

# **FINANCIAL RISKS AND FINANCIAL PERFORMANCE OF DEPOSIT-TAKING SAVINGS AND CREDIT COOPERATIVE SOCIETIES IN KENYA**

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## **ABSTRACT**

The study aimed to ascertain how the financial performance of Kiambu County's DT-SACCOs is affected by financial risks. The effect of credit risk, operational risk, market risk and liquidity risk on the Kiambu County DT-SACCOs financial performance are the precise aims that were emphasised in the research to accomplish the study objective. The study was anchored on the financial intermediary theory, liquidity preference theory, steward theory and information asymmetry theory. Thirteen licensed deposit-taking SACCOs with their headquarters located in Kiambu formed the target population and a descriptive research design was used. Secondary data from 2013 to 2022 for the thirteen-deposit taking SACCOs was collected from SACCO's financial statements and SASRA records. The data collected was unbalanced due to different licensing years of the deposit-taking SACCOs by SASRA. To analyse the data, the mean, standard deviation, minimum and maximum values were utilized as descriptive statistics, while panel data regression was employed as

inferential statistics. The diagnostic tests conducted before fitting the model were: heteroscedasticity test, Breusch – Pagan Lagrange Multiplier, Hausman and multicollinearity. According to the study's findings, credit risk had a small but beneficial impact on financial performance ( $=0.00337$ ,  $t= 0.26$ ,  $p>0.005$ ). Financial performance was positively and significantly impacted by operational risk ( $=0.01395$ ,  $t=4.88$ ,  $p0.05$ ), financial performance was positively significantly influenced by market risk ( $=0.7909$ ,  $t=32.36$ ,  $p0.05$ ), financial performance was significantly impacted negatively by liquidity risk ( $=-0.0023$ ,  $t =-4.28$ ,  $p0.005$ ). The study recommends that it is important for deposit-taking SACCOs to embrace financial risks even if it means hiring experts in risk management and should ensure that risk management practices incorporate other financial risks components.

**Keywords:** Financial Risks, Financial Performance, Deposit-Taking Savings and Credit Cooperative Societies.

## **INTRODUCTION**

SACCOs primarily target people and organizations that are excluded by banks. SACCOs are financial cooperatives that are member-owned, freely controlled by the members, and operate with the goal of maximizing economic benefits to members by providing financial services at fair and competitive rates (World Council of Credit Unions, 2022). There are 86,451 credit unions in the world with over 375 million members spread in 118 countries WOCCU (2021).

Deposit-taking SACCOs have been ranked as the world's fastest growing segment in the financial system thus contributing much in the global economic growth, as a result of their crucial role of collecting funds for later distribution to resource consumers. The National Credit Union Administration (NCUA) (2021), highlights that there are 5,099 federally insured credit unions in

the United States with approximately 124.3 million members and USD 1.85 trillion total asset base comparing it with the year 2019 which reported a total of 5,236 credit unions with 120.4 million members and USD 1.56 trillion total asset base. Member deposits grew by 56% in 2020 up from USD 1.02 trillion to USD 1.59 trillion and gross loans issued grew up from USD 57.4 million to USD 71.9 million over the same time frame. Total income generated in the year 2019 also showed an upward trend of 5.7% to report USD 320 million while in the next year 2020; it depicted a downward trend to USD 282 million thus depicting an 11.7% decrease.

Asia on the other hand has 33,472 credit unions in total, with 138.6 million members and asset base totalling to USD 660.97 billion as at the end of the year 2020 comparing it with 33, 634 credit unions, 64.8 million members and an asset base totalling to USD 440.5 billion in the previous year 2019. Total member savings increased by 45% up from USD 375.3 billion in the year 2019 to USD 544.5 billion in 2020. Total disbursed loans to members grew at the rate of 4% up from USD 375.2 billion in 2019 to USD 390.7 billion in 2020 (WOCCU, 2021).

Consequently, the credit unions in Europe in the year 2020 totalled to 3,382 this represented a 5% reduction comparing it with the year 2019 which reported 3,574 credit unions. According to WOCCU (2021), The total members reduced by 7.6% in the same time frame to 8.5 million in 2020 which also influenced the total amount of loan disbursed hence reducing from USD 12.5 billion to USD 11.75 billion in the same time frame. During the year 2020, the asset base in total for the credit union grew upwards from USD 34.4 billion to USD 34.9 billion.

Seychelles reports only one credit union which has 17,607 members in total which was a positive growth of 5.5% from 16,686 in 2018. Asset base in total in the period between 2018 and 2019 also reported an increase of 13.13% to SCR 492.6 million and deposits from members also increased to SCR 431.6 million from SCR 386.5 million in the same time frame. Total loans disbursed reported a decrease from SCR 114.1 million in 2018 to 112.6 million in 2019 thus representing a 1.25% decrease. Although the total loans disbursed decreased during the period 2018 to 2019, the total income generated grew to 19.08% from SCR 9.76 million to 11.6 million in 2019 (Seychelles Credit Union, 2020).

Cooperative movement in Kenya is ranked as the leading in Africa and seventh worldwide in terms of overall growth in the cooperative movement (Bwana & Mwakujonga, 2013). In Kenya the SACCO sector has been reporting tremendous growth and is currently number two in Africa in ranking when it comes to credit unions and first in Africa in terms of membership (WOCCU, 2021). Domestic savings amounted to Ksh. 400 billion which represented 33% of the country's total savings, and a total asset base of over 300 billion. Kenya's SACCO movement is considered to be the best in Africa and also ranked top 10 globally. This makes SACCOs an integral part of the country's social and economic growth, Kenya Union of Savings and Credit Co-operatives Limited (KUSSCO, 2020).

According to Sacco Societies Regulatory Authority (SASRA) in (2022, there are a total of 176 DT-SACCOs in Kenya with 5.54 million members in the year 2021 compared to 5.47 million in the year 2020 (SASRA, 2022). Total asset base as at the year ending 2021 was Ksh. 691.09 billion up

from Ksh. 627.68 billion in 2020 which shows an increase of 10.1% in 2021 comparing it with 12.75% over a same time frame in 2020. Total deposits in 2021 were Ksh. 474.25 billion an increase from Ksh. 431.46 billion recorded in 2020 representing a yearly increase of 9.92%. The total loans given out to members amounted to 522.25 billion, thus showing a yearly increase of 10.0% compared to the 474.77 billion recorded in 2020. The total SACCO incomes of all the registered SACCOs grew in 2021 to reach Ksh. 95.9 billion from 86.04 billion in 2020 thus showing an 11.47% increase. From all the income generated, 86.01% was from total loans disbursed and 38.15% of the total income generated in the year 2021, appeared as an expense linked to interest on deposits and thus it was paid back to members (SASRA, 2022).

Whenever a business entity is exposed to financial markets, there is a probability of suffering losses but there are also chances of making profits. The exposure to the financial markets provides strategic benefits to the enterprise. Proper management of the financial risks are of great important as that of implementing risk management policies since financial risks are a vital component of the business enterprise's risks. This fundamentally reduces the level of earnings due to financial risks (Dhanini et al., 2007).

Maina (2007) argues that there exist numerous risks including operational risks, strategic risks, compliance risks, business risks and financial risks. Njiru and Iraya (2020) on the other hand argues that financial risk takes center stage as it directly influences the performance of any firm. Some of the various financial risks we have entail operational risks, credit risks, market risk and liquidity risks (Maina, 2007). Liquidity risk should also be put in to consideration as SACCOs also encounter liquidity challenges not only due to lack of access to the Central bank as the lender of last resort to the commercial banks but also, they do not have an in-depth understanding of the determinants of these risks (Jazayeri, 2008). Thus, risks resulting from liquidity problems could be a major obstacle leading to failure of most SACCOs.

In Kenya, DT-SACCOs face a number of risks during their day to day operations ranging from operational risks, strategic risks, compliance risks, business risks and financial risks (Maina, 2007). While these risks are critical to the effective functioning of any firm, financial risk emanates as the most important risk that directly influences profitability and hence financial performance of firms (Njiru & Iraya, 2020).

