policy on financial performance of banks in Pakistan, size was used as a moderating variable in establishing a causal relationship between interest rate imposed by the State of Pakistan and financial performance of Banks. While the study found that the firm size affected the cost of funds, the study assumed that the assets owned by banks were of high quality to prudently justify the moderating effect of size. Firm size presupposes that large asset base in big firms provide a security for borrowing and hence large firms are able to procure funds at comparatively lower cost. A firm with high volume of low value assets that cannot be sold as soon as it may be practicably possible to sort out immediate problems may window dress the moderating effect of size on a firm's financial performance.

Zaman *et al*., (2014) study also established that the monetary policy had a significant relationship with firm value. The study appreciated the significance of macroeconomic indicators like exchange and interest rates as monetary tools that can influence performance of firms. This view was quite in tandem with the observation of this study. The sample size of 20 banks was adequate for the study considering that in 2017, Pakistan had excluding Microfinance and Development finance institutions 81 banks licensed by the State bank of Pakistan. In the study of

Ndubuaku *et al*., (2015) it was established that monetary policy rate during the SAP period did not have significant impact on the total assets value, deposit mobilization, loans and advances and credit to the private sector while the monetary policy rate had significant impact on same variables during the post SAP period. The study however failed to not only clarify whether the financial statements used had been audited but also failed to state whether the commercial banks that formed the population of the study were listed on the Nigeria security exchange. Information from audited financial statements and those from listed firms are more authentic than information gotten from unaudited and unlisted firms.

Mulwa (2015) using descriptive research design did a study on the effect of monetary policy on the financial performance of commercial banks operating in Kenya and regulated by the Central Bank of Kenya as at 31st December 2014. The study while using secondary data from websites of financial statements of commercial banks and publications from the Central bank of Kenya. While the study observed that the monetary policy is one of the principal economic management tools that the government uses to shape economic performance, the Mulwa (2015) study failed to indicate in the abstract what the study was all about, hence making it difficult for the readers to get an instant overview of the study. In the same study, the research methodology, averred that data collected for the study was from book values of the commercial banks. This statement lacked clarity on specific assets of the banks, hence creating subjectivity for readers with diverse background in finance.

In Uganda, Muheebwa (2018) established the relationship between liquidity and financial performance of savings and credit cooperatives in Fort Portal. The study concluded that liquidity not only helps the deposit taking SACCOs to ensure that the business always has a reliable cash supply, but is also a powerful tool in determining the financial health of future investments. The study recommended that deposit taking SACCOs should concentrate more on portfolio management in order to realize improved financial performance. While the study correctly underscored the importance of liquidity in SACCOs, there was no justification why Fort Portal was chosen as the area of study. Other factors like accessibility to credit in the money market, profile of the deposit taking SACCO and the business environment can

influence the liquidity. Mwaniki, Ndambiri and Oluoch (2018) using descriptive research design and sample size of 18 deposit taking SACCOs 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 deposit taking SACCOs as a moderating variable of the relationship between financial structure and financial performance. Though the study established a positive and significant relationship between equity financing, long term debt financing, short term debt financing, member deposits and financial performance of deposit taking SACCOs in Kenya, the sample size of only 18 out of 176 deposit taking SACCOs in Kenya was so small to be used for generalizing the effect of the financial structure on the financial performance of deposit taking SACCOs in Kenya.

Boyd, Levine and Smith (2001) investigated the impact of inflation on financial sperformance sector in the United States of America. The study examined cross-sectional relationship between inflation and financial sector conditions. Though the study recognized the importance of loans in performance of the banks, it failed to appreciate the significance of interest income on performance of the financial sector. Both studies of Boyd, Levine and Smith (2001) and Nasser and Jackson (2014) concentrated only on balance sheet items in evaluating performance. Emphasis on volume of assets and liabilities without a caveat relating as to their quality may mislead the users of the statements.

Kargi (2011) evaluated the impact of credit risk on profitability of banks in Nigeria. Financial ratios as a measure of performance and credit risk were obtained from annual reports and accounts of sampled banks from 2004 to 2008 while in Ethiopia, Awoke (2014) examined the impact of credit risk on financial performance of commercial banks. Eight banks were sampled and secondary data from annual reports of the same banks used in data analysis. Though both studies done in Nigeria and Ethiopia by Kargi (2011) and Awoke (2014) respectively used secondary data from annual reports, the quality of the reports could not be ascertained because there was no proof that the reports were produced from audited financial statements.

Shieler, Emenike and Amu (2017) evaluated whether there exists a relationship between credit risk management techniques and financial performance in microfinance institutions. This study examined whether there is a relationship between credit risk identification, credit risk appraisal, credit risk monitoring, credit risk mitigation and financial performance of microfinance institutions in Kampala. Though the study adequately analyzed the attributes of credit risk, Shieler *et al*., (2017) study fell short of specifying the criteria used to select Finca Uganda Ltd, Pride Microfinance Ltd, UGAFODE Microfinance Ltd; while leaving EFC Uganda Limited and YAKO Microfinance Limited. The study also focused on a sample of 60 members of the 60% of 5 Microfinance deposit taking institutions in Kampala, Uganda.

The adequacy of the sample could not be evaluated precisely because the study did not provide the number of members in each MFI. It is established that the study used only closed ended questions to collect primary data. According to Sahi, Arora & Dhameja, (2013) strict use of closed ended questions limits the respondent in giving an insight into feelings, background, hidden motivation, interest and decisions. It is indicated that Secondary data collected from the microfinance institutions for the period was from the annual reports. Altman, Sabato and Wilson (2010) in his study observed that reports from unaudited financial statements may not provide reliable information. The study also failed to mention major and relevant macroeconomic factors that may have impacted on credit risk in Uganda during the period of the study.

In Muriithi, Waweru and Muturi (2016) investigation on the effect of credit risk on financial performance in commercial banks in Kenya, the study established that credit risk had a negative and significant relationship with bank profitability. However, the period 2005-2014 under which the study was undertaken had high octane of political activities which could have significantly affected financial performance of commercial banks in Kenya. Apart from credit risk, Muriithi *et al*., (2016) study failed to appreciate the influence of political risk on performance of commercial banks in Kenya. It was not apparent in the study the factors that were presumed *ceteris paribus* during the period of the research. In the study of Mucheru,

Shukla and Kibachia (2017) that determined the effects of liquidity management on performance of commercial banks in Rwanda, the study revealed that liquidity risk management had a negative relationship with financial performance of commercial banks in Rwanda. However, the study did not disclose the caliber of the top management who formed the population. To a significant extent, the quality of responses in questionnaires is dependent more on the status and quality of the management in the organization. While liquidity gap could be one of liquidity risk parameters, Muriithi and Waweru (2017) study failed to measure loans to deposits ratio which is a significant ratio in evaluating the banks' position with regard to taking risk.

The study also posted contradictory data (Pages 43 & 42 respectively) in the abstract, methodology and the literature review on the number of commercial banks in Kenya for the year 2005 to 2014. In Osoro and Muturi (2015) the abstract in the study was well summarized and captured pertinent details. The statement of the problem was clear and indicated how the study was to address the problem. The study articulated well the conceptual framework, linked the relationship between the dependent and independent variables, provided good citations relevant to the study and used the right caliber of respondents. Secondary data from audited financial statements enhanced reliability of the findings of the study. However, the number of respondents chosen was small for purpose of generalization and no justification was given on the choice of the respondents.

2.6 Summary of the Reviewed Literature

Monetary theory shows how the moı tary policy affects interest rate which has a consequent effect on financial perfoı ance of deposit taking SACCOs in Kenya. DT-SACCOs not only offer credit to members, but they also borrow funds from the money market when the members' loan demand surpasses the ability of SACCO to service loans. The interest rate fluctuates according to the volume of money circulating in the economy (Bindseil, 2019)). The cost at which deposit taking SACCOs borrow funds has therefore an influence on their financial performance. The monetary theory therefore elucidates how the deposits taking SACCOs can be affected by the monetary policy instituted by the CBK. Quantity theory of money

explains how the supply of money affects interest rates which consequently impact on financial performance of deposit taking SACCOs. Interest rate according to the theory is affected by the amount of money in circulation (Pande & Chung, 2017). Deposit taking SACCOs offer credit to members and also borrow funds from the money market to meet their members' loan requirements. The interest rate fluctuates according to the volume of money circulating in the economy. The cost at which deposit taking SACCOs borrow funds has therefore an influence on their financial performance. The quantity theory of money explains how the DTS financial performance are affected by the supply and demand for money. Credit risk model explains how high cost of borrowing by deposit taking SACCOs with high credit risk exposure may affect deposit taking SACCOs' financial performance. As observed in Wangui and Muturi (2016), the main risk in deposit taking SACCOs is the default risk that may arise from non-repayment of loans.

The aim of the model is to assist SACCOs to select a portfolio of assets that will yield either highest return at lowest possible risk or at lower risk at same level of return. According to Makori and Sile, (2017), deposit taking SACCOs evaluate credit risk exposure and diversify loan products in order to mitigate against default risk. Baumol's model explains how trade-off between risk and return influence liquidity in deposit taking SACCOs. Liquidity in deposit taking SACCOs is important because SACCOs are obliged to issue loans to bona fide members on demand as and when requested for subject to prevailing conditions set by board of management. Liquidity risk in SACCOs should be maintained at minimum possible level without compromising returns in order to boost members' confidence in the deposit taking SACCOs. Baumol's model therefore explains how important it is for deposit taking SACCOs to maintain adequate funds to meet members loan requirements without foregoing alternative profitable investment opportunities for the deposit taking SACCOs.

2.7 Research Gaps

Lagat *et al.,* (2013) analyzed the effect of credit risk management practice on lending portfolios among SACCOs in Kenya. The results of the study indicated that there was significant effect of all the risk management practices on loan portfolio except risk evaluation which did not register significant effect on the lending portfolio of the

SACCOs. Kivuvo and Olweny (2014) using Alterman Z score model of corporate bankruptcy analyzed financial performance of Kenyan DT-SACCOs. Wangui and Muturi (2016) carried out a study on financial factors affecting performance of SACCOs in Kenya while Muriithi and Waweru (2017) assessed the impact of liquidity risk on financial performance of banks in Kenya. Consequently, Khalayi, Ondieki and Musiega (2014) did a comparative study on effects of interest rates on deposit mobilization among SACCO members in Kakamega County where it was established that interest rates positively affected performance of SACCOs. Though studies have been done on variety of drivers that affect financial performance of SACCOs, no study has been carried out to assess the interest rate drivers and financial performance of deposit taking SACCOS.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers research design, population of the study, sample and sampling techniques, data collection instruments, pilot testing of research instruments, data collection procedures, data processing and analysis.

3.2 Research Design

A strategic outline for action that serves as the bridge between research questions and execution or implementation of research is known as the research design (Blance, Durrheim & Painter, 2006). Experts define research design as the glue that holds the research project together. According to Rahman, Ationg and Zulhaimi (2017) a researcher must be well-versed in different types of research design. Moreover, a clear understanding of different research designs helps choose the proper technique for the research. A good research design helps select the right measuring tools to gauge results according to the research objective. In designing any research study, the researcher should be familiar with the basic steps of the research process that guide all types of research designs. Qualitative research does not need to replace traditional empirical framework and can boost current research in finance as an invaluable prelude as was the case in the Lintner 1956 paper.

Lintner's study of 1956 regarding dividend policy began as qualitative research study and it still hold true today after many years since he published his work. Lintner approached his work inductively to find out what directors, controllers, treasurers, and presidents at selected industrial companies had to say concerning dividend policies. Kariuki and Kamau (2014) in their study on food and beverage firms administered questionnaires to a sample of 36 CFOs where a response rate of 83.33% was achieved. This study therefore hinges on the gains made by the above researchers to establish the effect of interest rates drivers on financial performance of deposit taking SACCOs in Kenya. This study used descriptive survey research design. Descriptive research design is a scientific method which involves observing

and describing the behavior of a subject without influencing it in any way. Understanding the who, what and where of a situation of target group is an essential part of effective research and making informed business decisions (Waweru, Pokhariyal & Mwaura, 2012).The study employed a descriptive research design because the purpose of the study was to explore and describe observed phenomena. The descriptive research design also 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.

3.3 Research Philosophy

Generally, it is believed that underneath any given research design and choice of methods lies and should lie a researcher's philosophy, which implies the researcher's understanding of the nature of the world and how it should be studied. While ontology is the study and belief of the nature and form of social reality, epistemology is the study and belief of the relationship between the observer and the reality observed. According to Aliyu *et al.,* (2015) epistemology explains the criteria by which the researcher classifies what does and does not constitute the knowledge. Qualitative and quantitative approaches are rooted in philosophical traditions with different epistemological and ontological assumptions. Researchers whose quantitative tools and techniques involve measuring and counting, are called positivists while those who prefer the qualitative tools of observation, questioning, and description are called naturalists. Positivists and naturalists differ in their assumptions about what is important to study.

This study was guided by the positivism philosophy where the researcher used quantitative tools and methods in measuring the influence of independent variables on financial performance. Positivism adopts a clear quantitative approach to investigating phenomena, as opposed to post-positivist approaches, which aim to describe and explore in-depth phenomena from a qualitative perspective (Levy, 2015). 'Positivist approaches to the social sciences assume things studied are hard facts and the relationship between these facts can be established as scientific laws.

For positivists, such laws have the status of truth and social objects can be studied in much the same way as natural objects'. Existing theories were used to develop hypothesis which were tested and confirmed in whole or part or refuted (Mohajan, 2020).The individual understanding of reality has an effect of how we gain knowledge of the world meaning that our perception of reality, and how we gain knowledge, affected the conduct of the research (Mueller & Anderson, 2014)

3.4 Target Population

Population is a set of people, services, elements, events and group of things or households that are being investigated (Wanyoike, 2013). The target population is a subset of the population that reflects specific characteristics and can be practically reached in order to select a representative sample (Mugenda, 2013). There are 176 deposit taking SACCOs in Kenya. For the secondary data, the study targeted the DT-Sacco data from 2013 to 2017. For the primary data, the study targeted three senior managers in each of the DTS. The senior managers who were the focus of the study comprised of credit managers, chief executive officers, accountants, auditors, senior tellers and human resource managers. This was because they possessed diverse and specific knowledge regarding the DTS operations which was deemed appropriate for this study. The target population of this study therefore was 528 top managers in 176 DTS affiliated to KUSCCO in Kenya (KUSCCO, 2016).

3.5 Sample Size and Sampling Techniques

A sample is a small number of objects in a population used to make conclusion regarding the whole population. Its purpose is to estimate unknown characteristics of the population (Kothari & Gaurav, 2014). Sampling is therefore a systematic process of selecting a number of individuals for a study to represent the lager group from which they are selected (Mugenga & Mugenda, 2013). The process of sampling in this study took into account the purpose of the study, time constraints and the regional distribution of the DT-SACCOs in Kenya.

3.5.1 Determination of Sample Size

Krejcie and Morgan (1970) formula is commonly used in research to estimate sample size. The Krejcie and Morgan formula was used in this study to determine the sample size from primary data.

$$S = \frac{X^2 NP\,(1-P)}{d^2(N-1) + X^2(1-P)} \quad \text{.....Equation 3.1}$$

Where S is the desired sample size

X^2 is the Table value of chi-square for one degree of freedom at desired confidence level which is 1.96x 1.96= 3.841. N is the population size while P is the population proportion assumed to be 0.5 as this will provide maximum sample size and d is the degree of accuracy expressed as a proportion 0.05. The population size for this study was 528. The sample size S, was therefore:

$$S = \frac{3.8416 \text{ X } 528 \text{ X } 0.5\,(1 - 0.5)}{0.052\,(528 - 1) + 3.8416 \text{ X } 0.5(1 - 0.5)} = 223 \text{ Respondents}$$

A sample of 223 respondents from the target population of 528 top managers was used.

Table 3.1: Sample Size Distribution

Regions	No. of DTS	No. Managers	Distribution of Managers (%)	Managers to be sampled
Western	23	69	13.07	29
Rift Valley	37	111	21.02	47
Nairobi	42	126	23.86	53
Mt. Kenya	60	180	34.09	76
Coast	14	42	7.96	18
Total	**176**	**528**	**100**	**223**

Source: KUSCCO (2016).

3.5.2 Sampling Technique

Deposit taking SACCOs was categorized into; Western, Rift Valley, Nairobi, Mount Kenya and Coast strata. The study adopted stratified random sampling technique to achieve desired representation from various subgroups in the population (Mugenda & Mugenda, 2013). Simple random sampling was used to select managers in each stratum to whom the questionnaires were administered. Stratified random sampling ensured inclusion in the sample of subgroups which would otherwise be omitted by other sampling techniques because of their small numbers in the population. By each stratum being more homogenous than the total population, a more precise estimate can be achieved by estimating more accurately each of the component parts (Singh & Masaku, 2014).

3.6 Data Collection Instruments

Due to epistemological stance of finance studies, this study heavily relied on secondary data. Secondary/data 2is the existing data obtained from reliable sources which is based on objective facts (Turner & Müller, 2003). Secondary data entailed the collection of financial performance of DT SACCOs whose proxy was return on assets and return on investments data, monetary policy data, inflation rate data, credit risk data and liquidity risk data from year 2013 to 2017.The secondary data was collected using data collection sheet. Secondary data in this study was obtained from DT-SACCOs' audited financial statements, the government and semi-autonomous government agencies (SAGAs). The study used self-administered semi-structured questionnaires to the DT-SACCOs' top management who comprised of the credit managers, CEOs, tellers, accountants, internal auditors and human resource managers to gather primary data on effect of interest rate drivers on financial performance of deposit taking SACCOs. Questionnaires as a primary source of data was used mainly to validate the secondary data.

The questionnaire was appropriate in this study because of low cost of administration, DT-SACCOs are widely spread geographically, is free from interviewer bias and respondents will have adequate time to give well thought out answers (Kumar, 2011). Questionnaire in a descriptive study can be used to obtain

information about thoughts, feelings, attitudes, beliefs, values, perceptions, personality and behavioral intentions of the research participants in a large population (Gordon, 2011). Interviewer bias is eliminated when questionnaire is used. Secondary data collection sheets for the five-year period ending 2017 were used to collect data on financial performance of the deposit taking SACCOs in Kenya. Secondary data in this study was valuable because having already been used previously; it was easier for the data to be applied in carrying out further research. Secondary data was found to be not only time-saving but also cost-effective

3.7 Pilot Testing

The primary data collection instrument was pre-tested in order to assess their appropriateness. According to Bryman (2012) and Saunders *et al*., (2016), pilot testing is used to establish the appropriateness and accuracy of research design and instruments. Mugenda and Mugenda (2013) recommend a pilot sample of between 1 % and 10 % of the population. A pilot study was conducted on 10 % of the population to test the reliability of the research questionnaire. According to Malmqvist *et al* (2019), piloting enables testing of the feasibility, equipment and methods.The pilot testing in this study was therefore done using 22 questionnaires in 7 DTS that were randomly sampled from Western stratum DT-SACCOs.

3.7.1 Validity of Data Collection Instruments

Validity demonstrates the degree to which the instrument tests measures that they are purported to measure (Kothari & Gaurav, 2014). They identified four types of validity; content, criterion, confirmatory factor analysis and construct. According to Kothari and Gaurav (2014), construct validity refers to how well a research system can assess the construct it intended to measure. Blance *et al.*, (2006) noted that construct validity evaluation can be obtained from the board of experts who score the tools on how effectively they embody characteristics of the research intent. However, the study did not conduct construct validity since the content validity method of testing was more suitable given the nature of the study. Criterion validity is the instrument's ability to predict the outcomes of the present situation.