Despite the importance of DT-Saccos in the economy, the financial Performance of DT-Saccos in Kenya has been reportedly deteriorating from time to time. For instance, the asset base of deposit-taking SACCOs as a percentage of the country's GDP fell from 5.86% in the year 2020 to 5.75% in 2021 (SASRA, 2021) despite expectations to grow as this was upon recovery from Covid 19 pandemic. In Kiambu County, SASRA (2022) reports shows that the DT-Saccos have experienced increased percentage of non-performing loans (NPLs) from 5% in 2020 to 7% in 2022, there was a 1% membership decline and there was also increased competition from commercial banks. There is need to understand the reasons for these trends and establish whether the declining performance can be traced to financial risks so as to effectively hedge, to protect the future growth of DT-Saccos in Kiambu County.

The international and local studies reviewed in the study have produced contradictory findings regarding financial performance and the impact of financial risks. Akindele (2012) studies on the financial success of Nigerian banks included on the Nigerian Stock Exchange and risk management came to the conclusion that effective risk management practices enhance company performance; Oluwafemi et al. (2014) examined the connection between bank risk management and financial success in Nigeria and found that the two variables are positively correlated. The study by Muriithi et al. (2017) examined the contribution of liquidity risk on the financial performance of commercial banks in Kenya and discovered that financial risks have a detrimental effect on that performance. These studies present contradictory findings regarding what connection there is between financial risks and financial success, which highlights the need for more study. Further, there also exists limited studies on this area and hence this study aims to clear the air by determining the effect of financial risks on financial performance of deposit taking Saccos in Kiambu County, Kenya

The general objective of the study was to determine the effect of financial risks on the financial performance of deposit-taking Savings and Credit cooperative societies in Kiambu County, Kenya. The independent variables were credit risk, operational risk, market risk and liquidity risk.

## **LITERATURE REVIEW**

This section gives an overview of previous scholarly research on the connection between financial risks and financial success. The approach covered an analysis of the objectives, scope, context, content, methodologies, findings and conclusion of past researches. The empirical review's primary goal was to find any gaps in the study and offer a solid framework to close them.

### **Credit Risk and Financial performance**

Dayasagar (2019) examined how credit risk management techniques affected the success of Mahila cooperative banks in the Indian region of Kalaburagi. The objectives were to ascertain how the identification, analysis, tracking, and reduction of credit risk impacted the efficiency of women cooperative banks. Panel data methodology which combines time-series and cross-sectional data was used. The results showed that credit analysis, mitigation, and recognition all significantly influenced performance in a positive way. It was consequently recommended that women cooperative banks employ more stringent credit analysis tools and credit monitoring procedures.

A research was conducted on the profitability, operational risk, and credit risk management practices of Ghanaian universal banks (Gadzo et al., 2019). The sample size consisted of 24 Ghana universal banks. A SEM or structural equation model was employed to demonstrate a negative link between managing operational and credit risks and bank profitability.

A research was conducted in 2015 by Adekunle, Alalade, Agbatogun, and Abimbola to determine the impact of Nigerian commercial banks' management of credit risk on financial performance. ROE and ROA were used to assess bank success from a profitability standpoint. 10 banks that are listed on the Nigerian Stock Exchange made up the population of the panel data that was gathered between 2006 and 2010. The research found a weak link between the bank's financial success and credit risk management (Adekunle et al., 2015).

Shieler, Emenike, and Amu (2017) investigated the connection between credit risk management and the financial performance of Ugandan microfinance firms. They considered financial performance of microfinance companies in Kampala, Uganda, credit risk assessment, credit risk management, and credit risk reduction. From the credit and finance departments of three licensed microfinance banks in Kampala, sixty workers were selected. Primary data were gathered through questionnaires, and secondary data were gathered through financial records from microfinance institutions. The Pearson linear correlation coefficient was investigated using inferential statistics to determine the relationship between the factors, and the population was examined with the aid of descriptive statistics. The results showed that in addition to credit risk vigilance and reduction had a moderately positive connection with microfinance institution financial success, credit risk identification and assessment had a high positive association. The study concluded, among other things, that the credit risk assessment process should be used to identify, analyze, and quantify all loss exposures.

Githaiga (2015) looked at how credit risk affected Kenyan private banks' financial results. The relationships between the factors were built by the researchers using CAMEL indicators. A descriptive research methodology and multiple regression analysis were employed. The results show that the CAMEL components have a significant impact on the financial success of commercial banks. A weak negative correlation between credit risk and financial performance was also found during the study. According to the research, when evaluating financial performance, the CAMEL model can serve as a stand-in for credit risk management.

Mogga (2018) investigated the impact of credit risk management on commercial banks' financial performance in Juba, South Sudan. Secondary data was obtained from annual financial reports issued by banks between 2000 and 2012. According to the poll, the majority of banks regarded risk identification as a procedure in credit risk management that influenced financial performance. The study found that risk identification has no effect on a bank's financial performance, whereas risk analysis has a minor impact on a commercial bank's financial performance. Risk management, on the other hand, had a significant impact on financial performance, but loan approval had a significant impact on commercial banks' performance.

Luqman (2014) evaluated the impact of credit risk on the performance of Nigerian commercial banks between 2008 and 2012. The survey collected information from journals and yearly reports. According to the survey, the loan ratio plus advances to total deposits has a marginally negative impact on profitability, while the ratio of NPLs to loans and advances has a marginally negative impact on profitability. The analysis also revealed a substantial relationship between CRM performance interims and loan performance profitability.

Onango (2017) conducted research on the impact of credit risk management on financial performance with a main focus on Kenyan commercial banks. He used a longitudinal study method for his sample of 44 Kenyan commercial banks. According to his study, controlling non-performing loans has a positive impact on financial performance even though there is no correlation between the credit risk management variables of capital adequacy, loan loss provisions, and monetary performance.

The effect of financial risk on the financial success of Kenyan dairy cooperatives was assessed by Gitau (2021) through secondary data and a descriptive panel design. From 2009 to 2018, a sample and secondary statistics were collected using census sampling. Data was gathered using a secondary data gathering sheet, and multiple panel regression models were used to analyze the results. The findings demonstrated that credit management significantly impacted the return on investment, which evaluated the effectiveness of dairy marketing groups. The tests revealed that the factors were statistically important as well.

### **Operational Risk and Financial performance**

Achieving efficient operational risk management increases bank productivity, claim Ali, Bagram, and Ali (2018). The research used secondary information obtained from the annual reports of five major and five minor banks in Pakistan between 2005 and 2015. According to the research, operational risk management had a significant and detrimental effect on major commercial banks' performance but a positive effect on small banks' financial results. The research, however, was unable to draw a connection between operational risk management and the financial performance of financial institutions because the authors chose to emphasize operational risk rather than operational risk management.

Okeke, Aganoke, and Onuora (2018) conducted research on operational risk management and firm performance in Edo State, Nigeria, utilizing selected banks. The survey's goal was to look into the impact of process risk, people risk, technology and system risk, as well as external risk variables, on organizational performance. To examine data from 386 instances, the study used both correlation and descriptive statistics. Multiple regression analysis techniques were used to test the hypothesis. The survey found that an individual's risk variable had a negative significant effect on regional performance. Process risk had a negative influence on performance, whereas technology and system risk had a significant negative impact on bank performance. Similarly, in Edo state, the external risk variable had a positive but small influence on bank performance. According to the study, there is a clear negative relationship between operational risk management and bank performance in Edo state.

Festus and Fatoki (2015) looked into the relationship between operational risk management and Nigeria's financial advancement and economic expansion. A descriptive survey design was used throughout the study. The variables were subjected to quantitative research in order to meet the project's goals. The respondents' information was gathered using a convenient method. Descriptive statistics were used to carry out the research. 150 workers' data were collected from a number of financial institutions. Variance analysis or ANOVA was conducted to ascertain the study's hypothesis. The employee survey's main data was coded and analyzed using SPSS. The research results showed a favourable correlation between operational risk management and financial economic growth and progress in the financial sector.

Meshack (2016) looked into the relationship between operational risk management and financial success of commercial banks. A descriptive survey approach was used to answer the study queries. The group consisted of 34 licensed commercial banks with operations in Tanzania. The study's

descriptive data revealed a positive relationship between the operational risk management practices of Tanzanian commercial banks and their financial success.

A study on the management of financial risk and profitability of Kenyan oil firms was piloted by Ndung'u (2013) with a target group consisting of 85 oil companies in Kenya, and ad hoc research methods were used. A regression model was used to match operational risk management on profitability. The research revealed a connection between operational risk management and profitability, a measure of financial performance.

Siminyu, Clive, and Musega (2016) conducted a pilot research to ascertain the relationship between operational risk management and DT-SACCO profitability in Kakamega County. The four SACCOs that run the county served as the populace in this descriptive design study. Means and standard variation were used to summarize field data using the descriptive analysis technique. To make sense of how the variables linked to one another, inferential analysis was used. The study's conclusions showed a strong correlation between operational risk management and SACCO profitability in Kakamega County.

### **Market Risk and Financial performance**

Hoffman et al. (2018) conducted a study on the distribution of interest rate risk in order to offer more effective financial risk management strategies. The results of the study demonstrate that there are substantial differences in the way interest rate risk is distributed among European countries. In particular, financial organizations in fixed-rate economies and the hospitality sector in variable-rate economies suffer from high interest rates. The results imply that financial organizations' net worth becomes brittle when interest rates change, which affects loan availability via the balance sheet. When the real sector, on the other hand, carries the majority of the interest risk, monetary policy transfers it through their balance sheet, with larger implications for investment and consumption.

Kassi et al. (2019) conducted a study to assess the influence of market risk on the financial performance of 31 non-financial enterprises listed on Morocco's Casablanca Stock Exchange between 2000 and 2106. ROE, profit margin, and ROA were utilized as financial performance indicators. Market risk was measured using the extent of financial leverage, gearing ratio, and book to market value. The OLS model, the fixed-effect model, the random effect model, and the system GMM models were all used. According to the findings, numerous market risk metrics have a significant negative impact on business financial performance.

Ali and Nsenje (2017) conducted a research study in Lusaka, Zambia, to determine the impact of GDP, inflation, and exchange rate volatility on profitability in the hotel business. A study that examined quarterly secondary data from 2005 to 2015 focused on three sizable hotels with global names and more than half of their revenue coming from foreign currencies. In order to assess the effect of predictor variables on the response variable, a multivariate regression model was used. The research discovers that while currency rate volatility has a significant impact on profitability, inflation has a negative impact on profitability. The rate of GDP growth helps capacity utilization. According to the study, the Central Bank of Zambia must take the required actions to raise the value of the local currency and avoid currency instability in order to protect the profitability of the hotel



business. The study also demonstrated how prudent monetary policy can be used to limit the quantity of money in circulation. Examples include increasing the reserve ratio and selling bonds on the open market.

Kolapo and Fapetu (2015) conducted research on the interest rate risk and performance of Nigerian deposit money banks (DMBs) between 2002 and 2011. ROA was used to assess performance, while average lending ratio and interest rate diversity were used to assess interest rate risk. The study employed fixed-effect regression analysis, and the findings demonstrated that each measure of interest rate risk has a negligible effect on bank performance.

In Mbogo's (2016) study, financial risk management was examined in relation to deposit-taking SACCOs in Kenya. Return on investment was used to evaluate profitability, and SASRA-approved DT-SACCOs were all included in the study. The study's secondary data were analyzed using inferential and descriptive statistics. The outcome of the research findings showed that while financial risk had a substantial effect on deposit-taking SACCOs' return on investment, interest rate risk management had a positive impact on SACCO profitability.

Research was conducted on the financial risk and bank profitability of Kenyan private banks (Maniagi, 2018). It aimed to determine how the profitability of Kenyan banks was affected by market risk, credit risk, fluctuating interest rates and exchange rates, compliance risk, and liquidity risk. A positive research philosophy was adopted while descriptive survey research was used. There were 44 Kenyan commercial banks present, of which two were under-receivership due to noncompliance issues. The data that was examined covered the years 2006 through 2015. According to the research, controlling interest rate risk was crucial for profitability, and the other factors were crucial for bank expansion.

Gweyi (2018) studied the impact of financial risk management on the DT-SACCO's financial success in Kenya. The research examined the effects of credit, interest rate, liquidity, and operational risk management as well as the moderating role of company size on the financial performance of Kenya's DT-SACCOs. Descriptive and inferential statistics were used to analyze data from 135 Deposit-Taking SACCOs from 2010 to 2015 in accordance with an adjusted research design. The results demonstrate that controlling operational, interest rate, liquidity, and credit risks greatly improves the monetary performance of Kenya's DT-SACCOs.

### **Liquidity Risk and Financial performance**

In order to investigate the connection between liquidity risks and the financial success of Malaysian banking institutions, Sohaimi (2013) examined disclosures and liquidity risks. Deposits, liquidity gaps, cash, and NPLs are all examples of financial success indicators. Bank Negara Malaysia has gathered information from periodicals, books, and financial records for the years 1997 to 2012. The study used multiple regression to examine how liquidity risk affected the bank's capital and reserves. The research came to the conclusion that NPLs exacerbate the liquidity risk, which has a significant impact on the banks' capital reserve.

The effect on bank performance of liquidity risk in Tunisia was investigated by Hakimi and

Zaghdoudi (2017) between 1990 and 2013, a sample of 10 institutions was used. The random impact model was examined using panel data. According to earlier research, banks' performance is severely hampered by financial risk. The findings also indicate that the success of the bank is negatively impacted by inflation and the global financial crisis. However, the impact of other bank factors like size, financial risk and sufficient capital ratio is negligible.

On the financial success of Kenyan commercial banks, Waweru and Muriithi (2017) evaluated the impact of liquidity risk. Between the years of 2005 and 2014, every business bank in existence was inspected. In the study, the net stable funding ratio was used as the financial performance metric, and the liquidity coverage ratio was used to assess the liquidity risk. According to records kept by the Central of Kenya, secondary statistics were obtained from the financial records of commercial banks.

To eliminate time-inconsistent un-noted firm-specific impacts and to lessen the occurrence of endogeneity issues, panel data methods of the generalized method of moments and random effects estimation were used. The findings showed that while liquidity coverage ratios have no effect on the short- or long-term financial performances of Kenyan commercial banks, the net funding ratio is negatively linked to the bank's profitability in both the short- and long-term.

## **RESEARCH METHODOLOGY**

This study employed a descriptive research methodology to examine the contribution of financial risks on the financial performance of Kiambu County's DT-SACCOs. The 13 deposit-taking SACCOs that SASRA has licensed to function for the fiscal year ending December 31, 2022, was the target population. The research factored in 12 SACCOS because one SACCO Good faith Sacco Society Limited was SASRA registered in the year 2014 thus lacked enough data to cover the ten-year period under study that is 2013-2022. Given the small size of the target group, the Census approach was used. The census method produces reliable results with few errors at a lower cost than sampling does (Kothari, 2008).

The researchers used secondary data that was gathered from SASRA financial records and particular SACCO financial accounts. The measurements of each SACCO variable were entered into an additional data file that was created in Excel. The financial performance of SACCOs formed the dependent variable, and credit risk, operational risk, market risk, and liquidity risk were the independent variables. A secondary data collection sheet was used to gather secondary data from financial statements.

The study employed a secondary data collection sheet to collect secondary data by looking over published reports, management reports, and other publications by the company as per the operationalization of variables and over the study period 2013 through 2022. From the target population size of 13 Saccos, 12 were analyzed since one DT Sacco had incomplete data and hence was eliminated. The study's total observations therefore were 120.

Descriptive statistics was used to describe the data, while inferential statistics was used to explain

how the study's variables link to one another. Means and standard deviation were used as descriptive statistics, and panel data regression was used as an inferential statistic. With the help of the coefficient of determination, which describes the strength of the relationships between the factors, data analysis was done using STATA version 16. In order to ascertain the nature, magnitude, and direction of the relationships, the hypothesis was also evaluated. Tables and charts were used to present the data. To determine the relationship between the factors, a model-regression analysis was performed analytically. The model can be seen below;

The regression model used was as follows:

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

Where  $Y_{it}$  = Financial performance;  $X_{1it}$  = Credit risk;  $X_{2it}$  = Operational risk;  $X_{3it}$  = Market risk;  $X_{4it}$  = Solvency risk;  $\beta_0$  = Constant;  $\beta_1, \beta_2, \beta_3, \beta_4$  = predictor variable coefficient;  $\varepsilon_{it}$  = Error term of the model.