In order for the analysis to be able to distinguish impacts by the individual independent variables on the dependent variable, the criterion validity should be met through the correlation coefficient among the independent variables (Schindler & Cooper, 2011). This was done by comparing results from the devices and results from similar devices used in other studies. Confirmatory factor analyses are a computational multivariate approach used to determine how many factors in the assessed variables are included. However, the study did not use confirmatory factor analysis since the study employed questionnaires whose sole purpose was to extend the understanding of quantitative analysis. Further, there is content validity which allows making of claims about what a test measures. It is the degree to which the content of a test is representative of the domain it is intended to cover. The content validity involved testing for logical flow and understanding of the constructs under study. This was achieved by asking experts to rate the content of the instruments. The simple and intuitive nature of its basic idea is one of the strengths of the content validation. According to Almanasreh *et al.,*(2019), what the content validity index (CVI) aims to measure is a domain content and the test items are sampled from that domain so that the test items are representative of the entire domain. A CVI of more than 0.7 is considered as valid while a CVI of less than 0.5 is considered unacceptable. This study employed the content validity by discussing the questionnaire questions with the supervisor and six experts drawn from banks and SACCOs on whether the questions are straight forward and easy to understand. The validity testing also allowed for logical testing of the questions in relation to the purpose of the interview guide. According to Kallio *et al.*,(2016), the instrument was therefore considered valid since the questions were easy to understand and they exhibited a logical flow in terms of what the instrument was purported to inquire.

3.7.2 Reliability of Data Collection Instruments

Reliability is the degree of consistency that the instrument or procedure for data collection demonstrates that whatever it is measuring, it does so consistently (Tella, 2011). An instrument is reliable if it produces the same results whenever it is repeatedly used to measure a trait or concept from the same respondents even by other researchers (Amin, 2005). Reliability in a study is influenced by random errors

which arise from inaccurate coding, ambiguous instructions to the respondents, interviewer's fatigue, interviewee's fatigue and interviewer's bias (Mugenda & Mugenda, 2013). Reliability in this study was influenced by some respondents' poor interpretation and understanding of the questions. The reliability of the questionnaire was tested using the Cronbach's Alpha correlation coefficient. Cronbach Alpha value greater than 0.7 is regarded as satisfactory for reliability assessment (Chronbach, 1946).

3.8 Data Collection Procedures

The data collection process commenced after approval of the proposal by the JKUAT and issuance of the authority to conduct research from the Ministry of education science and technology. Primary source of data was collected through questionnaires and observations (Kothari, 2012). The questionnaires were self-administered by the researcher and research assistants to top management of the deposit taking SACCOs. According to Saunders et al., (2016) individuals at higher level of management are most able to offer insights from which understanding can be inferred. Secondary data was obtained from the DT-SACCOs audited financial statements and government agencies.

3.9 Data Processing and Analysis

Data analysis is the reasoning to understand the data that has been gathered with the aim of determining consistent patterns and summarizing the relevant details revealed in the investigation (Bryman, 2012). Data analysis was guided by the aims and objectives of the study and the measurement of the data collected to determine the patterns revealed in data collection regarding the collected variables. This minimized the number of outliers that would otherwise compromise the study findings. Both descriptive and inferential statistics were used in analysis of data. Descriptive statistical tools in the study were frequencies, percentages, means, variances and standard deviations. Inferential statistical tools used were panel regression analysis and Pearson Product Moment Correlation. All data collected was analyzed at 5% level of significance.

3.9.1 Data Analysis Model

The choice and justification of using multiple linear regression models in the study is that they offer a powerful tool in establishing a causal relationship between the independent variables and dependent variables. Since the study has a moderating variable, moderated multiple regression (MMR) analysis was used to test the moderating effect of DT-Sacco size on the relationship between interest rate drivers and the financial performance of DT-SACCOs in Kenya. All the constructs of independent variables were regressed with the dependent variable where only those constructs whose influence was found significant were retained and used in the optimal regression equation.

The study used panel regression models:

OLS Equation $Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon$…….**(3.2)**

MMR Equation $Y = \beta_0 + [\beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it}] Z + \varepsilon$…….. **(3.3)**

Where **Y** represents the financial performance of the deposit taking SACCOs, while β_1, β_2, $\beta_3$andβ_4 represent beta coefficients of independent variables: the monetary policy, inflation, credit risk and liquidity risk respectively, while β_0 is Y-intercept or constant term. X_1, X_2, X_3, andX_4 represent the independent variables: monetary policies, inflation, credit risk and liquidity risk respectively. ε is the error term which accounts for all other factors outside the regression equation which did not affect the dependent variable and $_{it}$ represents time and entity in panel regression. Z represents the moderator firm size. In panel data regression, both fixed effects model and random effects model are estimated.

The fixed effects model assumes that there is one true effect size; which underlies all the studies in the analysis, and that all differences in observed effects are due to sampling error. On the other hand, in the random-effects model the true effect could vary from study to study. For example, the effect size might be higher or lower in studies. Because studies will differ in the mixes of participants and in the implementations of interventions, among other reasons, there may be different effect

sizes underlying different studies. If it were possible to perform an infinite number of studies (based on the inclusion criteria for analysis), the true effect sizes for these studies would be distributed about some mean. The effect sizes in the studies that actually were performed are assumed to represent a random sample of these effect sizes (Bryman, 2012). Hausman test was used to choose between random and fixed effects for interpretation and generation of inferences. In order to test for the relationship between the dependent and independent variables, R^2 statistic, T-test, F statistic and regression coefficients were used at 95% level of confidence.

3.10 Pre and Post Estimation Tests

Pre-estimation tests were used to assess the robustness, reliability and the validity of the assumptions of the panel data regression methods. Pre-estimation tests included test for normality, linearity and test of unit roots. Normality and linearity tests were important in identifying the distribution of the data and whether it follows Gauss Markov theorem (Kissling & Carl, 2008). Normality tests were conducted using histogram, skewness and kurtosis while linearity tests were conducted using scatter plots. Additionally, according to Agrawal (2015), stationarity of the data is a key requirement for panel data hence panel regression was performed to establish stationarity of the series. Stationarity test was conducted using Fisher's method. In panel data unit-root tests, series for each panel is tested separately, and the p-values aggregated to obtain an overall test of whether there is a unit root (Mertler & Reinhart, 2016). The null hypothesis in Fisher's test avers that all panels contain a unit root. The alternative hypothesis asserts that for a finite number of panels, at least one panel is stationary. As N tends to infinity under the alternative hypothesis, the number of panels that do not have a unit root increases at the same rate as N.

The study also conducted post-estimation tests of heteroscedasticity and serial correlation to ensure that the assumptions of heteroscedasticity and serial correlation were not violated. The presence of heteroscedasticity was established by modified Wald test. The consequence of heteroscedasticity problem includes over estimation of standard errors which results to poor calculations of t-statistics and probability values(Mertler & Reinhart, 2016). The problem of heteroscedasticity was addressed by conducting robust standard errors regression. Serial correlation or autocorrelation

occurs when the residuals are not independent of each other (Kissling & Carl, 2008).The linear regression model for autocorrelation was tested with the Woodridge test for autocorrelation in panel data.

The null hypothesis of the tests asserts that the residuals are not linearly auto-correlated. Consequences of the error terms being serially correlated include inefficient estimation of the regression coefficients, under estimation of the error variance, under estimation of the variance of the regression coefficients, and inaccurate confidence intervals. Serial correlation reduces the standard errors of the coefficients and raises the value of R-squared (Ogunbiyi, 2014). When serial correlation is detected, there are several remedies. Since autocorrelation is often caused by leaving important independent variables out of the regression model, an obvious remedy is to add other appropriate independent variables to the model.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter contains details of presentation of data analysis, interpretation and discussion of findings. The chapter covers the pilot study results, response rates, Bio-data information of the respondents, descriptive analysis, inferential analysis, hypothesis testing and discussion of regression results. The section analyzed the primary data first which gave the subjective information regarding the study variables and the results were triangulated with the secondary data results.

4.2 **Pilot Study Results**

The Pilot study was conducted to establish validity and reliability of Questionnaire. The pilot testing in this study was therefore done in 7 DTS that were randomly sampled from Western stratum of DT-SACCOs. According to Mugenda and Mugenda (2013), a pilot sample of between 1% and 10% is appropriate for a study. The Western stratum was chosen for the pilot study because of cost logistics. Pilot testing was done using 22 questionnaires administered to top management of randomly sampled deposit taking in the Western region.

4.2.1 Validity of the Research Instruments

Research instruments were checked whether they were valid by use of content validity method. Six experts were asked to cross check the questionnaire items and establish whether the items measure what they purport to measure and whether they can be understood by the respondents. The six experts were engaged to offer unbiased assessment on construct items measured. The validity of data collection instruments was quantitatively tested by use of content validity index. A rating criterion was used to assess the items on clarity and simplicity. The experts used a rating scale of 1: Not relevant, 2: Somewhat relevant, 3: Quite relevant and 4: Highly relevant. After computation, the CVI was established to be 0.90. Since content validity index of the questionnaire instrument is above the minimum acceptable

threshold of 0.7, the questionnaire instrument was considered to be valid. Additionally, the discussion of the instrument with the supervisors allowed for logical testing of the questions in the questionnaire (Zeng, Proctor & Salvendy, 2011). The instrument was therefore considered valid since the questions were easy to understand and they exhibited a logical flow in terms of what the instrument was purported to inquire.

4.2.2 Reliability of the Research Instruments

The reliability of an instrument refers to its ability to produce consistent and stable measurements. According to Cooper and Schindler (2011) reliability tests the stability, equivalence and internal consistency of an instrument. The reliability of an instrument refers to its ability to produce consistent and stable measurements. Njine, Nzulwa, Kamara and Ombui (2017) explain that reliability can be seen from two sides: reliability (the extent of accuracy) and unreliability (the extent of inaccuracy). The most common reliability coefficient is Cronbach's alpha which estimates internal consistency by determining how all items on a test relate to all other items and to the total test- internal coherence of data. The study assessed each variable and respective number of items in the scale to obtain Cronbach's alpha value as shown in Table 4.1.

Table 4.1: Reliability results

Scale	Number of Test Items	Cronbach's Alpha Value	Acceptability
Monetary Policy	4	0.856	Acceptable
Inflation	4	0.872	Acceptable
Credit risk	4	0.761	Acceptable
Liquidity Risk	3	0.765	Acceptable

Monetary policy, inflation and credit risk with four items of measurement had a high Cronbach's alpha value greater than 0.70. Liquidity risk with three items of measurement had also Cronbach's alpha value of 0.765 which was fairly higher than the acceptable threshold of 0.7. It was established from Table 4.1 that Cronbach value for each construct was more than 0.70. This indicates that the data was reliable since an alpha coefficient higher than 0.70 signifies that the gathered data has a

relatively high internal consistency and could be generalized to reflect the respondent's opinions on the study problem.

4.3 Response Rate

The target population of this study was 528 top managers in 176 DTS affiliated to KUSCCO in Kenya. A sample of 223 top management staff was drawn from the population of 528 top managers. Out of a total of 223 questionnaires administered to the stratified randomly sampled DTS managers, 181questionnaires were returned. Table 4.2 shows the summary of results of the response rate.

Table 4.2: Response Rate

Response Rate	Frequency	Percent
No of Questionnaires sent out	223	100%
Questionnaires returned	181	77.6%
Questionnaires not returned	42	22.4%

The returned questionnaires represent 77.6 per cent response rate. Kelly, Clark, Brown and Sitzia (2003) set an adequate response rate at 75 per cent while Mugenda and Mugenda (2013) observed a response rate of 50 per cent to be adequate, 60 per cent and above as good, and above 70% to be very good. Cooper and Schindler (2011) also argue that a response rate exceeding 30% of the total sample size provides enough data that can be used to generalize the characteristics of a study problem. Based on the assertions above the response rate of 77.6 % was considered adequate for the study.

Additionally, apart from engaging a trained team of five research assistants in collection of data in from various parts of the country, the researcher actively and personally administered the questionnaires in some DTS in Western and part of the Nyanza regions. Lead persons were used to administer the questionnaire in some DTS. The strategy adopted by the study enabled accessibility to high number of respondents (Hussain, Salia & Karim, 2018). Moreover, the researcher ensured that the respondents were aware of the questionnaires and their purpose for the study. Consistent follow up calls with research assistants, contact persons and personal

visits enhanced the response rate. According to Danish & Usman (2010), appropriate strategies ensures high response rate.

4.4 Bio-data Information of the Respondents

Demographic characteristics indicated how various respondents assessed the constructs that were administered to them. The views received were subjective as they depended on the individual respondent's perception.

4.4.1 Gender of the Respondents

The study sought to investigate the gender distribution of the respondents. The respondents were therefore required to indicate their gender by ticking against the option of either male or female. Table 4.3 shows the summary of findings of the gender distribution in deposit taking SACCOs.

Table 4.3: Gender Distribution

Gender	Frequency	Valid Percent	Cumulative Percent
Male	86	47.5	47.5
Female	95	52.5	100
Total	**181**	**100**	

The findings of the study established that 86 (47.5%) of the respondents were male while the remaining 95(52.5%) were of female gender. Male respondents were lower than female respondents because majority of the male respondents were involved in field work such as loan recovery and loan appraisal activities. This made it difficult to find the male gender as well as making those who received the questionnaires fully fill them. On the other hand, female were more as compared to male because majority of them were at the offices which mean that they were easily accessible.

The results implied that there is fair gender distribution and therefore eliminated perception or data distortion that would otherwise have been associated with gender bias. The findings implied that the DT-SACCOs top management had complied with the constitutional requirement in Kenya on rights and fundamental freedoms. Sec 27(8) of the Constitution of Kenya requires that not more than two-thirds of the

members of elective or appointive bodies shall be of the same gender. In this regard, there was no gender which exceeded 66.7 percent of the total respondents which is the two thirds of the study participants (Kaimenyi, Kinya & Chege, 2013). This implies that gender was fairly distributed both at work and also for the purpose of this study.

4.4.2 Respondents Level of Experience at the SACCO.

The study required the respondents to state the years they have worked in the DT-SACCO. This question was asked in order to assist in evaluation of the quality or the relevancy of information gathered and whether the respondents were experienced enough to understand the activities of DT-SACCOs and how regulations work against or in favor of the SACCOs. An experience attribute was therefore used in the research as a DT–SACCOs' industry knowledge test. Table 4.4 shows the results of the years of experience of respondents.

Table 4.4: Years of Work

Years of Work	Frequency	Valid Percent	Cumulative Percent
0 to 10 years	63	34.8	34.8
11 years to 20 years	118	65.2	100
Total	**181**	**100**	

The findings revealed that majority 118(65.2%) of the respondents had been working at their respective SACCOs for a period between 11 years and 20 years while only 63(34.8%) of the respondent have been at SACCOs for less than 10 years. The majority of the respondents were therefore experienced in SACCOs' operations and held high positions which required a good understanding of the industry and its operations. This implies that the questionnaire responses are reliable because they were filled by experienced respondents. Additionally, it reveals the importance of experience which is the empirical or posteriori knowledge based on mastery of an event or subject gained through involvement in or exposure on it.

4.4.3 Position in the SACCO

The study also determined the position held by the respondent in the SACCO. The data regarding positions in the study was coded and presented in form of frequencies. Table 4.5 provides a summary of findings from the analysis.

Table 4.5: Respondents Job Position

Position	Frequency	Valid Percent
CEO	43	23.8
Accountant/Internal Auditor	46	25.3
Credit Manager	49	27.1
Teller	40	22.1
HRM	3	1.7
Total	**181**	**100**

The findings in the study revealed that a simple majority of 49(27.1%) of the respondents were credit managers, 46(25.3%) of the respondents were either accountants or internal auditors, 43(23.8%) of the respondents were CEOs, 40(22.1%) of respondents were tellers and only 3(1.7%) of the respondents were HRM managers. Majority of the respondents were credit managers who were readily available. The study noted credit managers were highly demanded by the loan applicants, hence their availability was very paramount. Additionally, the CEOs were mostly at their offices to deal with SACCOs administrative issues which meant that they had the time to fill in questionnaires during the study period.

Human resource managers were the least of the respondents and this could be attributed to the fact that they are few and their functions could at times be performed by other managers. Accountants and tellers were also easily accessible because they were least involved in field operations. The fair distribution of positions was a good indicator that the respondents were not only competent enough in interpreting issues regarding the DT-SACCO operations but also understood the dynamics of the SACCO industry. Additionally, the results from respondents from diverse job positions are less likely to suffer from respondents' biasness on responses relating to interest rate drivers and financial performance of the deposit taking SACCOs. It is

imperative for fair distribution of the job designations since it aids the reliability of information provided by the respondents.

4.5 Descriptive Analysis

Descriptive analysis was used to describe the basic features of the collected data and was presented in form of tables and figures. Descriptive analysis preceded quantitative analysis of the data done to test the hypotheses proposed by the research model. As was observed in Onyango and Ngahu (2018), descriptive statistics of the study variables were summarized through the use of frequencies, percentages, means, standard deviation and figures. The attributes that the study considered were the DT-SACCO's years of existence, main source of capital, percentage of funding from borrowings, the current share capital, main source of income and interest rate effect on demand for loans. The descriptive analysis also considered various views of the respondents on the constructs that were considered to have an impact on DT-SACCOs financial operations.

4.5.1 Duration of SACCO Existence

The respondents were asked to indicate how long the DT-SACCO has been in operation. This question was asked to establish the efficacy of SACCOs being involved in study basing on the logic that older SACCOs are more experienced in market dynamics and are experienced on how interest rates drivers affect their financial performance (Ochanda, 2014). Table 4.6 provides a summary of results of the years of existence of the deposit taking SACCOs.

Table 4.6: SACCO's Years Operation

Years of Operation	Frequency	Valid Percent
Less than 11 years	0	0
11 years to 20 years	98	54.1
Above 20 years	83	45.9
Total	**181**	**100**

From the findings in Table 4.6, 83(45.9%) of the respondents indicated that SACCOs have been in DT-SACCO business for period of over 20 years while 98(54.1%) of the respondents indicated that DTS had operated for period between 11 to 20 years. No respondent indicated that there was a deposit taking SACCO that had been in operation for less than 11 years. The results of the study show that the deposit taking SACCOs under study had existed for a minimum period of 11 years. The long period of existence in deposit taking SACCO business signifies possibility that each of the SACCOs under study had gone through boon and lean periods in their business life cycles. Hence the deposit taking SACCOs sampled offered a fair representative of the population in assessing the effect of interest rate drivers on financial performance of deposit taking SACCOs in Kenya.

4.5.2 Current Number of Members

The researcher sought to determine the current number of memberships in the DTS. Table 4.7 shows the summary results of current number of members in DT-SACCOs.

Table 4.7: Distribution of Number of Members

No. of Members	Frequency	Valid Percent
0 to 500	0	0
501 to 1000	3	1.7
1001 to 1500	53	29.2
1501 to 2000	42	23.2
Above 2000	83	45.9
Total	**181**	**100**

Findings as indicated in Table 4.7 reveal that majority 83(45.9%) of the DT-SACCOs had more than 2000 members. The results also revealed that 53(29.2%) of the DT-SACCOs had members between 1001 and 1500. Additionally, the DT-SACCOs which had 1501 to 2000 members accounted for 42(23.2%) of the entire study participants and only 3(1.7%) of the DT-SACCOs had less than 1000 members. For the deposit taking SACCOs that responded to the questionnaires, the study established that no DTS had members equal to or less than 500.

The findings are good indication of strong membership, which also implies that a good population of membership is affected by the changes in interest rates, which consequently affects the demand of DT-SACCO products and hence financial performance of deposit taking SACCOs. This was important because the number of members in DT-SACCOs is usually proportionate to the amount of members' share capital. Additionally, according to Lekaaso, Cherono and Rintari (2016), high number of members provides a wide pool for developing loan products that serve different segments of members and thus contribute to large loan portfolio, which has significant effect on the DT-SACCO's financial performance.

4.5.3 Main Source of Capital for SACCOs

The researcher sought to establish the SACCOs' main source of capital. This was based on the logic that if DT-SACCOs' main source of capital is from borrowing, then their performance is more likely to be affected by the interest rate drivers. Hence data on source of capital provides sufficient and useful information regarding the effect interest rate drivers on financial performance of deposit taking SACCOs. Table 4.8 shows the results of source of capital distribution summary.

Table 4.8: Source of Capital for Deposit Taking SACCOs

Source of Capital	Frequency	Valid Percent
Members Share Capital	75	41.5
Borrowings from External Sources	37	20.4
Interest Income from loans Retained for Investment	69	38.1
Total	**181**	**100**

The findings as revealed in Table 4.8 show that majority of the respondents indicated that 75(41.4%) of DT-SACCOs source of capital came from members share contributions, 69(38.1%) was from capitalized income from lending activities while 37(20.4%) was sourced from borrowing. This was prudent and logical because generally, interest rates drivers affect cost of credit among financial intermediaries. Restricted external borrowing relative to the members' shares was found to be due to deposit taking SACCOs shifting funding strategies in line with prudential norms. The

deposit taking SACCOs are required to limit their funding from external borrowing to 25% of their total assets, that's gearing of 2.5 times of capital.

4.5.4 Percentage of Funding from Borrowings

The research also investigated the proportion of borrowed funds in the DT-SACCOs' capital structure. The responses provided a useful tool in establishing external funds in the capital structure of the deposit taking SACCOs with a view to assessing safety of the members' deposits. Table 4.9 provides a summary of findings from the respondents.

Table 4.9: Percentage of Funding from borrowing

Percentage from borrowings	Frequency	Valid Percent
0 to 30%	59	32.6
31 to 50%	51	28.2
51 to 70%	33	18.2
Over 70%	38	21
Total	**181**	**100**

From Table 4.9, majority of the respondents 59 (32.6%) opined that borrowed funds were less than 30% in DTS capital structure. The respondents who thought that borrowed funds in DTS ranged between 31 to 50% were 51(28.2%). Additionally, the results revealed that 33(18.2%) of the respondents felt that 51 to 70% of the DT-SACCOs funds came from borrowings while 38(21%) of the respondents were of the opinion that over 70% of the DT-SACCOs' funds were derived from borrowings.

The findings established that though deposit taking SACCOs received funds from both members' shares and borrowings, the amount of funds sourced from borrowings were minimal. The DT-SACCOs were more inclined towards using the members share contribution as their main source of funding. The total risk exposure of member deposits in the DT-SACCO system in case of failure is higher when the financing is predominated by borrowings. There should therefore be concerted efforts by DT-SACCOs management to focus on increasing the momentum of

deposit mobilization not only to fund their own loan assets, but equally as a precursor towards the facilitation of inter-borrowing among DT-SACCOs, and establishment of a central liquidity facility framework for DT-SACCOs.

4.5.5 Current Share Capital of SACCOs.

The researcher sought to investigate the current share capital of DT-SACCOs. This was important in estimating the amount of cash at the disposal of the DT-SACCO's core operations. Table 4.10 shows the summary results of the findings.

Table 4.10: Summary of Current Share Capital

Current Share Capital (KES)	Frequency	Percent	Cumulative Percent
Below 100 million	64	35.4	35.4
100 million to 500 million	72	39.8	75.2
500 million to 1 billion	30	16.6	91.2
Over 1 billion	15	8.2	100

From Table 4.10, 136 (75.2%) of the DT-SACCOs had current share capital below KES 500 million while only 45(24.8%) of the DT-SACCOs had share capital above KES 500 million. The analysis on the distribution of current share capital among the 181 DT-SACCOs shows that the majority of the DT-SACCOs are actually very small in terms of their relative share capital size. This had an impact on their relative efficiency and sustainability, as the larger the share capital deposit size of the DT-SACCO, the more efficient and sustainable is the DT-SACCO.

4.5.6 Monetary Policy and Financial Performance of SACCOs

The first objective of the study was to determine the effect of the monetary policy on financial performance of deposit taking savings and credit cooperative societies in Kenya. The summary of results was presented in the Table 4.11.

Table 4.11: Responses on Effect of Monetary Policy

Statement	SA%	A%	N%	D%	SD%	Min	Max	Mean	Std.
The SACCO's accessibility to funds is affected by CBK cash reserve requirements.	23.30	22.00	13.26	19.34	22.1	1	5	2.96	1.49
The SACCO's accessibility to funds is affected by Central bank reference rate.	14.97	40.39	30.94	10.94	2.76	1	5	4.16	0.96
The SACCO's accessibility to funds is affected by open market operations of the CBK.	24.98	33.15	18.23	20.99	2.65	1	5	4.23	1.27
The SACCO's accessibility to funds is affected by its investment policy in government securities.	25.97	21.55	20.43	14.92	17.13	1	5	3.98	1.36
Aggregate								**3.83**	

Valid N=181, SD=Strongly Disagree D=Disagree N=Neutral A=Agree SA= Strongly Agree Std=Standard Deviation

Table 4.11 revealed that 45.3% of the respondents agreed that the SACCO's accessibility to funds affected the CBK cash reserve requirements (Mean =2.96, Std = 1.49). However, 41.44% of the respondents disagreed that the SACCO's accessibility to funds was affected by CBK cash reserve requirements. This was reflected by the mean average of 2.96 which indicated that the responses were fairly balanced. This could be attributed to the regulatory role of the CBK over financial intermediaries through the monetary policy. The results were not consistent with those of Mulwa (2015) whose study found that monetary policy tools employed by the Central bank of Kenya do not have a significant effect on the financial performance of commercial banks in Kenya. Additionally, the results revealed that

55.36% of the respondents agreed with the statement that SACCO's accessibility to funds was affected by the CBK reference rate (Mean = 4.16, Std = 0.96).

The respondents who disagreed with the statement were 13.70% while those who were neutral were 30.70%. The results therefore implied that the CBK reference rate influences the SACCO's accessibility to funds particularly for those SACCO's whose source of funding was from borrowing. In that sense, DT- SACCO's who borrow and transact with banks to fund their operations do feel the impact of CBK reference rate. The respondents who agreed that DT SACCOs' accessibility to funds is affected by the open market operations of the Central Bank of Kenya were 58.13% (Mean = 4.23, Std = 1.27). The respondents who disagreed were 23.64% while 18.23 % were neutral.

The results were in tandem with the notion of Laopodis (2013) who asserted that the monetary policy actions can propagate the real financial sector stability if they are properly transmitted into the macro-economy through channels like consumption, interest rate and wealth effect. Since CBK is the main financial and banking sector regulator, its operations could have a domino effect on SACCOs operations and performance. The results also concurred with assertions of Gertler and Karadi (2011) who established that monetary policy actions affect the real economy through their influence on consumption and investment spending. The results also revealed that majority (47.52%) of the respondents indicated that they agreed with the statement that SACCO's accessibility to funds was affected by the deposit taking SACCOs' investment policy in government securities (Mean = 3.98, Std = 1.36), 32.05% of the respondents disagreed while 20.43% were neutral.

The results indicated that more respondents opined that SACCOs investment policy in government securities affected their financial performance. The findings were echoed by those of Zaman, Arslan, Sohail and Malik (2015) who carried out a study on the impact of monetary policy on financial performance: evidence from banking sector of Pakistan where they established that the monetary policy had a significant relation with the firm value. This implied that policies on investment in government securities influence the investment orientation of the DT-SACCOs hence affecting

their accessibility to funds. On the overall, the results depicted that monetary policy had an influence on SACCO's accessibility to funds.

This was accounted for by the fact that the statements used to measure the effect of monetary policy on SACCO's accessibility to funds ranged from 2.96 to 4.23 with an aggregate value of 3.83. Additionally, the standard deviation for majority of the items indicated that the responses to the items were not deviating much from the mean. The results of influence of monetary policy on SACCO's accessibility to funds can be attributed to the results of SACCO's source of funds which majority of the respondents indicated that their main source of funds was from membership as well as borrowing. In that regard the monetary policy had a direct influence on the DT SACCOs' source of funding and hence its effect on financial performance was insignificant.

4.5.7 Inflation and Financial Performance of SACCOs.

The second objective of the study was to establish the effect of inflation on financial performance of deposit taking savings and credit cooperative societies in Kenya. Kenya deposit taking SACCO industry forms part of Kenya financial services sector. The items in the questionnaire were therefore designed to capture the perceptions of the respondents on whether inflation affected the financial performance of DT SACCOs. The summaries of results were presented as shown in Table 4.12.

Table 4.12: Responses on Effect of Inflation.

Statement	SA%	A%	N%	D%	SD%	Min	Max	Mean	Std
The Gross domestic product affects cost of borrowing of the SACCO.	25.97	28.78	19.89	14.92	10.44	1	5	4.15	1.48
The Consumer price index affects demand for loans of the SACCO.	22.1	30.94	24.31	22.65	0	2	5	3.52	1.07
The social spending in the economy affects cost borrowing of the SACCO.	20.99	25.97	24.31	27.07	1.66	1	5	3.38	1.14
Decline in Loan demand affects operational costs of the SACCO.	34.86	29.89	22.1	10.39	2.76	1	5	4.34	1.23
Aggregate								**3.84**	

Valid N=181, SD=Strongly Disagree D=Disagree N=Neutral A=Agree SA= Strongly Agree S.D=Standard Deviation

Results from Table 4.12 revealed that 54.75% of the respondents agreed that GDP affected the cost of borrowing of the SACCOs (Mean =4.15, Std = 1.48). The findings also revealed that 25.36% of the respondents disagreed while 19.89% were neutral that GDP affected the cost of borrowing of the SACCOs. The findings therefore implied that a good number of respondents believed that GDP had an effect on their SACCO's financial performance. The findings were consistent with those of Tsaurai (2017) who investigated the impact of inflation on financial sector performance in Sub-Saharan Africa where it was found that inflation had negative effects on financial sector performance.

Boyd, Levine and Smith (2001) also concurred with the findings when through their assessment on the impact of inflation on financial sector performance found that there was significant and economically negative relationship between inflation and bank sector development. Additionally, deposit taking SACCOs form a substantial proportion of gross national savings on the role played by SACCOs in savings mobilization, making perfect channels in promoting high levels of savings which

makes them vulnerable to changes in GDP. The results also revealed that 53.04% of the respondents agreed that CPI affected the demand for loans of the SACCO (Mean =3.52, Std = 1.07). Additionally, the results also showed that while 24.31% were neutral, 22.65% of the respondents disagreed that CPI affected the demand for loans in deposit taking SACCOs.

These findings were in agreement with those of Oleka, Sabina, and Ebue **(**2015) in Nigeria who investigated the relationship between inflation and performance of firms where it was concluded that irrespective of the economy involved, high inflation rate is inimical to financial sector performance and that the government should therefore employ necessary measures to control inflation as a way of improving the performance of the financial sector. However, the study slightly diverged from findings of Kiptoo and Wanyoike (2015) who assessed the effect of cost push inflation on financial performance of SACCOs in Eldama Ravine Sub County, Kenya. Their study found a weak relationship between financial performance of SACCOs and cost push inflation. From their analysis it was revealed that a unit increase in cost push inflation would lead to a slight increase in financial performance implying that there was a positive weak relationship between financial performance of SACCOs and cost push inflation. The results of the study further revealed that 46.96% of the respondents agreed while 28.73% disagreed with the statement that social spending in the economy affected cost of borrowing of the SACCO (Mean =3.38, Std = 1.14).The respondents who were neutral were 24.31%. The findings of the study were in concurrence with various policies enacted by the Government of Kenya to shield the poor from adverse standards of living conditions. The Kenya's National Safety Net and Equality Programme through cash transfer program provides stipends that cushions the vulnerable population of the society.

The Government of Kenya has put in place cash transfer programs that enable the elderly and most vulnerable members of the society to buy food while coping with Covid-19 pandemic. The "Inua Jamii'' social protection program in Kenya is also currently providing cash to orphans, vulnerable children, older persons and people with severe disabilities. Social spending explicitly integrates economic and social policies. Social services financing is a critical link between economic and social

policies. Social policies should not only be pro-poor, but should be complimented with economic policies that reinforce pro-poor objectives. The findings also revealed that majority of the respondents (64.75%) agreed, 13.15% disagreed while 22.1% were indifferent to the statement that decline in loan demand affected operational costs of the SACCOs (Mean =4.34, Std = 1.23).

The economies of scale derived from large volume of loans reduces operational costs, hence decline in loan demands reduces financial performance of deposit taking SACCOs. Deposit taking SACCOs that issue more loans spread fixed costs among loan applicants and are therefore able to pass some of the cost savings to their members. The findings of the study agreed with Wallace (2014) who examined how certain banking costs change with size of the bank. They found that costs relative to bank size declined as the bank size increased. Their study documented how increasing size affected various components of non-interest expense. The findings were also consistent with those of Nasser and Jackson (2014) who established that macroeconomic stability was important for banking sector stability, mainly because uncertainty about inflation had adverse effects on banks' overall performance. Their study recognized the importance of loans in performance and banking sector development, though as was stated in earlier review it failed to appreciate interest income on performance of the financial sector. Generally, the results found out that inflation had an influence on deposit taking SACCOs' financial performance. This was accounted for by the fact that the statements used to measure the effect of inflation on DT SACCOs' financial performance ranged from 3.38 to 4.34 with an aggregate mean of 3.84. This showed that majority of the respondents agreed with the statements regarding inflation and the financial performance of DT SACCOs. Similarly, the standard deviation for the items that measured the constructs indicated that the responses to the items did not significantly deviate from the mean. It was therefore implied that inflation had an influence on DT SACCOs' financial performance.

4.5.8 Credit Risk and Financial Performance of SACCOs

The fourth objective of the study was to establish the effect of credit risk on financial performance of deposit taking savings and credit cooperative societies in Kenya. The items in the questionnaire were designed to capture the perceptions of the respondents on whether credit risk affected the financial performance of DT SSACCOs.

The summary of results was presented in Table 4.13.

Table 4.13: Responses on Credit Risk.

Statement	SA%	A%	N%	D%	SD%	Min	Max	Mean	Std
Sacco maintains adequate asset base to cushion lenders	30.40	24.90	27.10	17.0	0.60	1	5	3.67	1.1
The equity funds adequately cover debts of the SACCO.	25.40	23.20	23.80	26.50	1.10	1	5	3.45	1.17
The SACCO's cash flow adequately meets the cash demands of the members.	22.10	28.70	22.70	26.50	0.00	2	5	3.46	1.11
The SACCO maintains prudent levels of credit risk exposure consistent with available capital.	30.40	22.10	17.70	14.40	15.40	1	5	3.98	1.49
Aggregate								**3.56**	

N=181, SD=Strongly Disagree D=Disagree N=Neutral A=Agree SA= Strongly

Agree Std = Standard Deviation.

The results revealed that 55.3% of the respondents agreed, 17.6% disagreed and 27.10 % were neutral to the statement that their deposit taking SACCOs maintained adequate asset base to cushion them against members' loan demands (Mean = 3.67, Std =1.1). Additionally, the results the of the study also revealed that 48.6% of the respondents agreed, 23.80% were indifferent while 27.6% disagreed with the statement that equity funds of the DTS adequately covered their debt obligations (Mean =3.45, Std =1.17). The findings of the study were consistent with those of

Kargi (2011) who evaluated the impact of credit risk on profitability of banks in Nigeria.

The Kargi (2011) used financial ratios as a measure of performance while the credit risk assessment was obtained from annual reports and accounts of sampled banks from 2004 to 2008. The study findings revealed that credit risk management had a significant impact on profitability of Banks in Nigeria. Table 4.13 also indicated that 48.6% of the respondents agreed that equity funds adequately covered debts of the SACCO (Mean =3.45, Std= 1.17). The respondents who disagreed were 27.60% while 23.8% were neutral to the statement that equity funds adequately covered debts of the DT SACCOs. The findings were consistent with Authority (2015) that peer-grouped DT-SACCOs in terms of total assets and total deposits in order to assess those with high concentration of risks and determining their individual strengths. High emphasis was placed on full compliance with the prescribed statutory minimum requirements, especially with regard to the prudential standards necessary for ensuring the stability and soundness of DT-SACCOs, as well as the safety and security of members' deposits therein through on-site and off-site surveillance. It was established from the study that while 50.8% of the respondents agreed that cash flow in deposit taking SACCOs adequately meets cash demand for the members, 22.7% were neutral and 26.5% disagreed (Mean =3.46, Std = 1.11).

This was also reflected in the mean responses of 3.46 of the respondents indicating that majority of the respondents agreed with the statement. The results concur with tenets of SACCO operations that ensure that adequate cash is maintained not only for members loans requirements but also to pay dividends when they are declared in the annual general meeting. It was observed that most DT-SACCOs maintained cash flow that enabled them to satisfy the cash demands of the members and hence reducing credit risk. The stability of the DT-SACCO system is a key regulatory focus of the SACCO regulating authority as witnessed by the strengthening of the financial stability indicators of DT-SACCOs. The results were consistent with that of, Shieler, Emenike and Amu (2017) who evaluated whether relationship exist between credit risk management techniques and financial performance in microfinance institutions.

Their findings indicated that credit risk identification and appraisal had a strong positive relationship on financial performance, while credit risk monitoring and mitigation had moderate significant positive relationship on financial performance of MFIs. Among other recommendations, the study observed that credit risk appraisal process should identify and analyze all loss exposures and quantify them. This was also in agreement with Beaudrie and Kandlikar (2011) that suggested a guide in selection of a technique or combination of techniques to handle each credit risk exposure. The findings were consistent with Murugu (2010) who analyzed the effect of credit risk management practices on the performance of SACCO and established that SACCOs had heavily relied on credit risk techniques which were not adequate to mitigate against loan losses in a dynamic and competitive lending environment. Additionally, the results of the study revealed that the 52.5% of the respondents agreed, 17.7% were neutral while 29.8% disagreed with the statement DT SACCOs maintain prudent levels of credit risk exposure consistent with available capital (Mean =3.98, Std =1.48). This was also reflected in the mean responses of 3.98 of the respondents indicating that majority of the respondents agreed with the statement. The results implied that DT-SACCOs were effectively and prudently managing the credit risk. This was explained by the fact that the statements used to measure the effect of credit risk on SACCOs' financial performance ranged from 3.45 to 3.98 with an aggregate of 3.56.

This show that majority of the respondents agreed with the statements regarding credit risk and the financial performance of SACCOs. Additionally, the standard deviation of the items indicated that the responses to the items did not materially deviate from the mean. The results generally indicated that credit risk had an influence on deposit taking SACCOs' financial performance. Deposit taking SACCOs' coverage ratios like interest coverage ratios and cash flow coverage ratios provide a long-term debt paying ability of the SACCO. The results of influence of credit risks on financial performance of DTS were attributed to the fact that the main source of income for the deposit taking SACCOs was interest from loans.

Therefore, the DT- SACCOs risk profile oscillated in the realm of credit risk through loan defaulting, bad debts among other credit risk profiles. The results were in

tandem with those of Kargi (2011) who evaluated the impact of credit risk on profitability of banks in Nigeria and also concurred with Muriithi, Waweru and Muturi (2016) study which investigated the effect of credit risk on financial performance in commercial banks in Kenya where it was established that credit risk had a negative and significant relationship with bank profitability. Poor asset quality or high non-performing loans to total assets was found to be in short and long run related to poor bank performance.

4.5.9 Liquidity Risk and Financial Performance of SACCOs

The fifth objective of the study was to establish the effect of liquidity risk on financial performance of deposit taking savings and credit cooperative societies in Kenya. The items in the questionnaire were designed to capture the perceptions of the respondents on whether liquidity risk affected the financial performance of SACCOs. The summary of results was presented in the Table 4.14.