Various diagnostic tests were conducted. The Heteroscedasticity, Breusch-Pagan Lagrange multiplier, and Hausman are some of the diagnostic tests that were run, and the model to be used was defined using the Hausman test. Regression analysis was performed under certain assumptions, with a focus on residuals and predictor behavior. The Breusch-Pagan test was used in this research to check for heteroscedasticity. The VIF was used in this study to check each independent variable for multicollinearity. While the Breusch-Pagan Lagrange multiplier (LM) was used to determine whether to use a pooled ordinary least squares (POLS) model or a random effect (RE) model. To determine whether the residuals are independent of one another, autocorrelation in the regression model was performed using the Woolridge test. The Hausman Specification Test was applied in a regression model to identify natural repressors.

In the Hausman test, the null hypothesis is rejected if the value of P is less than the significant level (0.05), which shows that the data used did not originate from a typical population. Endogenous repressors in a regression model may be the reason why the OLS estimators failed. According to the statistics, OLS regression cannot be done because the independent variable and the error term have no relationship. A Hausman test was carried out to see whether impacts were fixed or random.

First, the researchers used the Hausman test to choose the appropriate model for the study; if the Prob>chi2 value is greater than 0.05, the favoured model will be taken to be one with random effects. In the case where Prob>chi2 is less than 0.05, the alternative reversed the impacts. Basically, it evaluated the unique errors' (ui) association with the regressors. This evaluation was used to choose between the fixed effects model and the random effects model. The fixed effect model will be used if the results indicated a p-value of less than 0.05 (indicating that H1 is true), and the random effect model will be used if the p-value is greater than 0.05 (indicating that H0 is true), using the random effect model as the null hypothesis (H0) and the fixed effect model as the alternative (H1).

	H <sub>0</sub> Is True	H <sub>1</sub> Is True
Random Effect Estimator		
Fixed Effect Estimator		

In order to choose the best model from the pooled OLS and either random or fixed effects models, the researchers will need to run extra tests regardless of the outcomes of the Hausman test. If they chose to use a random effect model, the combined OLS model and the random effect model will be compared using the Breusch-Pagan Lagrangian Multiplier (BPLM) test. The alternative hypothesis (H<sub>1</sub>) is the pooled OLS and the null hypothesis (H<sub>0</sub>) is the random impact (when variance = 0).

	H <sub>0</sub> Is True	H <sub>1</sub> Is True
Random Effect Estimator		
Pooled OLS		

If the fixed effects model is chosen, the researchers will need to use the Wald F-test to evaluate the best model between the fixed effect and pooled OLS models. Taking into account the alternative hypothesis (H<sub>1</sub>), which will have a pooling OLS when the F-value is greater than the F-critical, and the null hypothesis (H<sub>0</sub>), which will have a fixed impact when the F-value is less than the F-critical

	H <sub>0</sub> Is True	H <sub>1</sub> Is True
Fixed Effect Estimator		
Pooled OLS		

## **DATA ANALYSIS FINDINGS AND DISCUSSION**

### **Introduction**

The results and interpretations of the study are presented in this section, which are guided by the research objectives. Descriptive and panel regression analysis were used to analyse the data. Descriptive analysis was used to address the nature of the variables evaluated, whereas panel regression analysis was employed to assess how financial risk affected the financial performance of Deposit Taking SACCOs in Kiambu County, Kenya. The section also discusses the diagnostic tests used to determine whether the panel data model used was a perfect fit for the data.

### **Descriptive Statistics**

Credit risks, operational risks, market risks and liquidity risks, were the four independent variables and financial performance was the dependent variable in the research. These factors were measured using various methods. It is worth mentioning that the study included one hundred and twenty (120) observations, the number of DT-SACCOs analysed was twelve (12), as shown by (n), and the average number of years was 10, as indicated by (T). One deposit taking SACCO were excluded from the study: Good faith Sacco Society ltd was registered during the year 2014 thus no enough data to cover the 10 years under the study. The metrics' means, standard deviations, minimum and

maximum values were also emphasized.

One of the independent variables was credit risk, which was quantified as a ratio of non-performing loans to gross loans. The mean of the ratio of non-performing loans to gross loans for the period is given by 0.05083. The overall standard deviation is 0.04298 while between the 12 DT-SACCOs is 0.0311 and within the years, the standard deviation is 0.0308. The low standard deviation values mean that the overall, in between DT-SACCOs and within the average period of 10 years, the non-performing loans to gross loans ratio has been around the mean. The minimum overall ratio of non-performing loans to gross loans is 0.0095 while the maximum is 0.2009. The minimum value between the 12 DT-SACCOs is 0.0174 while the maximum is 0.1129. The minimum value within the years is -0.0029 while the maximum is 0.1606.

The second independent variable was operational risk, which was quantified as a ratio of operating expenses to gross income. The mean of the ratio of operating expenses to gross income is 0.5145 for the period. The overall standard deviation is 0.2883, the standard deviation between the 12 DT-SACCOs is 0.1663 while within the years is 0.2398. The overall and within standard deviation are quite high which means that the overall and within the 10-year average period of study, ratio of operating expenses to gross income has deviated away from the mean. The Overall, minimum value is 0.0893 and maximum value is 2.8017, between the DT-SACCOs the minimum value is 0.2265 and the maximum is 0.7046, within the period the maximum value is 2.689 while the minimum is 0.0832.

The third independent variable was market risk, which was quantified as a ratio of net operating expenses to gross income. The mean of the ratio of net operating income to gross income is 0.0575 for the period. The overall standard deviation is 0.0387, the standard deviation between the 12 DT-SACCOs is 0.02736 while within the years is 0.02834. The low standard deviation values meaning that the overall, between and within the 10 years' average period studied the ratio of net operating expenses to gross income did not deviate much from the mean. The Overall minimum value is -0.0921 and maximum value is 0.1502, between the DT-SACCOs the minimum value is 0.0266 and the maximum is 0.1242, within the period the maximum value is 0.1225 while the minimum is -0.1113.

The fourth independent variable was liquidity risks, which was quantified as a ratio of gross loans to total income. The mean of the ratio of gross loans to total assets was 1.3921 for the period. The overall standard deviation is 1.0689, the standard deviation between the 12 DT-SACCOs is 0.7609 while within the years is 0.7792. The low standard deviation values meaning that the overall, between and within the 10 years' average period studied the ratio of net operating expenses to gross income did not deviate much from the mean. The Overall minimum value is 0.1106 and maximum value is 4.9138, between the DT-SACCOs the minimum value is 0.52544 and the maximum is 2.9746, within the period the maximum value is 3.8635 while the minimum is -0.8232.

Financial performance was measured as a ratio of Net Operating Income to Total Assets (ROA), which served as the dependent variable. The overall standard deviation is 0.0299, the standard deviation between the 12 DT-SACCOs is 0.02258 while within the years is 0.02057. The low

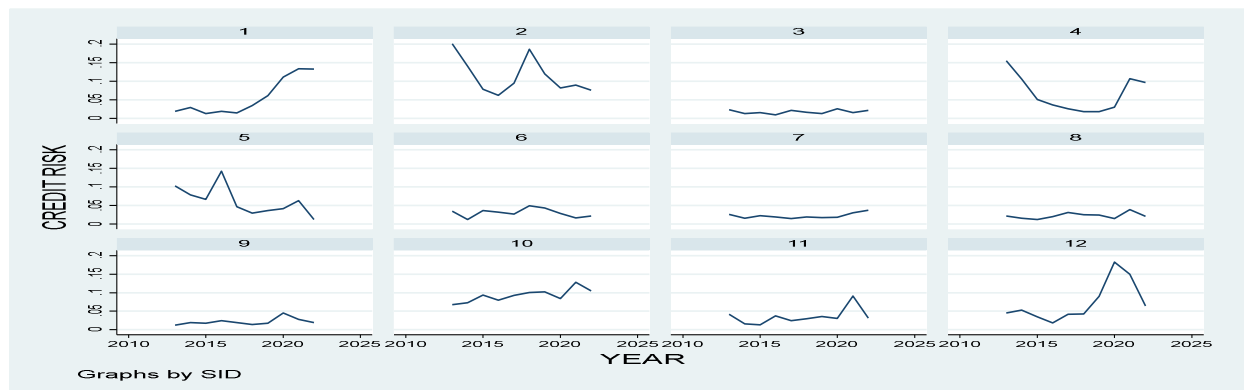
standard deviation values depict that the overall, between and within the ratio of net operating income to total assets has not deviated very much from the mean. Overall, the minimum value is - 0.0576 and maximum value is 0.1199, between the DT-SACCOs the minimum value is 0.02305 and the maximum is 0.1019, within the period the maximum value is 0.9916 while the minimum is – 0.05541. The descriptive statistics results are summarized in table 2.