Table 4.14: Responses on Liquidity Risk.

Statement	SA %	A%	N%	D%	SD %	Min	Max	Mean	Std
The SACCO maintains adequate cash to meet immediate cash demands of members.	39.80	29.80	29.30	1.10	0.00	2	5	4.08	0.86
Total SACCO's assets are adequately covered by member's deposits.	27.10	27.60	22.70	22.70	0.00	2	5	3.59	1.11
The SACCO's deposits adequately cover loan demands of the members.	24.90	22.70	28.20	23.80	60	1	5	3.48	1.12
Aggregate								**3.71**	

Valid N=181, SD=Strongly Disagree D=Disagree N=Neutral A=Agree SA= Strongly Agree Std=Standard Deviation.

The results from the Table 4.14 revealed that 69.6% of the respondents agreed with the statement that the deposit taking SACCOs maintain adequate cash to meet immediate cash demands of members (Mean = 4.08, Std = 0.86). The respondents who disagreed were 1.1% while 29.3% were neutral. The high number of

respondents agreed with the assertion of the statement because most DT SACCOs were able to promptly service the members loans and pay dividends from profits.

The results were consistent with those of Song'e (2015) who conducted a study on the effect of liquidity management on the financial performance of a sample of 27 deposit taking SACCOs licensed by SASRA in Nairobi County where it was found that financial performance as measured by profit before tax over total assets was positively related to liquidity risk, operational efficiency, quick ratio and log of total assets. The respondents in the study who agreed that the SACCO's assets were adequately covered by member's deposits were 54.7%, while 22.7% disagreed (Mean =3.59, Std = 1.11). The percentage of the respondents who were neutral were 22.7%. Additionally, the results revealed that 47.6% of the respondents agreed that the DT-SACCOs' deposits adequately cover loan demands of the members (Mean = 3.48, Std = 1.12). However, 28.20% were not sure whether the DT- SACCOs' deposits adequately cover loan demands. However, mean of 3.48 showed that majority of respondents agreed which implied that the DT-SACCOs' deposits adequately covered loan demands of the members. This was consistent with the results of DT SACCOs' source of capital where the majority of the respondents indicated that members were the main source of funding for deposit taking SACCOs.

The findings also support regulatory requirements for DT SACCOs which require that they comply with SASRA periodic returns and reports for off-site surveillance. The study was consistent with that of Muheebwa (2018) in Uganda, who established the relationship between liquidity and financial performance of savings and credit cooperatives in Fort Portal and found that there was a significant relationship between liquidity of portfolio and financial performance of SACCOs in Fort Portal, Uganda. The statements used to measure SACCO's ability to manage liquidity risk ranged from 3.48 to 4.08 with an aggregate of 3.71. This showed that majority of the respondents agreed with the statements regarding liquidity risk and the financial performance of SACCOs.

According to the responses received, liquidity risk has an influence on deposit taking SACCOs' financial performance since a deposit taking SACCOs with optimal cash

holding, good asset base and large volume of deposits are able to borrow on comparatively competitive terms. The standard deviation of the items indicated that the responses to the items were not deviating much from the mean. The results were consistent with the study of King (2013) who established that liquidity risk was negatively related to bank performance in market-based financial system. However, it was observable that despite the impressive liquidity measurement from the findings of the study, most DT-SACCOs were often unable to meet their short-term obligations to their members, particularly the disbursement of loans. This irony was occasioned by the fact that the bulk of liquidity pressures in DT-SACCOs were normally occasioned by demand for loans, which expects that once a member is qualified, a loan is deemed a right, unlike in the banking sector.

4.6 Secondary Data

Secondary data was obtained from deposit taking SACCOs, Central Bank of Kenya, SASRA reports and Kenya National Bureau of Statistics. The data was collected from the SACCOs, cleaned and organized in excel for further analysis. Table 4.15 shows the distribution of secondary data over the years. Table 4.15 Distribution of Secondary Data over the Years.

Table 4.15: SACCO's Total deposits Trends

Year	2013	2014	2015	2016	2017	Overall (2013-2017)	
	Mean	Mean	Mean	Mean	Mean	Mean	Std
Total deposits (Average Kes'000')	124529.1	148218.1	156056.3	160664.1	203672.6	158628	2.21
Core capital (Average Kes'000')	50149.46	47142.05	57777.43	55038.48	64087.64	54839.01	6.62
Earnings Before Interest (average Kes'000')	12553.03	11386.09	13580.78	15801.83	16404.71	13945.29	2.12
Interest Income (Average Kes'000')	277330.8	410699.5	484460.3	535094.4	589318.9	459380.8	1.21
Total Loans	94200.85	90673.37	99099.05	87088.26	198470.2	151902.4	1.99
Loan Products (Sum)	1478	1622	1677	1833	2281	1778.2	3.08
Current Liabilities (Sum Kes'000')	1494848	2895654	1898130	1645399	310675.5	1648941	1.26
Long-term Liabilities (Sum Kes'000')	17818545	31273412	20797767	46084792	32058262	29606556	0.11
Fixed assets (Average Kes'000')	28670227	57538716	59583027	61157670	67623901	54914708	1.51
Total assets (Average)	2190040	2680458	3532628	3895120	3692357	3198121	2.29
Current Assets (average)	1923486	2167550	2898916	3770716	3714355	2895004	2.78
Total cash and marketable securities (Average Kes'000')	126577.5	126577.5	188301.9	234311.2	233365	181826.6	1.21
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
Number of Membership (Sum)	453588	470538	439950	523819	540849	485748.8	4.79
Amount of Dividends	3578745	2802362	4031457	4758938	6165654	4267431	1.28
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

From Table 4.15, there is an upward trend of deposit taking SACCO's total deposits. The average total deposits trend increased from KES 124,529.07('000') in 2013 to KES 203,672.62('000') in 2017. The increase was however gradual from year 2013 to year 2016. Year 2017 on average recorded a higher margin increase of KES

43,008.55(‘000’). This could be attributed to the fact that 2017 having been a year of general elections in Kenya, heightened political activities injected more money in the economy. Part of the money in circulation was possibly tapped by the SACCO members and deposited in the SACCO. There was an also sustained effort by the SACCO management to attract depositors through sustained aggressive marketing, new products and innovations such as partnering with banks to offer cheques and other value adding services to members.

Interview conducted with management of some deposit taking SACCOs revealed that all licensed deposit taking SACCOs were now connected to SACCO link automated teller machines by the Cooperative bank of Kenya. Additionally, Table 4.15 also revealed an upward trend of SACCO’s core capital. The average total core capital trend increased from KES. 50,149.46 (‘000’) in 2013 to KES, 64,087.64(‘000’) in 2017, the increase was however, gradual over the five-year period. This was partly because some of the DT-SACCO management adopted a policy of investing funds above statutory requirement of KES 10M in other income generating activities. Additionally, as the SACCO sector grows *ceteris paribus*, SACCOs’ operational costs increase hence slowing down growth in core capital.

The increase however, is explained by the regulatory requirements of SASRA which demand that the core capital should not be less than 10% of the deposit taking SACCO’s total assets. Therefore, as the total assets increases, the core capital was expected to proportionately increase. Table 4.15 shows an upward trend of SACCOs’ EBIT. The average EBIT trend increased from KES.12,553.03 (‘000’) in 2013 to KES. 16,404.71 (‘000’) in 2017.However, after the general election there was a slump in 2014 which was associated to the post-election effects of 2013. Consequently, the average interest income trend increased from KES. 277,330.8 (‘000’) in 2013 to KES. 589,318.93 (000) in 2017. The increase in EBIT and interest income was explained by aggressive marketing by the deposit taking SACCOs management which increased loan uptake**.** Additionally, this was in line with economic growth reported by Kenya Bureau of Statistics over the five years whose spillover effect contributed to strong performance in SACCO industry. The average outstanding loans trend increased from KES. 1,420,060 (‘000’) in 2013 to KES.

2,847,100 (000) in 2017**.** The implementation of interest rate caps which regulated the cost of loans by commercial banks did not affect demand for SACCO loans. The clientele relationship between DT-SACCOs and their members was unique. As banks pursued better investment opportunities as well as being more risk cautious due to stringent assessment of the risk profile of the loan applicants, some bank customers turned to SACCO loans hence increasing the loan demand. Table 4.15 also revealed an upward trend of SACCO's loan products. The sum of loan products increased from 1478 in 2013 to 2281 in 2017.

After the introduction of the capping interest rates law, the DT-SACCOs introduced a variety of loan products in an effort to fend off competition from commercial banks. Additionally, Table 4.15 also revealed an increasing trend of current liabilities from KES 1,194,848.38 ('000') in year 2013 to KES 1,345,399 ('000') in year 2017.There were fluctuations in the current liabilities over the period. The changing nature of the current liabilities was attributed to changes in debt financing arising from fluctuations in members' loan demands in circumstances of inadequate deposits from members to finance loan demands. Table 4.15 further indicates that there was increasing trend of SACCO's long-term liabilities. The sum of long-term liabilities increased from KES. 17,818,545 ('000') in 2013 to KES. 22,058,262 ('000') in 2017.

The increase in long-term liabilities was attributed to the desire of most deposit taking SACCOs to borrow long term loans to invest in non-core activities like government bonds, shares and real estates. Increase in members loan demands also contributed in SACCOs to seek funds from other sources to finance loan products. Similarly, there was an increasing trend in DT- SACCOs fixed assets. The average fixed assets trend increased from KES. 234,578.68 ('000') in 2013 to KES. 373,680.12 ('000') in 2017**.** This was explained by the DT-SACCOs desire to invest idle members deposits in fixed assets over time. The decline in fixed assets in 2016 was attributed to increase in loan demands hence some of the DT-SACCOs scaled down investment in fixed assets. Some DT-SACCOs in their quest to finance members' loan demands disposed off part of the fixed assets to raise cash to meet the rising demand of loan products. Further, this was in line with the need for SACCOs to inverts more funds in research and development, information technology in order

to increase their competitiveness in financial intermediation industry. With increasing competition, desire to increase market base, enhanced government regulatory framework, deposit taking SACCOs have been compelled to invest more in fixed assets. Table 4.15 also reveals an upward trend in DT-SACCOs current assets. The average current assets trend increased from KES. 1,923,486 (‘000’) in 2013 to KES. 3,714,354.92 (‘000’) in 2017. Additionally, the findings revealed an upward trend in DT-SACCOs’ total assets. The average total assets trend increased from KES 2,158,064.68(‘000’) in 2013 to KES 3,892,356.97 (000) 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 securities increased from KES 126,577.5 (‘000’) in 2013 to KES 233,364.9833 (‘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 2017, there was a slight decline in the total cash and marketable securities which could partly have been due to conversion of marketable securities into cash for political campaign activities.

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 of 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 memberships except for the year 2015. Membership increased from sum of 453,588 in 2013 to

470,538.00 before falling to 439,950 in 2015. There was an observed gradual increase in members from 439,950 in 2015 to 540,849 in 2017.The observed decline was attributed to some of the ineffectual marketing policies adopted by some of the DT-SACCOs. The implementation of interest rate capping law in 2016 also made commercial banks shift to lending to corporate and government which consequently made individuals seek loans from DT-SACCOs.

In addition, there was an upward trend for period from 2014 up to 2017 of dividends paid by deposit taking SACOs to members. Amount of dividends paid to members decreased from KES 3,578,745 in 2013 to KES 2,802,362 in 2014, then rising to sum of KES 616,564 ('000') in 2017. The decline was partly attributed to low loan uptake by members following the general election of 2013 which affected interest income culminating to decline in DT-SACCOs' financial performance. Due to political factors, majority of deposit taking SACCOs experienced reduced income from investments in non-core activities. Finally, Table 4.17 also revealed 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.

4.7 Pre Estimation Tests

The study sought to understand the distribution of the data for the variables that were used to generate inferences. The study used total cash and marketable securities as the proxy measure for monetary policy, CPI as the proxy measure for inflation rates, non-performing loans as the proxy measure for credit risk, loan to deposits ratio as the proxy measure for liquidity risk, total assets as the proxy measure for size of the DT SACCOs and the ROA as the proxy measure for the financial performance of DT SACCOs. The study tested for normality, linearity and unit roots in panels.

4.7.1 Normality Tests Using Skewness and Kurtosis

Skewness measures the degree and direction of a symmetry. A symmetric distribution such as a normal distribution has a skewness of 0. Data with skewness between +1 and -1 is considered to be normally distributed according to Gauss

Markov theorem of distribution (Gujarati, 2003). Kurtosis was used to measure the heaviness of the tails of a distribution. For data to be normally distributed, it must have a kurtosis of between -3 and +3. Kurtosis of 3 indicates a bell-shaped distribution (Mesokurtic), kurtosis less than 3 indicates a platykurtic distribution (flatter than a normal distribution with shorter tails) and a kurtosis of greater 3 indicates a leptokurtic distribution (more peaked than a normal distribution with longer tails). Table 4.16 shows the skewness and kurtosis results.

Table 4.16: Skewness and Kurtosis

Variable	Skewness	Kurtosis	Excess Kurtosis	Min	Max
Monetary Policy (Total cash and marketable securities)	-.6564325	2.812937	-0.19	KES 7.942 million	KES 487 million
Inflation (CPI)	0.1734398	1.801458	-1.2	140.1059	183.2307
Liquidity Risk (Loan to deposit ratio)	0.253898	2.050326	-0.95	0.08	5.24
Credit risk (Non-performing loans)	-.653564	1.767901	-1.23	KES 1.04M	KES 7.4M
Size (Total Assets)	-.957683	2.302778	-0.7	KES 28M	KES 1.58 Billion
Financial performance (ROA)	.0528969	2.148312	-0.85	1.07	21.42

According to Table 4.16, monetary policy was negatively skewed but normally distributed as indicated by the skewness of -.6564325. The kurtosis of the monetary policy (total cash and marketable securities) was 2.81 and the excess kurtosis was -0.19. This implied that the distribution of monetary policy data was platykurtic. The minimum value of total cash and marketable securities was KES 7.942 million and the maximum value was KES 487 million over the period of study. Additionally, the results revealed that the inflation (CPI) was positively skewed but normally distributed as indicated by the skewness of 0.17. The kurtosis of the inflation was 1.80 and the excess kurtosis was -1.2. This implied that the distribution of CPI data was platykurtic. The minimum value of CPI was 140.1059 and the maximum value was 183.23 over the period of study. Further, the results revealed that the credit risk (Non-performing loans) was negatively skewed but normally distributed as indicated by the skewness of -0.653564. The kurtosis of the credit risk was 1.77 and the excess kurtosis was -1.23. This implied that the distribution of NPL data was platykurtic.

The minimum value of NPL was KES 1.04 million and the maximum value was KES 7.4 million over the period of study. Additionally, the results showed that the liquidity risk (Loans to deposits ratio) was positively skewed but normally distributed as indicated by the skewness of 0.25. The kurtosis of the liquidity risk was 2.05 and the excess kurtosis was -0.95. This implied that the distribution of Loans to deposits ratio data was platykurtic. The minimum value of loans to deposit ratio was 0.08 and the maximum value was 5.24 over the period of study.

Moreover, the findings also revealed that the size of DT SACCOs (total assets) was negatively skewed but normally distributed as indicated by the skewness of -0.957. The kurtosis of the total assets was 2.30 and the excess kurtosis was -0.7. This implied that the distribution of total assets data was platykurtic. The minimum value of total assets was KES 28 million and the maximum value was KES 1.58 billion over the period of study. Finally, the findings indicated that the financial performance (ROA) of the DT Sacco was positively but normally distributed as indicated by skewness of 0.53. The kurtosis of the total assets was 2.14 and the excess kurtosis was -0.85. This implied that the distribution of ROA data was platykurtic. The minimum value of ROA was 1.07 and the maximum value was 21.42 billion over the period of study.

4.7.2 Normality Test Using Histogram.

The distribution of the data was further examined using histograms. According to Gujarati (2003), the residuals or the error terms of the data should be normally distributed before correlation and regression analysis.

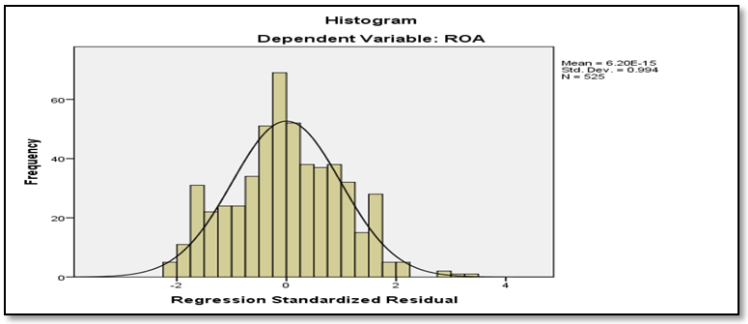


Figure 4.1: Histogram

According to Figure 4.1, the histogram reveals that residuals were normally distributed. According to Lind and Marshall (2013), a bell-shaped curve shows that the data is symmetrical and normally distributed. Hence, the study qualified the data to be normally distributed and fit for further analysis such as regression analysis.

4.7.3 Test for Linearity

Test for linearity was conducted using scatter plots. Figure 4.2 shows the summary of the results.

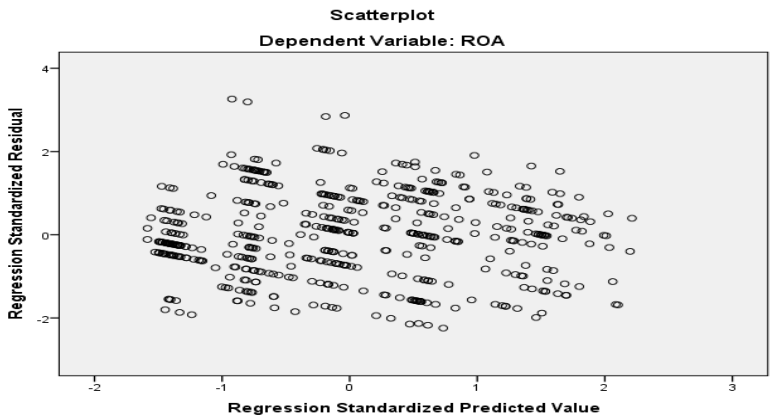


Figure 4.2: Scatter graph

As shown in Figure 4.2, the residual plots were scattered with no clear pattern, hence the assumption of linearity was confirmed. This concurred with Lind *et al.*, (2012) on linearity which postulated that linearity assumption is established if and only if the residual plots are scattered without a clear pattern.

4.7.4 Stationarity Tests

Prior to conducting panel data regression, the study conducted unit root test which is also known as stationarity test. Stationarity test was conducted using Fisher's method. In the context of panel data, the test performs a unit-root test on each panel's series separately, and then combines the p-values to obtain an overall test of whether the panel series contains a unit root. The null hypothesis tested by fisher was that all panels contain a unit root. Table 4.17 shows the unit root tests for Returns on Assets.

Table 4.17: Return on Assets Stationarity Tests.

		Statistic	**P- Value**
Inverse Chi-squared (148)	P	633.21	0.000
Inverse normal	Z	-5.9418	0.000
Inverse logit t(349)	L*	-14.5333	0.000
Modified inv. Chi-squared	Pm	28.2025	0.000

From Table 4.17, the p-value of the inverse chi-squared, inverse normal, inverse logit and modified inverse chi-squared is 0.000 which was less than 0.05. Therefore, the study rejected the null hypotheses that all the financial performance panels contained unit roots hence the panels were stationary. Table 4.18 shows the stationarity tests of monetary policy data

Table 4.18: Monetary Policy Stationarity Tests

		Statistic	**P-Value**
Inverse Chi-squared (148)	P	749.33	0.000
Inverse normal	Z	-10.1813	0.000
Inverse logit t(339)	L*	-20.5437	0.000
Modified inv. Chi-squared	Pm	34.9516	0.000

From the Table 4.18, the p-value of the inverse chi-squared, inverse normal, inverse logit and modified inverse chi-squared is 0.000 which was less than 0.05. Therefore, the study rejected the null hypotheses that all the monetary policy panels contained unit roots hence the panels were stationary. Table 4.19 shows the stationarity tests of non-performing loans data.

Table 4.19: Credit Risk Stationarity Tests

		Statistic	**P-Value**
Inverse Chi-squared (148)	P	875.2072	0.000
Inverse normal	Z	-9.0265	0.000
Inverse logit t (364)	L*	-22.4104	0.000
Modified inv. Chi-squared	Pm	42.2681	0.000

From the Table 4.19, the p-value of the inverse chi-squared, inverse normal, inverse logit and modified inverse chi-squared is 0.000 which was less than 0.05. Therefore, the study rejected the null hypotheses that all the credit risk panels contained unit roots hence the panels were stationary. Table 4.20 shows the stationarity tests of liquidity risk data.

Table 4.20: Liquidity Risk Stationarity tests

		Statistic	**P-Value**
Inverse Chi-squared (148)	P	838.4656	0.000
Inverse normal	Z	-4.4334	0.000
Inverse logit t (324)	L*	-19.7705	0.000
Modified inv. Chi-squared	Pm	40.1325	0.000

From the Table 4.20, the p-value of the inverse chi-squared, inverse normal, inverse logit and modified inverse chi-squared is 0.000 which was less than 0.05. Therefore, the study rejected the null hypotheses that the entire liquidity risk panels contained unit roots hence the panels were stationary. Table 4.21 shows the stationarity tests results of total assets ratio data.

Table 4.21: Total Assets Stationarity Test

		Statistic	**P-Value**
Inverse Chi-squared (148)	P	562.6176	0.000
Inverse normal	Z	-4.4282	0.000

Inverse logit t(359)	L*	-12.3622	0.000
Modified inv. Chi-squared	Pm	24.0992	0.000

From the Table 4.21, the p-value of the inverse chi-squared, inverse normal, inverse logit and modified inverse chi-squared is 0.000 which was less than 0.05. Therefore, the study rejected the null hypotheses that all the total assets panels contained unit roots hence the panels were stationary.

4.8 Inferential Analysis

Inferential statistics analysis was performed using correlation and regression analyses to determine the relationship between the independent and the dependent variables. All data was analyzed at 5% level of significance. Prior to inferential analysis, Pre-estimation tests were conducted to establish the distribution of the data and whether it meets the Gauss Markov distribution theorem. Inferential statistical tools used were Pearson Product Moment Correlation and panel regression analysis.

4.8.1 Correlation Analysis

The correlation analysis explained the relationship between monetary policy, inflation, credit risk, liquidity risk and the financial performance of DT-SACCOs respectively It also showed the influence of DT-SACCO size as a moderating variable on the relationship between independent and dependent variables. Pearson product moment correlation was performed to establish the relationship between the variables. Correlation analysis gives the Pearson's coefficient value (correlation test) and the significance value (measuring significance of the association). In this study, the Pearson r statistic was used to calculate bivariate correlations.

4.8.1.1 Correlation between Monetary Policy and Financial Performance of SACCOs

The study conducted a correlation analysis between monetary policy and financial performance of DT SACCOs as shown in Table 4.22.

Table 4.22: Correlation between Monetary Policy and Financial Performance of SACCOs

		Monetary Policy
Financial Performance of DT SACCOs	Pearson Correlation	0.156**
	Sig. (2-tailed)	0.001
Valid N		**74**

***Correlation is significant at the 0.05 level (2-tailed)*

As shown in Table 4.22 at 95% confidence level, a correlation value between monetary policy and financial performance of SACCOs was 0.156. This correlation coefficient value was between 0.1 and 0.3 indicating a weak positive correlation between monetary policy and financial performance. The results further showed that monetary policy had p-value of 0.001 with ROA at 95% level of confidence. The relationship was tested at 95% level with a 2-tailed test where the probability value was found to be less than 0.05 indicating that monetary policy relationship with ROA was significant. The study findings were consistent with those of Zaman, Arslan, Sohail and Malik (2015) who found out that monetary policy had significant inverse relationship on firm financial performance that was measured by ROA and ROE. This was plausible in the sense that if monetary policy affects the banks negatively, deposit taking SACCOs will benefit from the customers who will shift from the commercial banks.

4.8.1.2 Correlation between Inflation and Financial Performance of SACCOs

The study conducted a correlation analysis between inflation and financial performance of SACCOs as shown in Table 4.23.

Table 4.23: Correlation between Inflation and Financial Performance of SACCOs

		Inflation
Financial Performance of DT SACCOs	Pearson Correlation	-0.482**

	Sig. (2-tailed)	0.01
Valid N		**74**

***Correlation is significant at the 0.05 level (2-tailed)*

From Table 4.23 above, inflation had a correlation value of -0.482 with ROA at 95% confidence levels. This correlation coefficient value lies between -0.3 and -0.5 indicating that there was a weak negative linear association between inflation and financial performance. The results further showed that inflation had a p-value of 0.01 with ROA at 95% confidence level. The relationship was tested at 95% level with a 2-tailed test where the probability value was found to be less than 0.05 indicating that inflation relationship with financial performance was significant. The results were consistent with Tsaurai (2017) who found that high inflation rate is inimical to financial sector performance since inflation led to reduced credit uptake, reduced bank profitability and led to increase in non-performing loans.

It was argued that irrespective of the economy, the government should employ necessary measures to control inflation as a way of improving the performance of the financial sector. Other study findings included the structure of revenue of the banks starting to shift away from interest income, significant decline in profitability and rationing out micro, small and medium enterprises from the credit market. However, the effect of inflation on commercial banks could have given the deposit taking SACCOs competitive edge because as banks made it difficult for SMEs to access loans, the SACCOs were presented with the opportunity to increase their loan portfolio as their loans demand soared. These results contrasted with those of Okwany (2017) who found out that inflation led to reduced credit uptake, reduced bank profitability and led to increase in non-performing loans due to decline in new approved loans.

4.8.1.3 Correlation between Credit Risk and Financial Performance of SACCOs

The study conducted a correlation analysis between credit risk and financial performance of SACCOs as shown in Table 4.24.

Table 4.24: Correlation between Credit Risk and Financial Performance of SACCOs

		Credit Risk
Financial Performance of DT SACCOs	Pearson Correlation	-0.291**
	Sig. (2-tailed)	0.002
Valid N		**74**

***Correlation is significant at the 0.05 level (2-tailed)*

From Table 4.24, credit risk had a coefficient of correlation value of -0.291 with ROA at 95% confidence levels. This correlation coefficient value was between -0.1 and -0.3 indicating a very weak negative linear association between credit risk and financial performance. The results further showed that credit risk had p-value equal 0.002 with financial performance at 95% confidence level. The relationship was tested at 95% confidence level with a 2-tailed test where the probability value was found to be less than 0.05 indicating that there was a significant relationship between credit risk and financial performance of DT-SACCOs. The findings were consistent with those of Justus *et al*., (2016) who assessed the influence of credit risk management practices on loan delinquency in SACCOs in Meru County, Kenya. Their study revealed that there existed a strong relationship between credit risk controls, collection policy and loan delinquency in SACCOs. The study concluded that credit risk management practices significantly influenced loan delinquency of SACCOs in Meru County. It was found that SACCOs have heavily relied on credit risk techniques which are not adequate to mitigate against loan losses in a dynamic and competitive lending environment. It was also established that credit risk monitoring and control mechanisms were lacking in majority of SACCOs which resulted in late detection and determination of non-performing and defaulted loans.

4.8.1.4 Correlation between Liquidity Risk and Financial Performance of SACCOs

The study conducted a correlation analysis between liquidity risk and financial performance of SACCOs as shown in Table 4.25.

Table 4.25: Correlation between Liquidity Risk and Financial Performance of SACCOs

		Liquidity Risk
Financial Performance of DT SACCOs	Pearson Correlation	-0.226**
	Sig. (2-tailed)	0.001
Valid N		**74**

***Correlation is significant at the 0.05 level (2-tailed)*

From Table 4.25, liquidity risk had coefficient of correlation value of -0.226 with ROA at 95% confidence level. This correlation coefficient value lies between -0.1 and -0.3 indicating a very weak negative linear association between liquidity risk and ROA. The results further showed that liquidity risk also had p value equal 0.001 with ROA at 95% confidence level. The relationship was tested at 95% confidence level with a 2-tailed test where the probability value was found to be less than 0.05 indicating that there was a significant relationship between liquidity risk and ROA. The results were in tandem with those of Makaa and Ondigo (2013) who found that profitability of the commercial banks in Kenya was negatively affected by increase in liquidity gap and leverage. It was observed that with significant liquidity gap, banks may have to borrow from the repo market even at a higher rate thereby pushing up the cost of funds.

4.8.1.5 Correlation between Firm Size and Financial Performance of SACCOs.

The study conducted a correlation analysis between DT-Sacco Size and financial performance of SACCOs as shown in Table 4.26.

Table 4.26: 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**

***Correlation is significant at the 0.05 level (2-tailed)*

From Table 4.26, 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 a positive linear association between firm size and financial performance. The results further showed that at 95% confidence level, firm size had p 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 the relationship between firm size and financial performance was significant. The firm size influenced performance particularly because the firm had the capacity to conduct financial leverage hence increasing its assets and in turn raising the returns on assets.

4.8.2 Regression Analysis

Since the study had a moderating variable, moderated multiple regression (MMR) analysis was used to test the moderating effect of SACCO size on the relationship between interest rate drivers and the financial performance of DT-SACCOs in Kenya. The regression models of the study were as follows:

OLS Equation $Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon$ **…… (4.1)**

MMR Equation $Y = \beta_0 + [\beta_1 X1_{it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it}] Z + \varepsilon$ **……. (4.2)**

Where **Y** represents the financial performance of the deposit taking SACCOs, while β_1, β_2, β_3, and β_4, represents beta coefficients of independent variables: the monetary policy, inflation, credit risk and liquidity risk respectively, while β_0 is Y-intercept or constant term. X_1, X_2, X_3, and X_4–represent the independent variables: monetary policy, inflation, credit risk and liquidity risk respectively, ε is the error term which accounts for all other factors outside the regression equation which may affect the dependent variable. **Z** represents the moderator (firm size).

4.8.2.1 Fixed Effects Model

The study conducted both fixed and random effects model. The independent variables in the model were monetary policy, inflation, credit risk and liquidity risk whose proxies were the amount invested in government securities, consumer price index, non-performing loans and loans to deposits ratio respectively. The dependent variable in the model was financial performance of DT SACCOs whose proxy was return on assets. The large figures for some of the variables were expressed in form of natural logs for the purpose and convenience of analysis. The fixed effects model assumes that there is one true effect of size which underlies all the studies in the analysis and that all differences in observed effects are due to sampling error. Table 4.27 shows the fixed effects model prior to moderation.

Table 4.27: Fixed Effects Model

Number of Observation					370	
Number of Panels					74	
R-sq –	**within**				0.2231	
	Between				0.227	
	Overall				0.1534	
	F (4,291)				20.89	
	Prob>F				0.000	
Financial Performance	**Coef.**	**Std.err**	**T**	**p>|t|**	**[95% Conf. Interval]**	
Monetary Policy	1.096113	.8982103	1.22	0.226	-.6936103	2.885836
Inflation	0.09254	. 022227	4.16	0.000	-.0482491	.1368258
Credit Risk	-1.490323	.4733325	-3.15	0.006	-2.433458	.5471872
Liquidity Risk	-0.138886	.034616	-3.9428	0.002	-.0274146	.3051869
Cons.	-0.811939	4.959465	-0.16	0.870	-10.69389	9.070011

Dependent variable is ROA*

The fixed effects model in Table 4.27 shows that the model was significant in the study. The F-statistic was 20.89 and its respective p-value was 0.000 which was less than 0.05 hence the independent variables are significant predictors of dependent variable. The monetary policy and inflation had positive influence on financial performance while the credit risk and liquidity risk had a negative effect on financial performance.

4.8.2.2 Random Effects Model without Moderation

The study also conducted the random effects and the results are as shown in Table 4.28.

Table 4.28: Random Effects Model

Number of Observation					370	
Number of Panels					74	
R-sq –	**within**				0.2160	
	Between				0.0641	
	Overall				0.1657	
	chi2(4)				80.41	
	Prob > chi2				0.000	
Financial Performance	**Coef.**	**Std.err**	**T**	**p>|t|**	**[95% Conf.**	**Interval]**
Monetary Policy	.022641	0.6329511	0.04	0.971	-1.21792	1.263203
Inflation	0.10282	0.0174842	5.88	0.000	.0685492	0.13708
Credit Risk	-1.088118	0.4210533	-2.58	0.010	-1.91336	-0.26286
Liquidity Risk	-0.122097	0.084914	1.44	0.150	-.0443317	0.288525
Cons.	-0.58258	3.943493	0.15	0.883	-7.14652	8.311682

Dependent variable is ROA*

The random effects model in Table 4.28 shows that the model was significant. The Chi-square statistic was 80.41 and its respective p-value was 0.000 which was less than 0.05 hence the independent variables were significant predictors of dependent variable. The monetary policy and inflation had positive influence on ROA while the credit risk and liquidity risk had a negative effect.

4.8.3 Hausman Test

Hausman test was carried out for the specified panel regression model to establish which panel effects (between fixed and random) provided better estimation results for the study, the test was premised on the null hypothesis that random effect model was the preferred model.

Table 4.29 shows the results of Hausman test.

Table 4.29: Hausman Test Output

Financial Performance	Fixed (b)	Random (B)	b-B	sqrt(diag(V_b-V_B))
Monetary Policy	1.096113	.022641	1.073472	0.3612623
Inflation	0.09254	0.10282	0.0167894	0.0071566
Credit Risk	-1.490323	-1.088118	-0.402205	0.3386775
Liquidity Risk	-0.138886	-0. 122097	-0.016789	0.0535306
chi2(4)	12.60		**Prob>chi2**	0.0134

The Hausman test results provided a chi-square value of 12.60 and a corresponding p-value of 0.0134. The result indicated that the chi-square statistic was significant at 5% level. The study effectively rejected the null hypothesis that random effects model was an appropriate estimate for the panel regression model.

4.9 Post Estimation Tests

Post estimation tests were conducted to establish whether the fixed effects model violated the assumptions of regression which could have rendered the results spurious. The study therefore tested for presence of heteroscedasticity and autocorrelation.

4.9.1 Test for Heteroscedasticity

Heteroscedasticity occurs when the variance of the error terms is not the same across all the observations (Kousmanen, 2014). Heteroscedasticity is a symptom of model misspecification or unrealistic model of disturbances. The presence of heteroscedasticity causes biased and inconsistent estimation which leads to over or underestimation of standard errors. The presence of heteroscedasticity in panel data was ascertained using modified Wald test in fixed effects regression model. Table 4.30 below shows the summary of the results.

Table 4.30: Wald Test for Heteroscedasticity.

chi2 (75)	34030.75
Prob>chi2	0.00001

The null hypothesis of modified Wald test is homoscedasticity (or constant variance). From the Table 4.30, the Chi-square was 34030.75 and its respective probability value was 0.00001 which was less than the critical value of 0.05. Therefore, the study rejected the null hypotheses and concluded that there was heteroscedasticity. This implied that the standard errors in the fixed effects model were not accurately computed hence the size of T-statistics was either inflated or deflated rendering the model spurious. To address this problem, fixed effects model with robust-standard errors was conducted.

4.9.2 Serial Correlation Test

Autocorrelation (also called serial correlation) occurs when the error term observations in a regression are correlated. Serial correlation reduces the standard errors of the coefficients and raises the value of R-squared. To detect autocorrelation in panel data, Woodridge test was used. The Woodridge null hypothesis stated that there was no first order autocorrelation. Table 4.31 shows the summary of results.

Table 4.31: Woodridge Test of Autocorrelation

F(1, 73)	0.054
Prob > F	0.8171

From Table 4.31, the F-statistic was 0.054 and its respective probability value was 0.8171 which was more than the critical value of 0.05. The study therefore, failed to reject the null hypothesis and therefore concluded that the data did not suffer from first-order autocorrelation.

4.9.3 Regression Model Prior to Moderation

The fixed effects model was conducted prior to moderation. However, since the fixed effects model suffered from the heteroscedasticity problem, the study used a robust model to obtain heteroscedasticity-robust standard errors. Table 4.32 showed the fixed model regression with robust standard errors prior to moderation.

Table 4.32: 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	
ROA	**Coef.**	**Robust. Std.err**	**T**	**p>|t|**	**[95% Conf. Interval]**	
LogMP	1.096113	0.89821	1.22	0.226	-0.693610	2.885836
CPI	0.09254	0.22227	4.16	0.000	0.0482491	0.136826
LogNPL	-1.490323	0473333	-3.15	0.002	-2.433346	-0.547187
LqR	-0.138886	0.034616	-3.942	0.001	-0.027415	0.305187
Cons.	-0.81193	4.959465	-0.16	0.870	-10.69389	9.070011

Dependent variable is ROA*

From the regression results presented in Table 4.32, the F-statistic was 17.24 and its respective p-value was 0.000 which is less than 0.05 hence the independent variables were significant predictors of dependent variable. The results indicated that the overall regression model was statistically significant at 5% significance level and could therefore be used for prediction purposes. This further indicated that the independent variables were statistically significant in predicting financial performance of deposit taking SACCOs.

The R-square is 0.1534 which implied that the independent variables explained 15.34 percent changes in dependent variable (ROA). The four independent variables in the study explained only 15.34 % variation of financial performance of DTS in Kenya. This implied that other factors not considered in this research contributed 84.66% variation in 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.

Regression Equation $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$**…….…… (4.1 b)**
Becomes:

$Y = -0.811 + 1.096\ \mathbf{X}_1 + 0.093\ \mathbf{X}_2 - 1.49\ \mathbf{X}_3 - 0.139\ \mathbf{X}_4$ …….**…… (4.3a)**

The optimal regression model of the study based on the significance was:

$Y = 0.093\ \mathbf{X}_2 - 1.49\ \mathbf{X}_3 - 0.139\ \mathbf{X}_4$ ……**.....**…… **(4.3b)**

At 95% level of significance, only the p- values of inflation, credit risk and liquidity risk were less than the 0.05. Hence their coefficients had significant influence on 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.

4.9.4 Regression after Moderation

A moderationing variable is a variable, which is thought to moderate 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 variables is dependent on the value of a moderator (Saunders, Lewis & Thornhill, 2009). In this study, size of the DT SACCO was hypothesized to be a moderator affecting the relationship between dependent and the independent variables.

The null hypothesis **(**H_{05}) was that DT-SACCO size does not significantly affect the relationship between interest rate drivers and financial performance of deposits taking SACCOs in Kenya. In order to achieve this objective, the researcher first tested whether the paths between the independent variables and the dependent variable, between the independent variables and the moderator and between the moderator and the dependent variable, were statistically significant. By specifying a

model with return on assets as the dependent variable, the study tested whether monetary policy, inflation, credit risk and liquidity risk had statistically significant relationship with the size of the deposit taking SACCO. The regression results are presented in Table 4.33.