**Table 1 Descriptive Statistics Results**

Variable	Mean	Std. Dev.	Min	Max	Observations	
financ~e	overall	.0434292	.0299058	-.0576	.1199	N = 120
	between		.0225806	.02305	.1019	n = 12
	within		.0205678	-.0554108	.0991592	T = 10
credit~k	overall	.050825	.0429784	.0095	.2009	N = 120
	between		.0311327	.0174	.11286	n = 12
	within		.0308415	-.002905	.160595	T = 10
operat~k	overall	.51452	.2882696	.0893	2.8017	N = 120
	between		.1662736	.22647	.7046	n = 12
	within		.239882	.0832	2.689	T = 10
market~k	overall	.0575175	.0386651	-.0921	.1502	N = 120
	between		.0273625	.0266	.12417	n = 12
	within		.0283356	-.1112825	.1225375	T = 10
liquid~k	overall	1.3921	1.068862	.1106	4.9138	N = 120
	between		.7609514	.52544	2.97463	n = 12
	within		.7792383	-.82323	3.86352	T = 10

**Findings on Study Variables**

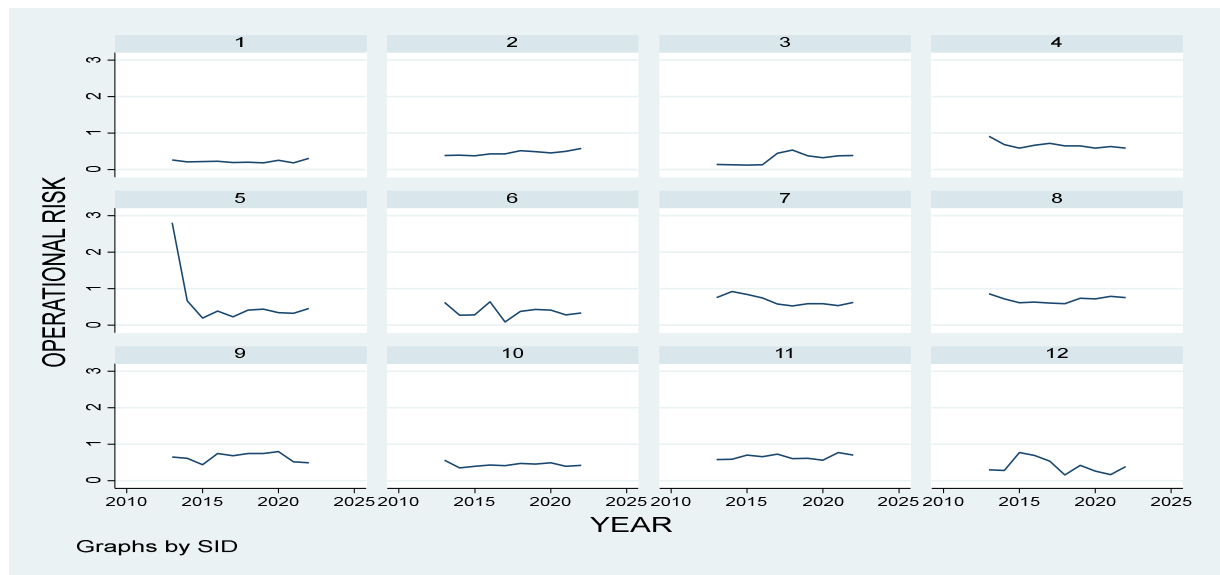
In this Section, line plots for the independent variables and line plots for the dependent variable will be displayed to show the results of the exploratory analysis of the study variables. Figure 2 below displays the variations in credit risk for the 12 DT-SACCOs over the study period of ten years using panel data plots. From the chart, though most of the DT-SACCOs showed that there were material changes in credit risk over the study, DT-SACCO 3, 6, 7, 8, 9, 10 and 11 were almost constant throughout the period implying that the measure of credit risk which was the ratio of non-performing loans to gross loans was almost constant during the period.



**Figure 1: Panel Data Lines Plots for Credit Risk**

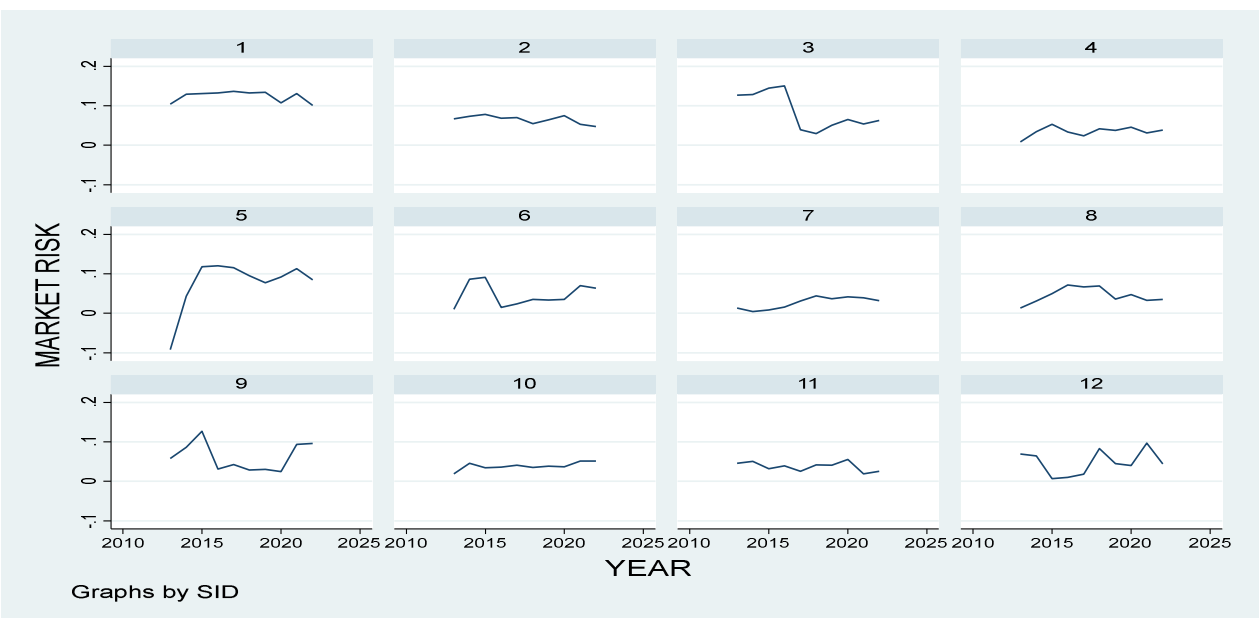
Using panel data plots, Figure 3 below shows the fluctuations in operational risk for the 12 DT-SACCOs during the course of the ten-year study. From the panel data line plots, most DT-SACCOs had little notable change over the ten-year period of the study and this indicates that the measure of

operational risk which the ratio of operating expenses to gross income was almost constant during the period. However, three DT-SACCOs (5, 6 and 12) showed material changes of operational risk over the period of study.