Table 4.33: 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.**	**Robust. Std.err**	**T**	**p>|t|**	**[95% Conf. Interval]**	
LogMP*z	0.1322212	0.108001	1.22	0.332	0.344783	0.4020763
CPI*z	0.0129108	0.003421	3.77	0.000	0.006094	0.0197275
LogNPL*z	-0.260209	.0697272	-3.73	0.000	-0.39914	-0.121275
LqR*z	-.025263	0.009269	2.80	0.003	-.001175	0.0517014
Cons.	3.071639	3.646324	0.84	0.402	-4.19381	10.3371

Dependent variable is ROA*

The model was presented algebraically as:

MMR Equation $Y = \beta_0 + [\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4] Z + \varepsilon$……Equation 4.2(b)

Following moderated regression analysis equation 4.2(b) becomes:

$Y = 3.07 + 0.1322 X_1 + 0.0129 X_2 – 0.260 X_3 – 0.025 X_4$ ……Equation 4.2(c)

The results from the summary of regression output in Table 4.33, showed the moderating effect of DT SACCO size. Monetary policy had a positive but insignificant (β_1= 0.1322, p= 0.332) relationship with financial performance of the DT- SACCOs after moderation. Inflation had a positive and significant (β_2=0.0129, p= 0.000) relationship with financial performance of DT-SACCOs after moderation as indicated by the regression output. Both credit risk (β_3= -0.26, p= 0.000) and liquidity risks (β_4= -0.0252, p= 0.003) had a negative and significant relationship with financial performance after moderation.

Table 4.34 shows the comparison of regression coefficients before and after moderation.

Table 4.34: Regression Coefficients before and after Moderation

Predictors before moderation	**B**
(Constant)	-0.811
Monetary policy	1.096
Inflation	0.093
Credit risk	-1.490
Liquidity risk	-0.139
Predictors after Moderation	**B**
(Constant)	3.071639
MPZ	0.132
CPIZ	0.013
CRZ	-0.26
LRZ	-0.025

The Table 4.34 shows the changes before and after moderation. Before moderation the regression coefficients for monetary policy, inflation, credit risk and liquidity risk were 1.096, 0.093, -1.49 and -0.139 while after moderation the regression coefficients were 0.1322, 0.013, -0.26 and -0.025 respectively. Table 4.35 below showed the model summary after and before moderation.

Table 4.35: Model Summary before and after Moderation

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

As observed in Table 4.35, 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 4.36 showed the summary of results.

Table 4.36: Independent t-tests

B	N	Mean	Df	T	Sig. 2-tailed	Mean difference	Std. error Difference
Before	4	-0.105	8	-0.783	0.045	-0.61783	0.789191
After	4	0.5134					

As shown in Table 4.36 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 rate drivers and financial performance of DT SACCOs in Kenya was rejected. The study established that 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 rate drivers on financial performance of DT-SACCOs.

4.9.5 Discussion of Regression Results

The study determined the effect of interest rate drivers on financial performance of deposit taking SACCOs in Kenya. The drivers of interest rate that were investigated were monetary policy, inflation, credit risk and liquidity risk. The government of Kenya adopted free market economy in the early 1990's where the pricing of goods and services was determined by the forces of demand and supply (Byrne & Ockwell, 2018). During this period, the financial sector was monopolized with a few banks which determined the cost of credit. According to Fin access survey, the commercial banks' lending rate of 23.4% in 2015 was considered high for the economy. The high interest rates charged by commercial banks and their volatility had affected DT-SACCOs particularly those that either maintained huge credit lines with commercial

banks or those which borrowed from commercial banks to lend to their members. This is because unlike in the banking sector where interest rates levied to customer loans are determined by individualized contractual agreements which allows easy variations, the cooperative sector lending is normally premised on standardized and uniform policies or By-laws applicable to all the members, thereby making it very difficult for DT-SACCOs to vary their lending rates with changes in market interest rates. The rising value of the loan size vis-a vis reduced number of loan accounts reflected lower access to smaller borrowers and larger loans to more established firms. Investment in government securities also increased during the tenure of the interest rate capping law. Consequently, in order for the commercial banks to compensate for reduced revenue from interest income as a result of interest rate caps, they increased their share of incomes from fees and commissions.

The share of non-interest income in commercial banks increased gradually from the 12.4% in September 2016 to 15.2% in June 2017. The rise in non-interest income in the banking sector discouraged potential bank customers who thought that interest caps had substantially reduced cost of bank credit. The DT-SACCOs therefore not only remained attractive to their members but were also able offer financial services to non-members who viewed SACCO products to be comparatively less costly than those offered by commercial banks. In that regard, the increasing performance of DT-SACCOs could be attributed to the fact that small scale borrowers reverted to deposit taking SACCOs for credit facilities hence increasing their loan portfolio. Interest rate is highly affected by the monetary policy and hence monetary policy have major impact on financial performance of the financial sector.

According to Adongo, Zeph & Muyima (2020), monetary policy involves actions taken by the monetary policy committee of the Central Bank of Kenya to influence the cost of money and credit availability. Monetary policy has a significant contribution to sustainable economic development by enhancing the financial performance of DT-SACCOs. The DT- SACCOs attract members and invest their deposits in income generating ventures. Expansionary policy increases supply of money in the economy. The expansionary policy makes individuals and DT-SACCOs to borrow from banks at low interest rates and invest the money in projects

that generate positive net present value. Conversely, restrictive monetary policy limits availability of credit and hence makes cost of funds to be expensive. As cost of loans increases and aggregate spending declines, so does the volume of investments. During restrictive monetary policy, deposits become attractive as they offer better market returns on savings. If interest rate is low, DT-SACCOs that borrow from commercial banks do so at low interest rate which consequently affects their income, share valuation, cash flows and financial performance. At high interest rate, external borrowing by DT-SACCOs become expensive which reduces interest rate spread and hence their financial performance. The effect of the pronouncements of the monetary policy committee on flow of money in the economy has an influence on the cost of credit which significantly affects the financial performance of financial intermediaries like DT-SACCOs.

Normally, monetary policy regulates the performance of commercial banks by implementing stringent measures which lowers the financial performance of banks. The restrictive effects of the monetary policies often make banks to shun small and medium customers who in turn revert to SACCOs. However, the results of the regression analysis indicated that monetary policy had no significant effect on the financial performance of SACCOs. This was consisted with a study by Mulwa (2015) who observed that the monetary policy is the principal economic management tool that the government uses to shape economic performance. The study established that monetary policy tools employed by the central bank of Kenya do not have a significant effect on the financial performance of commercial banks in Kenya.

The second objective of the study was to assess the effect of inflation on financial performance of savings and credit cooperative societies in Kenya. It was found that inflation had a negative influence on financial performance of deposit taking SACCOs and that the regression results of inflation on financial performance were significant. This was true owing to the fact that inflation increases the amount of money required for a basket of goods. Inflation reduces the individual's propensity to save. This observation was consistent with Tsaurai (2017) in Nigeria who investigated the impact of inflation on financial sector performance in the Sub-Saharan African region where it was established that both anticipated and

unanticipated inflation had a negative effect on the financial sector performance, especially on the activities of the banking sector. The study concluded that irrespective of the economy involved, high inflation rate was inimical to financial sector performance and therefore the government should employ necessary measures to control inflation as a way of improving the performance of the financial sector. This study therefore acknowledged the significant effect that inflation has on the performance of DTS and the role MPC in its management. The study in the third objective evaluated the effect of credit risk on financial performance of deposit taking savings and credit cooperative societies in Kenya.

Credit risk in deposit taking SACCOs is the probability of loss due to a member's failure to make loan repayment. Although it's difficult to know exactly who will default on obligations, properly assessing and managing credit risk can lessen the severity of loss. If there is a higher level of perceived credit risk shareholders and lenders usually demand a higher rate of interest for their capital. Guarantors play a critical role in cushioning a DT-SACCO from possible credit risk in lieu of loan default by a member. DT-SACCOs credit management department mitigates loses by continuously assessing the adequacy of the SACCO's capital and loan loss reserves. DT-SACCOs must ensure prudent management of credit risk by routinely assessing the credit risk profile of their members and appropriately apportioning a risk premium on each loan taken by a member.

Better credit risk management in DT-SACCOs not only ensures enhanced competitive advantage but also presents an opportunity of improving the overall financial performance. Without a thorough risk assessment, DT-SACCOs have no way of knowing if deposits accurately reflect risks or if loan loss reserves adequately cover potential short-term credit losses. Weak performing DT-SACCOs are usually high targets for close scrutiny by regulators and members as well as debilitating losses. The deposit taking SACCOs cannot avoid credit risk in their normal operations because their core business activities revolve around issuance of credit to members. It therefore follows that credit risk has a significant influence on financial performance of deposit taking SACCOs. The study established that credit risk has a negative and significant effect on the financial performance of DT-SACCOs. This

was attributed to the notion that with increase in loan demand, loan portfolio increases which also increases the number of loan defaulters and non-performing loans which eventually negatively affects the performance of the deposit taking SACCOs. The results of the study was consistent with Kargi (2011) who evaluated the impact of credit risk on profitability of banks in Nigeria and found that credit risk management had a significant impact on profitability of Banks in Nigeria. The study of Awoke (2014) on the impact of credit risk on financial performance of commercial banks in Ethiopia also established that provision for total loans, loan to total assets, and cost to total loans had significant effect on performance of banks.

The fourth objective of the study was to establish the effect of liquidity risk on financial performance of deposit taking savings and credit cooperative societies in Kenya. Liquidity risk in deposit taking SACCOs is the risk that arises from inability of the SACCO to timely meet its obligations as they fall due without incurring losses. Liquidity in deposit taking SACCOs may arise from inability of members to service their loans. Liquidity risk has an adverse effect on both earnings and capital adequacy of the deposit taking SACCOs. Deposit taking SACCO supervisory committees have on some occasions experienced financial difficulties caused by non-performing loans. The deposit taking SACCOs members in their annual general meetings must elect management that ensure compliance with SASRA's ''fit and proper test'' and capital adequacy to meet demands of lenders and borrowers.

Deposit taking SACCOs that regularly prepare accurate cash flow projection statements are able to predict future demands of both members and lenders. Deposit taking SACCOs facing liquidity problems frequently fail to meet loan application demands of the members. The inability to service members loan demands can lead to mass withdrawal of members from the deposit taking SACCO with a consequent effect of decline in profitability or in as worst-case scenario the total collapse of the deposit taking SACCO. The influence of liquidity risk on financial performance in this study was statistically significant. The deposit taking SACCO's management should therefore strike a balance between holding adequate deposits to meet members' loan obligations and investing of liquid cash in long term projects. The results of this study were consistent with Konadu (2009) who found that there was no

positive relationship between liquidity trend and profitability and concluded that there was negative relationship between liquidity and profitability in Ghana banking sector. In the banking industry, the size of a financial institution is used to capture economies and dis-economies of scale. The size of a deposit taking SACCOs was computed as the logarithm of total assets. The square of size was included in the model so as to account for potential nonlinearities due to dis-economies of scale as the deposit taking SACCOs becomes extremely large.

Using panel data analysis, Pervan *et al*., (2015) studied profit persistence and factors determining bank profitability in Croatia within the period 2002 to 2010 and established that there was a positive and significant association between bank size and profitability. Total assets were log transformed to capture financial institution size and applied the Arellano and Bond, (1991) GMM estimation technique. Their results postulated that financial institution should make use of their size to exploit cost advantages whose realization together with improved management would contribute to further increase in efficiency which would result to higher profitability. This study used deposit taking SACCO's size as the moderating variable. The study established that after moderation, the effects of monetary policy, inflation, credit risk and liquidity risk on financial performance of deposit taking SACCOs was reduced.

The study established that size of the deposit taking SACCOs was a significant moderator of interest rate drivers influence on financial performance hence, the SACCOs management should leverage size in order to generate higher profit margins and returns on assets. The findings were consistent with those of Kinyua (2013) who undertook a study to establish whether the size of the SACCOs as measured by total assets, deposits and turnover affects the financial performance as measured by the return on asset ratio. The study concluded that a strong relationship existed between financial performance and size of SACCOS in Kenya. Additionally, 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 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 deposit taking SACCOs in Kenya. Additionally, the study

revealed that the size of the deposit taking SACCOs shad a significant moderating effect on the relationship between financial structure and performance of deposit taking SACCOs.

4.10 Hypotheses Testing

Hypothesis testing is a statistical procedure for investigating ideas (Liu & Thompson 2009). A hypothesis test provides a rule for deciding which of two complementary hypotheses is true, based on some data. The purpose of statistical inference is to draw conclusions about a population on the basis of data obtained from a sample of that population. According to Rose *et al.,* (2017), Hypothesis testing is the process used to evaluate the strength of evidence from the sample and provides a framework for making determinations related to the population. Thus it provides a method for understanding how reliably one can extrapolate observed findings in a sample under study to the larger population from which the sample was drawn. This study used a null hypothesis to predict the relationship between the two test variables.

H_{O1}: There is no significant relationship between monetary policy and financial performance of deposit-taking savings and credit cooperative societies in Kenya.

The findings from regression output established that there was no significant relationship between monetary policy and performances of deposit taking SACCOs. The calculated p-value of 0.226 was greater than the critical value of 0.05 hence the failure to reject the null hypothesis which stated that there was no significant relationship between monetary policy and financial performance of deposit-taking savings and credit cooperative societies in Kenya. The study concluded that monetary policy had no significant effect on financial performance of deposit-taking savings and credit cooperative societies in Kenya.

H_{O2}: There is no significant relationship between inflation and financial performance of savings and credit cooperative societies in Kenya.

The results regression output found that there was significant relationship between inflation and the performances of deposit taking SACCOs. The calculated p-value was 0.000 which was less than the critical value of 0.05 hence the null hypothesis

which stated that there was no significant relationship between inflation and financial performance of savings and credit cooperative societies in Kenya was rejected. The results of this study resonates with Ndungo, Olweny and Memba (2019) who investigated the effect of credit reference bureaus Functions on financial performance of SACCOs. The study therefore concluded that inflation had a significant effect on financial performance of savings and credit cooperative societies in Kenya.

H_{03}: The credit risk has no significant effect on financial performance of deposit taking savings and credit cooperative societies in Kenya.

The regression results revealed that there was significant relationship between credit risk and performances of deposit taking SACCOs. The calculated p-value was 0.002 which was less than the critical value of 0.05 hence the null hypothesis which stated that the **c**redit risk had no significant effect on financial performance in deposit taking savings and credit cooperative societies in Kenya was rejected. It was therefore concluded that credit risk had a significant effect on financial performance of deposit taking savings and credit cooperative societies in Kenya.

H_{04}: There is no significant relationship between liquidity risk and financial performance in deposit-taking savings and credit cooperative societies in Kenya.

The regression results of the study found that there was significant relationship between liquidity risk and performances of deposit taking SACCOs. The calculated p-value of 0.001 was less than the critical value of 0.05 hence the study rejected the null hypothesis which stated that there was no significant relationship between liquidity risk and financial performance of deposit-taking savings and credit cooperative societies in Kenya. The study therefore concluded that there was significant relationship between liquidity risk and financial performance of deposit taking savings and credit cooperative societies in Kenya. The findings concurred with Wanjiru and Jagongo (2022) who investigated the effect of liquidity risk and financial performance of deposit taking SACCOs.

$H_{05:}$ The Size of a deposit taking SACCO has no moderating effect on the relationship between interest rate drivers and the financial performance of deposit taking SACCOs in Kenya.

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. The null hypothesis of moderation effect which stated that there is no significant moderation effect of size on the relationship between interest rate drivers and financial performance of deposit taking SACCOs in Kenya was rejected. The study therefore established that size had a moderating effect on the relationship between the interest rate drivers and financial performance of deposit taking SACCOs. These findings agree with that of Kinyua (2013) whose study revealed that size has a significant and positive effect on financial perfromamnce of deposit taking SACCOs.

Table 4.37: Summary of Hypotheses

Hypothesis	P – Value	Results
$H_{01:}$ There is no significant relationship between monetary policy and financial performance of deposit-taking savings and credit cooperative societies in Kenya.	0.226	Positive and insignificant (Reject H_{01})
Ho_2: There is no significant relationship between inflation and financial performance of savings and credit cooperative societies in Kenya.	0.000	Positive and significant (Reject H_{02})
H_{03}: The credit risk has no significant effect on financial performance of deposit taking savings and credit cooperative societies in Kenya.	0.002	Positive and significant (Reject H_{03})
H_{04}: There is no significant relationship between liquidity risk and financial performance in deposit-taking savings and credit cooperative societies in Kenya.	0.001	Positive and significant (Reject H_{04})
$H_{05:}$ The Size of a deposit taking SACCO has no moderating effect on the relationship between interest rate drivers and the financial performance of deposit taking SACCOs in Kenya.	0.045	Positive and significant (Reject H_{05})

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter comprises of the summary of research findings, conclusions, recommendations and suggestions for further research.

5.2 Summary of the Findings

This section outlines a summary of major findings of the study conducted in deposit taking SACCOs in Kenya. The findings relate the monetary policy, inflation, credit risk and liquidity risk with the financial performance of deposit taking SACCOs.

5.2.1 Monetary Policy and Financial Performance

The results of analysis from the respondents revealed that majority of the respondents agreed that the deposit taking SACCO's accessibility to funds was affected by CBK cash reserve requirements. However, the perceptions on accessibility to funds in relation to CBK cash reserve was balanced off with slight good number of the respondents disagreeing that the deposit taking SACCO's accessibility to funds was affected by CBK cash reserve requirements(Chepkulei & Shibairo, 2015). This was reflected by the mean average figure whose implication was that the responses were fairly balanced. The results also indicated that the respondents agreed with the statement that deposit taking SACCOs accessibility to funds was affected by the CBK reference rate while good proportion of respondents revealed that some of the respondents disagreed with the statement that deposit taking SACCO's accessibility to funds was affected by the CBK reference rate.

This was reflected by the average mean which showed that the responses were fairly similar. The results however, were not conclusive and no generalization could be made from them. Further, the results revealed that most of the respondents agreed with the statement that the deposit taking SACCO's accessibility to funds was affected by open market operations of the CBK. Majority of the respondents

indicated that they agreed with the statement that deposit taking SACCO's accessibility to funds was affected by the deposit taking SACCO's investment policy on government securities. Generally, the results depicted that monetary policy had slight influence on deposit taking SACCO's accessibility to funds. There was however an observed positive correlation between monetary policy and financial performance. The study also found that though the correlation between monetary policy and financial performance was positive, its effect on financial performance of deposit taking SACCOs was insignificant. The findings were in tandem with the monetary policy theory which provided foundation for models of economic fluctuations in which money was the fundamental driving factor behind movements in real output. In practice, when the monetary theory works, the Central Banks which control the levers of monetary policy can exert much power over economic growth rates.

5.2.2 Inflation Rate and Financial Performance

The study established that most respondents agreed that GDP affected the cost of borrowing of deposit taking SACCOs. The findings indicated that a good number of respondents believed that GDP had an effect on their deposit taking SACCO's financial performance which was affirmed by the mean of response and standard deviation. The values indicate that the responses largely deviated from the mean. It was also revealed that majority of the respondents agreed that CPI affected the demand for loans of the deposit taking SACCOs (Boateng & Dean, 2020). The respondents who agreed that CPI affected the demand for loans were more compared to those who disagreed. This was reflected by the mean response and a standard deviation which revealed that the responses did not largely deviate from the mean.

Further, the results established that majority of the respondents agreed with the statement that social spending in the economy affected cost of borrowing of the deposit taking SACCOs. The mean average of the responses showed that the responses were to a large extent positive. The study also found that majority of the respondents agreed with the statement that decline in loan demand affected operational costs of the deposit taking SACCOs. This was supported by the mean

response value which indicated that majority of the respondents agreed with the statement. The correlation coefficient value showed that there was a weak positive linear association between inflation and financial performance. Inflation was found to significantly affect the financial performance of deposit taking SACCOs. Although the study found out that inflation had a weak association with financial performance of deposit taking SACCOs, it established that inflation significantly affected their financial performance. The findings concurred with the arguments in the quantity of money theory which asserted that there was a positive relationship between supply of money and the long-term price of goods. According to the theory increase in quantity of money supply would lead to a proportionate percentage increase in price of commodities which would consequently affect the financial performance of deposit taking SACCOs.

5.2.3 Credit Risk and Financial Performance

The results of the study showed that majority of the respondents agreed to the statement that deposit taking SACCOs maintained adequate asset base to cushion them against members' loan demands. The mean response rate of 3.45 also revealed that a good number of the respondents agreed with the statement that equity funds of the DTS adequately covered their debt obligations. Additionally, the mean response of 3.98of the results in the study revealed that the majority of the respondents agreed with the statement that deposit taking SACCOs maintained prudent levels of credit risk exposure consistent with available capital. It was also established that credit risk significantly affected financial performance of deposit taking SACCOs(Njeru *et al.,* 2015). The findings were in agreement with the credit risk model which assumed that credit losses are synonymous with loan default.

5.2.4 Liquidity Risk and Financial Performance

The results of the study revealed that majority of the respondents agreed with the statement that the deposit taking SACCOs maintained adequate cash to meet immediate cash demands of members. This was supported by the average mean response which showed that majority of the responses concurred with the statement. Further, the study found out that the majority of the respondents agreed that the

deposit taking SACCO's assets were adequately covered by members' deposits. Additionally, majority of the respondents agreed that members' deposits in the deposit taking SACCOs adequately covered loan demands of the members. However, almost a quarter of the respondents were not sure whether the members' deposits adequately covered loan demands of members. The aggregate mean responses of the respondents implied that majority of the respondents were in agreement with the statement. The study established that there was a negative and significant correlation between liquidity risk and financial performance. The study also observed that liquidity risk had significant effect on the financial performance of deposit taking SACCOs. The findings agreed with Baumol model which is based on the economic order quantity, whose objective is to determine the optimal target cash balance an organization should hold. In view of the desire of DT-SACCOs to attain both liquidity and reasonable returns, Baumol and Tobin transaction for money was the preferred model for this study. DT-SACCOs therefore strike a balance between liquidity and reasonable returns by maintaining a mixed and balanced portfolio consisting of money and risky assets.

5.2.5 Size of the DT SACCO and Financial Performance

The correlation results revealed that the size deposit taking SACCO had a positive and significant correlation with financial performance. The size of deposit taking 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 deposit taking 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 deposit taking SACCO reduced. The study established that size of the deposit taking SACCO was a significant moderator on interest rate drivers influence on financial performance hence, the deposit taking SACCO management should lay emphasize on building a large asset base in their strategic plans in order to enjoy economies of scale for asset base influences many parameters that impact on financial performance of firms.

5.3 Conclusions of the Study

The study made conclusions that were in line with the objectives and findings of the study. Monetary policy actions undertaken by the Central bank influence the availability and cost of money in the economy. The Central bank should handle macroeconomic policies appropriately because changes in macroeconomics like the central bank reference rate and open market operations affect the supply of local currency with a consequent effect on cost of credit and hence the financial performance of deposit taking SACCOs. The monetary policy through interest and exchange rates channels contribute significantly to sustainable economic development and performance of firms. Interest rate is important in financial intermediation because change in official interest rate affect short term and long-term market interest rate, with a severe consequent effect on deposit taking SACCOs industry. Large deposit taking SACCOs effectively manage interest rate cost compared to small SACCOs. Most deposit taking SACCOs in this study were small hence were unable to reap benefits of economies of scale of lower borrowing cost resulting to the monetary policy influence on financial performance of deposit taking SACCOs to be insignificant.

The deposit taking SACCOs should optimize on macro-economic policies introduced by the government of Kenya from time to time to enhance smooth functioning of the sector. From the correlation values of monetary policy, inflation, credit risk and liquidity risk with financial performance, the study found that there was a relationship between the independent variables with financial performance of deposit taking SACCOs. However, from the values of regression analysis, only inflation, credit risk and liquidity risk had significant effect on financial performance of deposit taking SACCOs. The observations were in line with the arguments in the quantity of money theory and the assertions made in credit risk model.

The significant effect of credit risk on financial performance of deposit taking SACCOs was associated with the non-performing loans and bad debts that come with increase in loan demand hence significantly curtailing the financial performance of deposit taking SACCOs. The study averred that deposit taking SACCOs should routinely appraise the credit status of loan applicants in order to minimize the amount

of non-performing loans and bad debts. It was also established that the effect of liquidity risk on financial performance of deposit taking SACCOs was significant. Deposit taking SACCOs issue loans to members subject to availability of funds at their disposal. The study therefore concluded that optimal liquidity should be maintained by deposit taking SACCOs to allow for scheduled loan disbursements and a margin of safety.

5.4 Recommendations of the Study

Arising from the findings, the study came up with recommendations which are highlighted below.

5.4.1 Monetary Policy and Financial Performance

The results of the study indicated that most respondents agreed with the statement that SACCO's accessibility to funds was affected by the deposit taking SACCOs' investment policy in government securities. The results indicated that more respondents opined that SACCOs investment policy in government securities affected their financial performance. This study recommends that a comprehensive analysis be done to establish the percentage composition of income derived by the deposit taking SACCOs from non-core activities. Deposit taking SACCOs should consider venturing in low-risk government securities investment like other financial institutions. The results further showed that that monetary policy relationship with ROA was significant. This study recommends that a comprehensive analysis be done to establish the percentage composition of income derived by the deposit taking SACCOs from non-core activities. Deposit taking SACCOs should consider venturing in low-risk government securities investment as and when they are floated.

5.4.2 Inflation and Financial Performance

The results of the study revealed that 53.04% of the respondents agreed that CPI affected the demand for loans of the deposit taking SACCOs. The study also revealed that majority of the respondents agreed that CPI affected the demand for loans for the deposit taking SACCOs. This was reflected by the mean response and a standard deviation which revealed that the responses did not largely deviate from the

mean. The findings also revealed that 64.5% of the respondents agreed that decline in loan demand affected operational costs of the SACCOs. The economies of scale derived from large volume of loans reduced operational costs. Deposit taking SACCOs that issue more loans spread fixed costs among loan applicants and pass some of the cost savings to their members. Its therefore recommended that deposit taking SACCOs should diversify their loan products to be sustainable and attractive to more members.

5.4.3 Credit Risk and Financial Performance

The mean response of 3.98 in the study revealed that the majority of the respondents agreed with the statement that deposit taking SACCOs maintained prudent levels of credit risk exposure consistent with available capital. The calculated p-value of 0.002 generally indicated that credit risk had a significant influence on deposit taking SACCOs' financial performance. The study also established that most deposit taking SACCOs did not have credit control and monitoring mechanisms. This study therefore recommends that deposit taking SACCOs' management should put in place credit control and monitoring mechanisms that assist in early detection and determination of non-performing loans. It is also recommended that deposit taking SACCOs should routinely appraise the credit status of loan applicants in order to minimize the amount of non-performing loans and bad debts.

5.4.4 Liquidity Risk and Financial Performance

The results of the study revealed that majority of the respondents agreed with the statement that the deposit taking SACCOs maintained adequate cash to meet immediate cash demands of members. This was supported by the average mean response which showed that majority of the responses concurred with the statement. Further, the study found out that the majority of the respondents agreed that the deposit taking SACCOs' assets were adequately covered by members' deposits. Additionally, majority of the respondents agreed that members' deposits in the deposit taking SACCOs adequately covered loan demands of the members. The study established that there was a negative and significant correlation between liquidity risk and financial performance. The study also observed that liquidity risk

had significant effect on the financial performance of deposit taking SACCOs. This study therefore recommends that deposit taking SACCOs should manage liquidity risk by reinforcing its own resources since depositors could at any time and under unexpected reasons, withdraw their deposits to seek investments elsewhere with higher returns. The findings of the study also agreed with Baumol model which is based on the economic order quantity. This study therefore additionally recommends that deposit taking SACCOs should strike a balance between liquidity and reasonable returns by maintaining a mixed and balanced portfolio consisting of money and risky assets to avoid liquidity trap.

5.4.5 Moderating Effect of Size of Deposit Taking SACCO and Financial Performance

The study established that the size of the deposit taking SACCO was a significant moderator on interest rate drivers' influence on financial performance. The total assets held by deposit taking SACCOs has a direct impact on relative efficiency and sustainability of the DT-SACCOs in Kenya. This study therefore recommends that the deposit taking SACCO management should in their strategic plans lay emphasize on building a large asset base in order to enjoy economies of scale. The asset base influences many parameters that have an impact on financial performance of firms. The analysis in the study also brought to fore the policy question that there were just too many very small deposit taking SACCOs in the SACCO industry. The study therefore recommends for a policy call for the consolidation and merger of some of the very small deposit taking SACCOs in order to take advantage of size to improve on their efficiency and sustainability.

5.5 Suggested Areas for Further Research

The researcher recommends that future research should be directed towards validating the results of this study by conducting a similar research in micro-finance institutions in Kenya. This study focused on effect of interest rate drivers on financial performance of deposit taking SACCOs. In the advent of government dollar denominated borrowings, exchange rate factor on cost of funds cannot be underestimated. A similar study can therefore be done on the impact of exchange

rate drivers on financial performance of firms in Kenya. Additionally, since the study has established the moderating role of size of deposit taking SACCOs on interest rate drivers, a further research can be conducted on the effect of age on prudential financial management of deposit taking SACCOs in Kenya.

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APPENDICES

Appendix I: Questionnaire

Instructions:

Kindly read the questions and provide honest opinion of your view(s) about the information being requested for. Be sure that results and conclusions to your responses will to a very large extent assist the researcher, your SACCO and other interested stakeholders in understanding the interest rate drivers and financial Performance of deposit taking SACCOs in Kenya.

The information given about your organization was treated with a respect, confidence and will only be used for academic purposes.

SECTION A: General Information

1. Designation of the respondent in the SACCO----------

2. Gender of the respondent: ☐ Male ☐ Female

3. How many years have you worked in the SACCO?

0 – 10yrs ☐ 11yrs-20 ☐ above 20yrs ☐

4. For how long has your SACCO been in operation?

0 – 10yrs ☐ 11yrs-20 ☐ above 20yrs ☐

5. What is the current number of your members?

Less than 500 ☐

501 – 1000 ☐

1001 – 1500 ☐

1501– 2000 ☐

Above 2000 ☐

6. What is the main source of capital for your SACCO?

Members' shares ☐ borrowing ☐ members' shares/borrowing ☐

If any other, specify…….

7. If funding is from members' shares & borrowing, what approximate percentage is from borrowings? ☐ ☐ ☐ ☐

0-30% 31%-50% 51%-70% Over 70%

8. What is the current share capital of your SACCO in KES?

Below 100M ☐ 100M – 500M ☐

500M – 1 B ☐ over 1B ☐

9. Which is the Main source of income for your SACCO?

Interest from loans 70% & above ☐ Interest from loans 30% & below ☐

Interest from Investment and Others 70% & above ☐ Interest from Investment and Others 30% & below ☐

10. Does interest rate affect the demand for loans in your SACCO?

Yes ☐ No ☐

SECTION B: Monetary Policy and Financial Performance of SACCOs

You are required to indicate your level of agreement/disagreement with the statements in the table below using the following 5-point Likert scale: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly agree. Kindly tick (√) as you see appropriate for each question testing the attribute in the table.

Monetary policies statements	**5**	**4**	**3**	**2**	**1**
11.The SACCO's accessibility to funds is affected by CBK cash reserve requirements.					
12.The SACCO's accessibility to funds is affected by Central bank reference rate.					
13.The SACCO's accessibility to funds is affected by open market operations of the CBK.					
14.The SACCO's accessibility to funds is affected by the government 's selective credit control policy.					

SECTION C: Inflation and Financial Performance of SACCOs

You are required to indicate your level of agreement/disagreement with the statements in the table below using the following 5-point Likert scale: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly agree. Kindly tick (√) as you see appropriate question testing the attribute in the table.

Inflation attribute statements	**5**	**4**	**3**	**2**	**1**
15.The Gross domestic product affects cost of borrowing of the SACCO.					
16.The Consumer price index affects demand for loans of the SACCO.					
17.The social spending in the economy affects cost borrowing of the SACCO.					
18. Decline in Loan demand affects operational costs of the SACCO.					

SECTION D: Credit Risk and Financial Performance of SACCOs

You are required to indicate your level of agreement/disagreement with the statements in the table below using the following 5-point Likert scale: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly agree. Kindly tick (√) as you see appropriate for each question testing the attribute in the table.

Credit risk statements	**5**	**4**	**3**	**2**	**1**
19. The SACCO maintains adequate asset base to cushion lenders					
20.The equity funds adequately cover debts of the SACCO.					
21.The SACCO's cash flow adequately meets the cash demands of the members.					
22.The SACCO maintains prudent levels of credit risk exposure consistent with available capital.					

SECTION E: Liquidity Risk and Financial Performance of SACCOs

You are required to indicate your level of agreement/disagreement with the statements in the table below using the following 5-point Likert scale: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly agree. Kindly tick (√) as you see appropriate for each question testing the attribute in the table.

Liquidity risk statements	5	4	3	2	1
23. The SACCO maintains adequate cash to meet immediate cash demands of members.					
24. Total SACCO's assets are adequately covered by members deposits.					
25.The SACCO's deposits adequately cover loan demands of the members.					

SECTION F: Moderation effect of Size on Interest Rate Drivers and Financial Performance of SACCOs

You are required to indicate your level of agreement/disagreement with the statements in the table below using the following 5-point Likert scale: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4- Agree; 5-Strongly agree. Kindly tick (√) as you

see appropriate for each question testing the attribute in the table.

Size moderating statements	**5**	**4**	**3**	**2**	1
26.The SACCO has high asset base commensurate with its members' requirements.					
27.The SACCOs' value of assets adequately covers its liabilities.					
28.The SACCO's is adequately capitalized.					

Thank you for using your productive time to attend to this questionnaire.

MAY GOD BLESS YOU.

Appendix II: Secondary Data Collection Sheet

The aim of this data sheet is to gather information relevant to the academic study on: **Interest rate drivers and financial performance of deposit taking SACCOs in Kenya.** The data collected was used solely for academic purposes and was treated with high confidentiality. You are required to provide information on financial performance of your SACCO for period of 5 years by filing in the table below:

Data Sheet A

Details	**2013**	**2014**	**2015**	**2016**	**2017**
Total deposits (KES '000')					
Core capital (KES '000')					
Earnings before interest and tax- EBIT (KES '000')					
Interest Income (KES '000')					
Amount of outstanding loans issued to members (KES'000')					
Number of loan products					
Current liabilities (KES '000')					
Long-term liabilities (KES '000')					
Total External Funding (KES 000')					
Fixed Assets (KES '000')					
Current Assets (KES '000')					
Total Assets (KES '000')					
Total Cash and marketable securities (KES '000')					

Performance Indicators

	2013	**2014**	**2015**	**2016**	**2017**
Return on assets					
Return on investment					
Number of membership					
Dividends per share					

DATA COLLECTION SHEET B

Central Bank Monetary Policy Instruments

Cash reserve ratio (CR)

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	AV
	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR
2013													
2014													
2015													
2016													
2017													

(ii) Central Bank Reference Rate (BR)

	Sept	Oct	Nov.	Dec.	Jan.	Feb.	Mar	Apr	Ma	Jun	July	Aug	AV
	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR	BR
2013													
2014													
2015													
2016													
2017													

Appendix III: List of Deposit Taking SACCOs in Kenya

NO.	NAME OF SOCIETY	POSTAL ADDRESS
1.	2NK SACCO SOCIETY LTD	P.O BOX 12196-10100 NYERI
2.	AFYA SACCO SOCIETY LTD	P.O.BOX 11607 – 00400, NAIROBI.
3.	AGRO-CHEM SACCO SOCIETY LTD	P.O BOX 94-40107, MUHORONI.
4	ALL CHURCHES SACCO SOCIETY LTD	P.O BOX 2036-01000, THIKA.
5	ARDHI SACCO SOCIETY LTD	P.O. BOX 28782-00200, NAIROBI.
6	ASILI SACCO SOCIETY LTD	P.O.BOX 49064 – 00100, NAIROBI.
7	BANDARI SACCO SOCIETY LTD	P.O. BOX95011 –80104, MOMBASA.
8	BARAKA SACCO SOCIETY LTD	P.O.BOX 1548 – 10101, KARATINA.
9	BARATON UNIVERSITY SACCO SOCIETY LTD	P.O BOX 2500-30100, ELDORET.
10	BIASHARA SACCO SOCIETY LTD	P.O.BOX 1895 – 10100, NYERI.
11	BINGWA SACCO SOCIETY LTD	P.O.BOX 434 – 10300, KERUGOYA.
12	BORESHA SACCO SOCIETY LTD	P.O. BOX80–20103, ELDAMA RAVINE.
13	CAPITAL SACCO SOCIETY LTD	P.O BOX 1479-60200, MERU.
14	CENTENARY SACCO SOCIETY LTD	P.O.BOX 1207 – 60200, MERU.
15	CHAI SACCO SOCIETY LTD	P.O.BOX 47815 – 00100, NAIROBI.
16	CHUNA SACCO SOCIETY LTD	P.O.BOX 30197 – 00100, NAIROBI.
17	COSMOPOLITAN SACCO SOCIETY LTD	P.O.BOX 1931 – 20100, NAKURU.
18	COUNTY SACCO SOCIETY LTD	P.O.BOX 21 – 60103, RUNYENJES.
19	DAIMA SACCO SOCIETY LTD	P.O.BOX 2032 – 60100, EMBU.
20	DHABITI SACCO SOCIETY LTD	P.O.BOX 353 – 60600, MAUA.
21	DIMKES SACCO SOCIETY LTD	P.O.BOX 886 – 00900, KIAMBU.
22	DUMISHA SACCO SOCIETY LTD	P.O BOX 84-20600, MARARAL.
23	EGERTON SACCO SOCIETY LTD	P.O.BOX 178 – 20115, EGERTON.
24	ELGON TEACHERS SACCO SOCIETY LTD	P.O BOX 27-50203, KAPSOKWONY.
25	ELIMU SACCO SOCIETY LTD	P.O BOX 10073-00100, NAIROBI.
26	ENEA SACCO SOCIETY LTD	P.O.BOX 1836 – 10101, KARATINA.
27	FARIDI SACCO SOCIETY LTD	P.O. BOX 448-50400, BUSIA.
28	FARIJI SACCO SOCIETY LTD	P.O.BOX 589 –00216, GITHUNGURI.
29	FORTUNE SACCO SOCIETY LTD	P.O.BOX 559 – 10300, KERUGOYA.
30	FUNDILIMA SACCO SOCIETY LTD	P.O.BOX 62000 – 00200, NAIROBI.
31	GASTAMECO SACCO SOCIETY LTD	P.O BOX 189-60101, MANYATTA.
32	GITHUNGURI DAIRY & COMMUNITY SACCO SOCIETY LTD	P.O.BOX896–00216, GUTHUNGURI.
33	GOODWAY SACCO SOCIETY LTD	P.O BOX 626-10300, KERUGOYA.
34	GUSII MWALIMU SACCO SOCIETY LTD	P.O.BOX 1335 – 40200, KISII.
35	HARAMBEE SACCO SOCIETY LTD	P.O.BOX 47815 – 00100, NAIROBI.