**Figure 2: Panel Data Line Plots for Operational Risk**

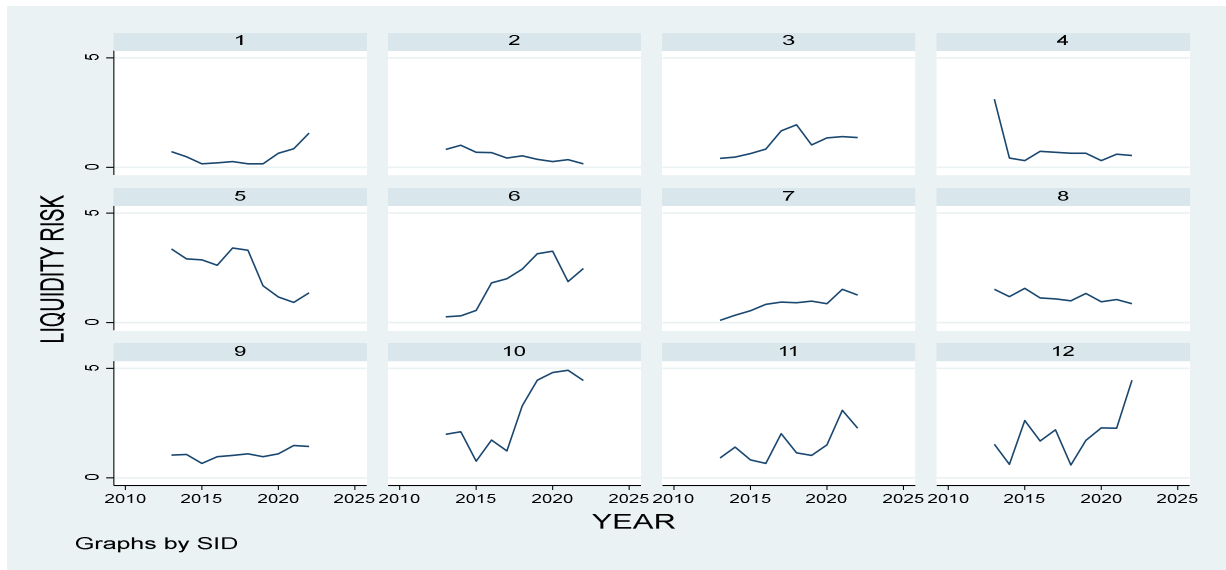
From the graphs in figure 4, we can see that the changes in market risk were significant over the ten years for most DT-SACCOs. Despite, this, DT-SACCO 2,4,7,8,10, and 11 experienced little or no significant changes over the period which indicates that the measure of market risk which was the ratio of net operating expenses to gross income fluctuated significantly for these DT-SACCOs.



**Figure 3: Panel Data Line Plots for Market Risk**

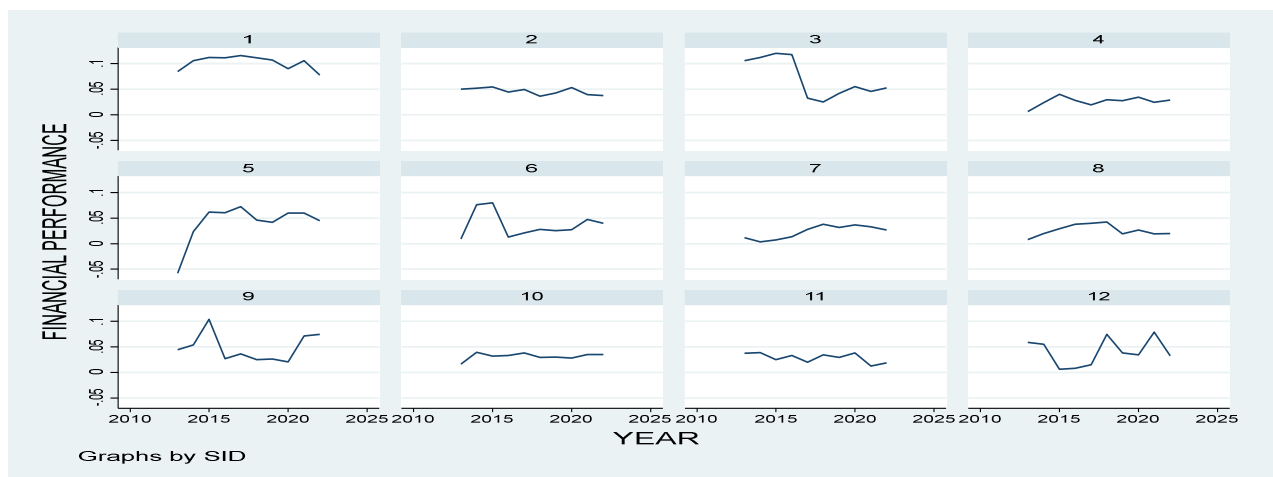
On the other hand, figure 5 reveals the variations in liquidity risk for the 12 DT-SACCOs over the study period of ten years using panel data plots. From the chart, though most of the DT-SACCOs showed that there were material changes in liquidity risk over the study, DT-SACCO 2,7,8 and 9,

were almost constant throughout the period implying that the measure of liquidity risk which was the ratio of total debts to total assets was almost constant during the period.



**Figure 4 Panel Data Line Plots for Liquidity Risk**

Figure 4.5 displays the line plots for financial performance, displays that there were material changes of financial performance during the study period of ten years for the 12 DT-SACCOs. The material changes over the study period showed that the ratio of net operating income to total assets which was the measure for financial performance had significant changes



**Figure 5: Panel Data Line Plots for Financial performance**

### **Diagnostic Tests**

The varied outcomes of the performed diagnostic tests are highlighted in the section. The primary goal of the diagnostic tests was to determine if the chosen panel analysis model suited the data acquired in the most optimal way. The diagnostic performed, were: heteroscedasticity. Breusch-Pagan Lagrange multiplier (LM) and Hausman test.



### **Test for Heteroscedasticity**

When the error term's size fluctuates depending on the values of the independent variables, heteroscedasticity is present. The Breusch-Pagan test was used in this investigation to determine the presence of heteroscedasticity. The consequence of breaching the assumption of homoscedasticity is proportional to the degree of heteroscedasticity. If the test statistic has a p-value less than the chosen threshold ( $p < 0.05$ ), heteroscedasticity is assumed rather than the null hypothesis of homoscedasticity.

*Table 2 Breusch-Pagan / Cook-Weisberg test for heteroscedasticity*

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity  
 Ho: Constant variance  
 Variables: financialperformance

chi2(1)	=	0.21
Prob > chi2	=	0.6453

Based on the findings, the prob > chi2 is 0.21 which is more than 0.05 implying that the study accepts the null hypothesis of homoscedasticity and heteroscedasticity is dismissed.

### **Breusch-Pagan Lagrange multiplier (LM)**

The Breusch-Pagan Lagrange multiplier (LM) was used to determine whether a random effects regression or an OLS regression should be used. In the LM test, the null hypothesis was that variances between entities were zero. Since the Prob>chi2 value (0.0000) was less than 0.05, there was no significant change between units (i.e. no panel effect), we rejected the null hypothesis and came to the conclusion that a random effect was suitable. The random effects model is justified by the fact that, unlike the fixed effects model, variation between entities is believed to be random and uncorrelated with the predictor or independent variables included in the model. Random effects presume that the entity's error term is unrelated to the predictors, allowing time-invariant variables to function as explanatory variables.

*Table 3 Breusch-Pagan Lagrange multiplier (LM)*

Breusch and Pagan Lagrangian multiplier test for random effects

$$\text{financialperformance}[\text{sid},\text{t}] = \text{Xb} + \text{u}[\text{sid}] + \text{e}[\text{sid},\text{t}]$$

Estimated results:

	Var	sd = sqrt(Var)
financi~e	.0008944	.0299058
e	.0000173	.0041563
u	.0000225	.0047462

Test: Var(u) = 0

<u>chibar2(01)</u>	=	159.89
Prob > chibar2	=	0.0000

### **Hausman Test**

Selecting the appropriate panel data models (Random effects and Fixed Effects) was best for the study; the researchers conducted the Hausman test. The Hausman Test highlights the values of endogenous variables that are influenced by other factors contained in the model. Based on the results the prob > chi2 is 0.0002 which is less than 0.05. Due to this, the most appropriate model for

the data is the fixed effect model as evidenced by the results. Hilmer and Hilmer (2013), fixed effect model enables management of unobserved time-invariant characteristics which are distinctive to specific units included in this study. The model suggests that these characteristics are correlated to the predictor variables.