36	HAZINA SACCO SOCIETY LTD	P.O.BOX 59877 – 00200, NAIROBI.
37	IG SACCO SOCIETY LTD	P.O.BOX 1150 –50100, KAKAMEGA.
38	ILKISONKO SACCO SOCIETY LTD	P.O BOX 91-00209, LOITOKITOK.
39	IMARIKA SACCO SOCIETY LTD	P.O.BOX 712 – 80108, KILIFI.
40	IMARISHA SACCO SOCIETY LTD	P.O.BOX 682 – 20200, KERICHO.
41	IMENTI SACCO SOCIETY LTD	P.O.BOX 3192 – 60200, MERU.
42	JACARANDA SACCO SOCIETY LTD	P.O. BOX 176744-00232, RUIRU
43	JAMII SACCO SOCIETY LTD	P.O.BOX 57929 – 00200, NAIROBI.
44	JITEGEMEE SACCO SOCIETY LTD	P.O. BOX 86937-80100, MOMBASA.
45	JUMUIKA SACCO SOCIETY LTD	P.O. BOX 14-40112, AWASI.
46	KAIMOSI SACCO SOCIETY LTD	P.O BOX 153-50305, SIRWA.
47	KATHERA RURAL SACCO SOCIETY LTD	P.O BOX 251-60202, NKUBU.
48	KENPIPE SACCO SOCIETY LTD	P.O.BOX 314 – 00507, NAIROBI.
49	KENVERSITY SACCO SOCIETY LTD	P.O.BOX 10263 – 00100, NAIROBI.
50	KENYA ACHIEVAS SACCO SOCIETY LTD	P.O. BOX 3080-40200, KISII.
51	KENYA BANKERS SACCO SOCIETY LTD	P.O.BOX 73236 – 00200, NAIROBI.
52	KENYA CANNERS SACCO SOCIETY LTD	P.O.BOX 1124 – 01000, THIKA.
53	KENYA HIGHLANDS SACCO SOCIETY LTD	P.O.BOX 2085 – 002000, KERICHO.
54	KENYA MIDLAND SACCO SOCIETY LTD	P.O BOX 287-20400, BOMET.
55	KENYA POLICE SACCO SOCIETY LTD	P.O.BOX 51042 – 00200, NAIROBI.
56	JOINAS SACCO SOCIETY LTD	P.O.BOX 669 – 00219, KARURI.
57	KIMBILIO DAIMA SACCO SOCIETY LTD	P.O. BOX 81-20225, KIMULOT.
58	KINGDOM SACCO SOCIETY LTD	P.O.BOX 8017 – 00300, NAIROBI.
59	KIPSIGIS EDIS SACCO SOCIETY LTD	P.O BOX 228-20400, BOMET.
60	KITE SACCO SOCIETY LTD	P.O.BOX 2073 – 40100, KISUMU.
61	KITUI TEACHERS SACCO SOCIETY LTD	P.O.BOX 254 – 90200, KITUI.
62	KMFRI SACCO SOCIETY LTD	P.O.BOX 80862, 80100 MOMBASA.
63	KOLENGE TEA SACCO SOCIETY LTD	P.O BOX 291-30301, NANDI HILLS.
64	KONOIN SACCO SOCIETY LTD	P.O.BOX 83 –20403, MOGOGOSIEK.
65	KORU SACCO SOCIETY LTD	P.O. BOX PRIVATE BAG-40100, KORU
66	KWALE TEACHERS SACCO SOCIETY LTD	P.O. BOX 123-80403, KWALE.
67	KWETU SACCO SOCIETY LTD	P.O BOX 818-90100, MACHAKOS.
68	K-UNITY SACCO SOCIETY LTD	P.O.BOX 268 – 00900, KIAMBU.
69	LAMU TEACHERS SACCO SOCIETY LTD	P.O. BOX 110-80500, LAMU.

70	LAINISHA SACCO SOCIETY LTD	P.O. BOX 272-10303, WANG'URU.
71	LENGO SACCO SOCIETY LTD	P.O.BOX 1005 – 80200, MALINDI.
72	MAFANIKIO SACCO SOCIETY LTD	P.O BOX 86515-80100, MOMBASA.
73	MAGADI SACCO SOCIETY LTD	P.O.BOX 13 – 00205, MAGADI.
74	MAGEREZA SACCO SOCIETY LTD	P.O.BOX 53131 – 00200, NAIROBI.
75	MAISHA BORA SACCO SOCIETY LTD	P.O.BOX 30062 – 00100, NAIROBI.
76	MARSABIT TEACHERS SACCO SOCIETY LTD	P.O.BOX 90 – 60500, MARSABIT.
77	MENTOR SACCO SOCIETY LTD	P.O.BOX 789 – 10200, MURANG'A.
78	METROPOLITAN NATIONAL SACCO SOCIETY LTD	P.O.BOX 871 – 00900, KIAMBU.
79	MILIKI SACCO SOCIETY LTD	P.O.BOX 43582 – 10100 NAIROBI
80	MMH SACCO SOCIETY LTD	P.O.BOX 469 – 60600, MAUA.
81	MOMBASA PORT SACCO SOCIETY LTD	P.O.BOX 95372–80104, MOMBASA.
82	MUDETE TEA GROWERS SACCO SOCIETY LTD	P.O.BOX 221 – 41053, KHAYEGA.
83	OLLIN SACCO SOCIETY LTD	P.O BOX 83-10300, KERUGOYA.
84	MURATA SACCO SOCIETY LTD	P.O.BOX 816 – 10200, MURANG'A.
85	MWALIMU NATIONAL SACCO SOCIETY LTD	P.O.BOX 62641 – 00200, NAIROBI.
86	MWIETHERI SACCO SOCIETY LTD	P.O. BOX 2445-060100, EMBU.
87	MWINGI MWALIMU SACCO SOCIETY LTD	P.O BOX 489-90400, MWINGI.
88	MUKI SACCO SOCIETY LTD	P.O BOX 398-20318, NORTH KINANGOP
89	MWITO SACCO SOCIETY LTD	P.O.BOX 56763 – 00200, NAIROBI.
90	NACICO SACCO SOCIETY LTD	P.O.BOX 34525 – 00100, NAIROBI.
91	NAFAKA SACCO SOCIETY LTD	P.O.BOX 30586 – 00100, NAIROBI.
92	NANDI FARMERS SACCO SOCIETY LTD	P.O BOX 333-30301, NANDI HILLS
93	NANYUKI EQUATOR SACCO SOCIETY LTD	P.O BOX 1098-CX10400, NANYUKI
94	NAROK TEACHERS SACCO SOCIETY LTD	P.O.BOX 158 – 20500, NAROK.
95	NASSEFU SACCO SOCIETY LTD	P.O.BOX 43338 – 00100, NAROBI.
96	NATION SACCO SOCIETY LTD	P.O.BOX 22022 – 00400, NAIROBI.
97	NAWIRI SACCO SOCIETY LTD	P.O BOX 400-16100, EMBU.
98	NDEGE CHAI SACCO SOCIETY LTD	P.O.BOX 857 – 20200, KERICHO.
99	NDOSHA SACCO SOCIETY LTD	P.O.BOX 532– 60401, CHOGORIA – MAARA.
100	NG'ARISHA SACCO SOCIETY LTD	P.O.BOX 1199 – 50200, BUNGOMA.
101	NOBLE SACCO SOCIETY LTD	P.O.BOX 3466 – 30100, ELDORET.
102	NRS SACCO SOCIETY LTD	P. O BOX 575-00902, KIKUYU.
103	NUFAIKA SACCO SOCIETY LTD	P.O BOX 735-10300, KERUGOYA.

104	NYAHURURU UMOJA SACCO SOCIETY LTD	P.O BOX 2183-20300, NYAHURURU.
105	NYALA VISION SACCO SOCIETY LTD	P.O BOX 27-20306, NDARAGWA.
106	NYAMBENE ARIMI SACCO SOCIETY LTD	P.O.BOX 493 – 60600, MAUA.
107	NYATI SACCO SOCIETY LTD	P.O. BOX 7601 – 00200, NAIROBI
108	NEW FORTIES SACCO SOCIETY LTD	P.O.BOX 1939 – 10100, NYERI.
109	ORIENT SACCO SOCIETY LTD	P.O.BOX 1842 – 01000, THIKA.
110	PATNAS SACCO SOCIETY LTD	P.O BOX 601-20210, LITEIN.
111	PRIME TIME SACCO	P.O. BOX 512 – 30700, ITEN
112	PUAN SACCO SOCIETY LTD	P.O BOX 404-20500, NAROK.
113	QWETU SACCO SOCIETY LTD	P.O BOX 1186-80304, WUNDANYI
114	RACHUONYO TEACHERS SACCO SOCIETY LTD	P.O. BOX 147-40332, KOSELE.
115	SAFARICOM SACCO SOCIETY LTD	P.O.BOX 66827 – 00800, NAIROBI.
116	SHERIA SACCO SOCIETY LTD	P.O.BOX 34390 – 00100, NAIROBI.
117	SHIRIKA SACCO SOCIETY LTD	P.O BOX 43429-00100, NAIROBI.
118	SIMBA CHAI SACCO SOCIETY LTD	P.O.BOX 977 – 20200, KERICHO.
119	SIRAJI SACCO SOCIETY LTD	P.O.BOX PRIVATE BAG, TIMAU.
120	SKYLINE SACCO SOCIETY LTD	P.O.BOX 660 – 20103, ELDAMA RAVINE.
121	SMART CHAMPIONS SACCO SOCIETY LTD	P.O BOX 64-60205, GITHINGO
122	SMART LIFE SACCO SOCIETY LTD	P.O BOX 118-30705, KAPSOWAR.
123	SOLUTION SACCO SOCIETY LTD	P.O.BOX 1694 – 60200, MERU.
124	SOTICO SACCO SOCIETY LTD	P.O.BOX 959 – 20406, SOTIK.
125	SOUTHERN STAR SACCO SOCIETY LTD	P.O BOX 514-60400, CHUKA
126	SHOPPERS SACCO SOCIETY LTD	P.O. BOX 16 – 00507, NAIROBI
127	STAKE KENYA SACCO SOCIETY LTD	P.O.BOX 208 – 40413, KEHANCHA.
128	STIMA SACCO SOCIETY LTD	P.O.BOX 75629 – 00100, NAIROBI.
129	SUKARI SACCO SOCIETY LTD	P.O BOX 841-50102, MUMIAS
130	SUBA TEACHERS SACCO SOCIETY LTD	P.O. BOX 237-40305, MBITA.
131	SUPA SACCO SOCIETY LTD	P.O.BOX 271 – 20600, MARALAL.
132	TAI SACCO SOCIETY LTD	P.O.BOX 718 –00216, GITHUNGURI.
133	TAIFA SACCO SOCIETY LTD	P.O.BOX 1649 – 10100, NYERI.
134	TARAJI SACCO SOCIETY LTD	P.O.BOX 605 – 40600, SIAYA.
135	TEMBO SACCO SOCIETY LTD	P.O.BOX 91 – 00618, RUARAKA NAIROBI.
136	TENHOS SACCO SOCIETY LTD	P.O.BOX 391 – 20400, BOMET.
137	THAMANI SACCO SOCIETY LTD	P.O.BOX 467 – 60400, CHUKA.
138	TRANSCOUNTIES SACCO SOCIETY LTD	P.O. BOX 2965-30200, KITALE.

139	TRANS NATION SACCO SOCIETY LTD	P.O.BOX 15 – 60400, CHUKA.
140	TIMES U SACCO SOCIETY LTD	P.O.BOX 310 – 60202, NKUBU.
141	TOWER SACCO SOCIETY LTD	P.O.BOX 259 – 20303, OL'KALOU.
142	TRANS- ELITE COUNTY SACCO SOCIETY LTD	P.O BOX 547-30300, KAPSABET.
143	UFANISI SACCO SOCIETY LTD	P.O BOX 2973-00200, NAIROBI.
144	UCHONGAJI SACCO SOCIETY LTD	P.O. BOX 92503-80102, MOMBASA.
145	UKRISTO NA UFANISI WA ANGALICANA SACCO SOCIETY LTD	P.O BOX 872-00605, NAIROBI.
146	UKULIMA SACO SOCIETY LTD	P.O.BOX 44071 – 00100, NAIROBI.
147	UNAITAS SACCO SOCIETY LTD	P.O.BOX 38791– 00100, NAIROBI.
148	UNI-COUNTY SACCO SOCIETY LTD	P.O BOX 10132-20100, NAKURU
149	UNITED NATIONS SACCO SOCIETY LTD	P.O.BOX 30552 – 00100, NAIROBI.
150	UNISON SACCO SOCIETY LTD	P.O BOX 414-10400, NANYUKI.
151	UNIVERSAL TRADERS SACCO SOCIETY LTD	P.O.BOX 2119– 90100, MACHAKOS.
152	VIHIGA COUNTY FARMERS SACCO SOCIETY LTD	P.O BOX 309-50317, CHAVAKALI.
153	VISION POINT SACCO SOCIETY LTD	P.O.BOX 42 – 40502, NYANSIONGO.
154	VISION AFRICA SACCO SOCIETY LTD	P.O BOX 18263-20100, NAKURU.
155	WAKENYA PAMOJA SACCO SOCIETY LTD	P.O.BOX 829 – 40200, KISII.
156	WAKULIMA COMMERCIAL SACCO SOCIETY LTD	P.O.BOX 232 – 10103, MUKURWENI.
157	WANAANGA SACCO SOCIETY LTD	P.O.BOX 34680 – 00501, NAIROBI.
158	WANANCHI SACCO SOCIETY LTD	P.O.BOX 910 – 10106, OTHAYA.
159	WANANDEGE SACCO SOCIETY LTD	P.O.BOX 19074 -00501, NAIROBI.
160	WASHA SACCO SOCIETY LTD	P.O.BOX 83256–80100, MOMBASA.
161	WAUMINI SACCO SOCIETY LTD	P.O.BOX 66121 – 00800, NAIROBI.
162	WEVARSITY SACCO SOCIETY LTD	P.O BOX 873-50100, KAKAMEGA
163	WINAS SACCO SOCIETY LTD	P.O.BOX 696 – 60100, EMBU.
164	YETU SACCO SOCIETY LTD	P.O.BOX 511 – 60202, NKUBU.
165	AIRPORTS SACCO SOCIETY LTD	P.O. BOX 19001-00501, NAIROBI
166	AINABKOI SACCO SOCIETY LTD	P.O. BOX 120, AINABKOI
167	ECO-PILLAR SACCO SOCIETY LTD	P.O. BOX 48 – 30600, KAPENGURIA
168	GOOD FAITH SACCO SOCIETY LTD	P.O. BOX 224 – 00222, UPLANDS
169	COMOCO SACCO SOCIETY LTD	P.O. BOX 30135 – 00100, NAIROBI
170	TELEPOST SACCO SOCIETY LTD	P.O. BOX 49557 – 00100, NAIROBI
171	NANDI HEKIMA SACCO SOCIETY LTD	P.O. BOX 211 -30300, KAPSABET
172	NITUNZE SACCO SOCIETY LTD	P.O. BOX 295 – 50102, MUMIAS
173	TRANSNATIONAL TIMES SACCO SOCIETY LTD	P.O. BOX 2274 – 30200, KITALE

174	MOI UNIVERSITY SACCO SOCIETY LTD	P.O. BOX 23 – 30107, MOI UNIVERSITY
175	NYAMIRA SACCO SOCIETY LTD	P.O. BOX 633 – 40500, NYAMIRA
176	BANANA HILL SACCO SOCIETY LTD	P.O. BOX 333 – 00219, KARURI

Source: Sacco Societies Regulatory Authority (2016)

Appendix IV: List of Deposit Taking SACCOs in Western Region (Western & Nyanza)

SN	Category	Name	Location	Email address
1	DTS	IG Sacco Society Ltd	Kateco Plaza, Muruli Road, Kakamega Town	Kateco@jambo.co.ke
2	DTS	Waversity Sacco Society Limited	Star Annex Building, Kakamega-Webuye Road	
3	DTS	Mudete Tea Growers Sacco Society Ltd	Kakamega-Kisumu Road, Khayega Market Centre	info@mudetesacco.co.ke
4	DTS	Nitunze Sacco Society Limited	Mosacco Plaza, Musanda Road, Mumias Town	nitunzeltd@yahoo.com nitunzeltd@gmail.com
5	DTS	Sukari Sacco Society Limited	Sukari Sacco Bldg, Mumias – Bungoma Highway	info@sukarisacco.org
6	DTS	Elgon Teachers Sacco Society Limited	Mwalimu Plaza, Kapsokwony-Kaptama Road, Kapsokwony	elgonsacco@yahoo.com
7	DTS	Ng'arisha Sacco Society Limited	Bungoma Teachers Sacco Plaza, Moi Avenue	info@ng'arishasacco.co.ke
8	DTS	Vihiga County Sacco Society Limited	Chavakali – Kapsabet Road	vitegro@yahoo.com
9	DTS	Faridi Sacco Society Limited	Faridi Housing Plaza, Busia/Kisumu Road - Busia	info@faridisacco.co.ke

10	DTS	Jumuika Sacco Society Limited	Chemelil Sugar Sports Complex, Awasi/Nandi Hills Rd. Chemelil Town Centre – Nyanza	jumuikasacco@gmail.com
11	DTS	Koru Sacco Society Limited	HOMA Lime Company, Koru Town	korusacco@gmail.com
12	DTS	Agro-Chem Sacco Society Limited	Unierectus Bldg. Unierectus Street Muhoroni Town centre	Agro-chemsacco@gmail.com lilobat@yahoo.com
13	DTS	Kite Sacco Society Limited	Re-insurance Plaza, Oginga Odinga Street, Kisumu City	kitesacco@gmail.com
14	DTS	Taraji Sacco Society Limited	Mwalimu Plaza, Oginga Odinga Street	info@tarajisacco.co.ke
15	DTS	GusiiMwalimu Sacco Society Limited	GusiiMwalimu Complex, Kisii-Keroka Road	gusiimwalimusacco@yahoo.com
16	NDTS	Tunza	Non-deposit Taking Saccos	tunza@ksm.care.or.ke
17	DTS	Wakenya Pamoja Sacco Society Limited	Kahawa House-Kisii	wpsacco@wakenyapamojasacco.com
18	DTS	Kenya Achievers Sacco Society Limited	Achievers Plaza, Nyamache-Igembe-Igage Road	info@achievassacco.co.ke
19	DTS	Nyamira Tea Farmers Sacco Society Ltd	Nyamira Tea Sacco Bldg, Nyamira-Mabundu Road	ntsacco@yahoo.com
20	DTS	Vision Point Sacco	Borabu Union Bldg.	visionpointsacco@gmail.com

		Society Limited		
21	DTS	Rachuonyo Teachers Sacco Society Ltd	Oyugis-Kisii Road	rachuonyateacherssacco@yahoo.com
22	DTS	Stake Kenya Sacco Society Limited Stake Kenya Sacco Society Limited	Stake Kenya Sacco Plaza	kutesaccoltd@yahoo.com
23	DTS	Suba Teachers Sacco Society Limited	Suba Teachers Building Opposite KCB	sutco.sacco@gmail.com

Source: KUSCCO 2018

Appendix V: Past and Current Levels of the Central Bank Rate

Date	CBR
01/07/2014	8.5%
01/08/2014	8.5%
01/09/2014	8.5%
01/10/2014	8.5%
01/11/2014	8.5%
01/12/2014	8.5%
01/01/2015	8.5%
01/02/2015	8.5%
01/03/2015	8.5%
01/04/2015	8.5%
01/05/2015	8.5%
01/06/2015	10.0%
01/07/2015	11.5%
01/08/2015	11.5%
01/09/2015	11.5%
01/10/2015	11.5%
01/11/2015	11.5%
01/12/2015	11.5%
01/01/2016	11.5%
01/02/2016	11.5%
01/03/2016	11.5%
01/04/2016	11.5%
01/05/2016	10.5%
01/06/2016	10.5%
01/07/2016	10.5%
01/08/2016	10.0%
01/09/2016	10.0%
01/10/2016	10.0%
01/11/2016	10.0%
30/01/2017	10.0%

Source: Central Bank of Kenya, 2017