**Table 4 Hausman Test**

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) re	(B) fe		
creditrisk	.0032355	.0033702	-.0001348	.0033491
operationa~k	.0114322	.0139522	-.0025199	.0006673
marketrisk	.7757035	.7908533	-.0151498	.0042535
liquidityr~k	-.002248	-.0022688	.0000208	.0001444

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

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(4) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 21.52 \\ \text{Prob}>\text{chi2} &= 0.0002 \end{aligned}$$

**Multicollinearity**

Multicollinearity is said to exist when two or more variables which are predictors are correlated. According to Gujarati (2012), a multicollinearity problem affects the coefficients of the regression model such that estimation cannot be carried out with accuracy and meticulousness due to standard errors. Variance inflation factor was adopted by the study to test the multicollinearity. According to Gujarati & Greene (2012), a VIF value of 1 show no multicollinearity problem, values between 1 and 5, is an indicator of reasonable multicollinearity problem in predictor variables while a value greater than 5 shows highly correlated variables in the study. From the table below, the variance inflation factor is 1.76, which is a modest level of Multicollinearity problem hence the Multicollinearity was not a great problem in the predictor variables used.

**Table 5 Multicollinearity Analysis**

Variable	VIF	1/VIF
marketrisk	2.46	0.405855
operationa~k	2.34	0.428192
liquidityr~k	1.17	0.855141
creditrisk	1.08	0.924546
Mean VIF	1.76	

**Correlation Analysis**

The study employed a correlation analysis to ascertain the strength and direction of the relationship between the dependent and independent variables. According to table 7's results, there was a weak and negative (-0.0470) correlation between deposit taking SACCOs' credit risk and financial performance. The association was not statistically significant since the p-value was higher than the chosen significance level of 0.05, at 0.6105.

The results also demonstrate a negative but significant link (-0.7406) between operation risk and financial performance of deposit-taking SACCOs. The link is significant at a 5% level of significance since the p-value is 0.0000, which is lower than the level of significance.

Market risk and deposit-taking SACCOs' financial performance have a strong positive correlation of 0.9628. The link is significant at a 5% level of significance since the p-value, which is less than the significance level, is 0.0000. The results also demonstrate a weakly negative correlation (-0.3223) between deposit-taking SACCOs' liquidity risk and financial performance. The association is significant at a 5% level of significance since the p-value is smaller than the level of significance (0.0003).

**Table 6 Correlation Analysis**

	financialp~e	credit~k	operat~k	market~k	liquid~k
financialp~e	1.0000				
	120				
creditrisk	-0.0470	1.0000			
	0.6105				
	120	120			
operationa~k	-0.7406	-0.0342	1.0000		
	0.0000	0.7107			
	120	120	120		
marketrisk	0.9628	-0.0209	-0.7508	1.0000	
	0.0000	0.8208	0.0000		
	120	120	120	120	
liquidityr~k	-0.3223	0.2672	0.1086	-0.2550	1.0000
	0.0003	0.0032	0.2375	0.0049	
	120	120	120	120	120

### Model Fitting

This section provides the fixed effects models results that were used to fit the data. credit risk, operational risk, market risk and liquidity risk were the independent variables. Return on assets (ROA) was the dependent variables. The results of fixed effect model are shown in Table 8.

The table 8 below shows the model fitness, explanatory power, the significance of the dependent variable (ROA) being predicted by the independent variables. The DT-SACCOs that were included in the study had an equal number of observations for the study period making the panel data to be balanced. In regards to model fitness, the f statistic (F= 702.53) was statistically significant as Prob> F = 0.000 which is lower than 0.05, showing that the model was fit and that at least one of the independent variables had a great impact on explaining the dependent variable. The coefficient of determination (r squared within= 0.9643) showing that the independent variables, credit risk, operational risk, market risk and liquidity risk account for 96.43 percent of the variance in ROA within the maximum period of 10 years. 87.74 percent of the variance in the dependent variable financial performance between the 12 DT-SACCOs is accounted for by the model (r squared between=0.87.74) and finally 91.85 % of variations in DT-SACCOs financial performance overall was attributed to financial risks (credit risk, operational risk, market risk and liquidity risk).

From the coefficients table below, the following panel regression model was fitted:

$$Y_{it} = -0.00625 + 0.00337X_{1it} + 0.01395X_{2it} + 0.79085X_{3it} - 0.00227X_{4it} + \varepsilon_{it}$$

Where  $Y_{it}$  = Financial performance

$X_{1it}$  = Credit risk

$X_{2it}$  = Operational risk

$X_{3it}$  = Market risk

$X_{4it}$  = Operational risk

$\varepsilon_{it}$  = Error term of the model.

t = time variable, 2013 to 2022

i = panel variable, 1-12 for each DT-SACCO Kiambu County, Kenya.

The above regression equation shows that when all the predictor variables (credit risk, operational risk, market risk and liquidity risk) are constant at zero, financial performance of DT-SACCOs in Kiambu County will have a constant value of 0.00625. According to the findings, liquidity risk has an adverse effect on DT-SACCOs' financial success in Kiambu County ( $\beta = -0.00227$ ), which implies that for every unit change in liquidity risk, DT-SACCOs' financial performance declines by 0.00227 units. The p-value found (0.0000), which was smaller than the chosen significance level of (0.05), indicated that it had a significant impact.

The research results depicted that operational risk has a positive effect on financial performance of DT-SACCOs in Kiambu County ( $\beta = 0.01395$ ), meaning that a unit change in operational risk increases the financial performance of DT-SACCOs in Kiambu county by 0.01395 units. The coefficient was significant since the p value obtained was 0.000 which is less than the selected 0.05 significant level.

From the research results, market risk has positive impact on financial performance of DT-SACCOs in Kiambu county with a coefficient of ( $\beta = 0.7908$ ). A unit change in market risk increases the financial performance of DT-SACCOs in Kiambu County by 0.7908. The coefficient was significant as the p value was 0.0000 which is lower than the significance level agreed of 0.05.

On the other hand, the study results reveal that, credit risk had positive effect on financial performance of DT-SACCOs in Kiambu county with a coefficient of ( $\beta = 0.00337$ ). A unit change in market risk increases the financial performance of DT-SACCOs in Kiambu County by 0.00337. The coefficient was insignificant as the p value was 0.797 which is more than the significance level agreed of 0.05.

**Table 7 Regression Analysis**

Fixed-effects (within) regression	Number of obs	=	120
Group variable: sid	Number of groups	=	12
R-sq:	Obs per group:		
within = 0.9643	min =		10
between = 0.8774	avg =		10.0
overall = 0.9185	max =		10
	F(4,104)	=	702.53
corr(u_i, Xb) = 0.0315	Prob > F	=	0.0000

financialperf~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
creditrisk	.0033702	.0130577	0.26	0.797	-.0225238	.0292642
operationalrisk	.0139522	.0028584	4.88	0.000	.0082839	.0196204
marketrisk	.7908533	.0244415	32.36	0.000	.7423849	.8393217
liquidityrisk	-.0022688	.0005296	-4.28	0.000	-.0033191	-.0012186
_cons	-.0062503	.002932	-2.13	0.035	-.0120646	-.000436
sigma_u	.00791378					
sigma_e	.00415631					
rho	.78380077	(fraction of variance due to u_i)				

F test that all u\_i=0: F(11, 104) = 27.09 Prob > F = 0.0000

### Discussion of findings

The following section discusses the outcomes of the research in line with the research objectives and research hypothesis formulated in chapter one of the study. These were based on conceptual and empirical literature. In order to test the research hypothesis, a panel data model was employed in the research. Further the section discusses the results of the study to show the extent of agreement to prior studies.

In Kiambu County, it was discovered that credit risk had a weak positive impact on DT-SACCOs' financial performance. The results are in line with the study of Gadzo et al. (2019) on how Ghanaian universal banks handle credit risk, operational risk, and profitability and the study of Adegunle *et al.* (2015) on the link between management of credit risk by Nigerian commercial banks on monetary performance.

Other studies have produced contradicting results from those of the current study. Onango (2017) conducted a study on the impact of credit risk management on financial performance, focusing primarily on 44 Kenyan commercial banks. The results were in contrast to those of the current study. Dayasagar (2019), who looked into how credit risk management measures affected the performance of mahila cooperative banks in the Indian Kalaburagi region, found the opposite in his study. The objectives were to ascertain the effects of credit risk analysis, monitoring, and reduction on the efficiency of women cooperative banks. The findings of Gitau's (2021) evaluation of the effect of financial risk on the financial performance of Kenyan dairy cooperatives did not agree with those of this study.

The study's findings showed that financial performance of DT-SACCOs in Kiambu County was significantly positively correlated with operational risk. The results are in line with the study by Meshack (2016) who investigated the link between management of operational risk and commercial

banks financial performance. The research used a descriptive survey approach and 34 licensed commercial banks operating in Tanzania made up the sample. The findings of the study by Festus and Fatoki (2015) who investigated how operational risk management affects financial development and economic growth in Nigeria using descriptive survey design also were similar to the study findings.

Simiyu et al. (2016) conducted research to ascertain the relationship between operational risk management and DT-SACCO profitability in Kakamega County. Descriptive design was used, with the population being the 4 SACCOs that operate in the county. The study's findings were in line with the current study findings. Ndung'u (2013) piloted a study on management of financial risk and profitability of Kenyan oil companies. 85 oil companies in Kenya made up the target population, and a casual research design was adopted. The study findings were in line with the current study findings.

Other studies have however, produced conflicting results. Ali, Bagram, and Ali (2018), did a study to determine how effective operational risk management boosts bank productivity. The study relied on secondary data gathered from the annual statements of five large and five minor banks in Pakistan from 2005 to 2015. The study findings of Kamau and Njeru (2016) who looked into how financial risks affected the financial performance of Nairobi Securities Exchange-listed insurance companies were also contrary to the current study findings.

According to the study's findings, market risk significantly improved the financial performance of DT-SACCOs in Kiambu County. The following research' findings and theses are comparable: Mbogo (2016) examined the impact of financial risks on the performance of deposit-taking SACCOs in Kenya. All DT-SACCOs that have received SASRA approval were included in the study, and financial success was evaluated using return on investment.

Gweyi (2018) conducted research on how financial risk management affected the Kenya's DT-SACCOs financial performance. The study looked at how company size, as a moderating factor, affected the monetary performance of Kenya's DT-SACCOs, as well as the effects of management of credit, interest rate, liquidity, and operational risk. According to an adjusted study design, statistics, both descriptive and inferential, were employed to analyse data from 135 Deposit-Taking SACCOs from 2010 to 2015. The findings were similar to the current study findings.

The study findings are also in line with the study conducted by Maniagi, (2018) on bank profitability and financial risk management of Kenyan commercial banks. The study aimed to ascertain how market risk, credit risk, shifting interest rates and currency exchange rates, compliance risk, and liquidity risk impacted the profitability of Kenyan banks. While descriptive survey research was employed, a positive research philosophy was embraced. The population was 44 Kenyan commercial banks, of which two were under-receivership as a result of noncompliance difficulties.

The study findings are contrary to the following study findings: Hoffman et al. (2018) study aimed at examining interest rate risk allocation in order to provide improved financial risk management solutions and the study conducted by Ali and Nsenje (2017) to ascertain the influence of GDP and

inflation on profitability in the hotel industry, as well as the impact of exchange rate volatility on profitability with the subject of the study being Three sizable hotels with global brands and more than half of their revenue coming from foreign currencies.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

The research presented has shed light on the ways in which several financial risks, including credit risk, operational risk, market risk, and liquidity risk, have an impact on the financial performance of deposit-taking SACCOs in Kiambu County:

#### **Credit Risk and Financial Performance**

Finding out how credit risk affected the financial performance of deposit-taking SACCOs in Kiambu County was the study's first specific objective. The study discovered that credit risk had a positive significant impact on the financial performance of deposit-taking SACCOs in Kiambu County. It was also discovered that the influence was negligible. This implies that higher credit risk causes deposit-taking SACCOs in Kiambu County to perform financially better. The study comes to the conclusion that credit risk has a small but significant impact on the financial performance of deposit-taking SACCOs in Kiambu County.

#### **Operational Risk and Financial Performance**

The second specific objective of the study was to evaluate the effect of operational risk on the financial performance of deposit taking SACCOs in Kiambu County. The study findings showed that operational risk had a positive significant influence on the financial performance of deposit taking SACCOs in Kiambu County. The positive effect means that an increase in operational risk leads to an increase in the financial performance of deposit taking SACCOs in Kiambu County. The conclusion of the study was that operational risk has a positive significant influence on the financial performance of deposit taking SACCOs in Kiambu County.

#### **Market Risk and Financial Performance**

The third specific objective of the study was to determine how Market risk affected the financial performance of deposit-taking SACCOs in Kiambu County. It was clear from the study's findings that market risk has a favourable impact on the financial success of deposit-taking SACCOs in Kiambu County. Also noted as being significant was the influence. According to the positive influence, a unit increase in market risk results in a proportional rise in the financial performance of Kiambu County's deposit-taking SACCOs. The study's conclusion was that market risk had a positive, significant impact on the financial performance of deposit-taking SACCOs in Kiambu County.

#### **Liquidity Risk and Financial Performance**

The fourth specific objective of the study was to look into how liquidity risk impacted the financial performance of deposit-taking SACCOs in Kiambu County. The study's findings made it clear that liquidity risk has a negative impact on the financial performance of deposit-taking SACCOs in

Kiambu County. Moreover, it was determined that the influence was substantial. Since deposit-taking SACCOs in Nairobi County are negatively impacted, a unit increase in liquidity risk results in a proportional decline in their financial performance. The study came to the conclusion that liquidity risk has a considerable adverse impact on the financial performance of deposit-taking SACCOs in Kiambu County.

## **Recommendations**

### **Credit Risk and Financial Performance**

According to the finding of the study on the first objective, credit risk had a positive and insignificant influence on financial performance. As a result, the study recommends that deposit-taking SACCOs managers need to reduce the number of non-performing loans. This may be accomplished by developing effective credit risk procedures that allow the SACCO to differentiate between good and problematic borrowers.

### **Operational Risk and Financial Performance**

The study finding on the second objective was that operational risk has a positive and significant effect on financial performance. Due to this, the study recommends that there is a need for deposit-taking SACCO's administrators to allocate adequate resources towards, the understanding of operational risk for them to ensure that adopted operational risk management practices are sound and will positively impact the deposit-taking SACCO financial performance.

### **Market Risk and Financial Performance**

The study's third objective findings was that market risk has a positive and significant effect on the financial performance of deposit-taking SACCOs. Based on this finding, the study recommends that deposit-taking SACCOs should regularly review their market risks according to the central bank cap as this will improve the repayment of loans and improve financial performance.

### **Liquidity Risk and Financial Performance**

According to the finding of the study on the fourth objective, liquidity risk had a negative and significant influence on financial performance. As a result, the study recommends that deposit-taking SACCOs managers need to reduce the gross loans. This may be accomplished by developing effective liquidity risk management procedures that allow the SACCO to determine their optimal liquidity level to ensure that all borrower needs are met as well as the Sacco day to day running expenses are met.

### **Recommendations for Future Research**

The study focused on financial risks (credit risk, operational risk, market risk and liquidity risk) but these are just a few of the financial risk components, as their other components, for example legal risk and solvency risk and there is need for other studies to incorporate these financial risk components. There are also different measures of financial performance for example Return on Equity (ROE) and this can be used instead of Return on Asset (ROA) only. The study was conducted within a 10-year period and other studies can consider widening the scope to more years and make use of other methods of analysis such as regression analysis and time series analysis and not the



panel data model used by the study as this will provide a different perspective from what the current study has. The study considered deposit taking SACCOs in Kiambu County and other studies can widen the scope by incorporating other counties or even considering all the deposit taking SACCO licensed by SASRA to operate in Kenya. Other studies can be done on other financial sector player such as non-withdrawal deposit taking SACCOs or even non deposit taking SACCOs.

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