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[1*]Stella Wanjiru Njoroge, [2]Dr. Wamugo Lucy Mwangi & [3]Dr. Njaramba Jennifer Gathoni
[1]Postgraduate student, Kenyatta University
[2]Department of Accounting &Finance, School of Business, Economics and Tourism, Kenyatta University
[3]Department of Econometric & Statistics, School of Business, Economics and Tourism, Kenyatta University
***Email of the corresponding author: stellanjoroge28@gmail.com**

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Abstract

Since 2010, DT-SACCOs in the country have struggled with poor financial performance due to financial risks and the inability to retain funds for capital growth, consequently failing to meet shareholder expectations for increased wealth. The general objective of this study was to investigate the effect of financial risk on the wealth of shareholders of DT-SACCO in Nairobi City County. The specific objectives of the study were to examine the effect of capital, credit, and liquidity risk on value of shareholders' wealth. The study also investigated the moderating influence of Sacco asset size. The study was anchored on four theories: stewardship theory, the buffer theory of capital adequacy, the shiftability theory of liquidity and the modern portfolio theory. The study opted for a positivist research philosophy over interpretivism and realism. This positivism approach facilitated a clear, empirical examination of causal relationships within a structured explanatory research design, targeting a specific population of 43 licensed DT-SACCOs. The diagnostic tests used comprise of normality, autocorrelation, homoscedasticity, stationarity, and multicollinearity. The data for this research was sourced from the Sacco Society Regulatory Authority and SACCOs reports covering 2011 to 2021. Analysis was conducted using Stata 16. Results of corelation reveal a positive association between capital risk and shareholders wealth, while credit risk was found to have a negative relationship with shareholders wealth. Liquidity risk had a negative relationship with the value of shareholders' wealth. In addition, the DT-SACCO size showed a positive association in relation to shareholders' wealth. Results of Panel regression analysis shows a positive and statistically significant association between capital risk and shareholders wealth of DT-SACCOs of Nairobi city county. The capital risk had a coefficient estimate of 1.1400 and its p-value is 0.00900. However, it can be noted that the credit risk did not significantly affect shareholder wealth. The results were indicated by a coefficient of -2.6600 and a p-value 0.6350 for this variable. Contrary, it was noted that liquidity risk affected shareholder wealth negatively by a coefficient of –5.7600 and p-value of 0. 0000. Firm size had a statistically significant moderating effect on the interaction between financial risk variables on shareholders wealth. The study recommended that SACCOs embrace effective capital risk management practices by adopting optimal risk-return balance, diversifying sources of capital and developing strong monitoring mechanisms for risks. In addition, the study recommends for SACCOs to develop comprehensive liquidity risk management policies, closely monitor liquidity adequacy ratio, and cash flow projections and diversify funding sources.

Keywords: *Financial risk, capital risk, credit risk, liquidity risk, firm size, shareholder wealth, deposit taking SACCOs, Nairobi City County.*

1.0 Background of the Study

Deposit taking SACCOs are often seen as critical to social and economic development (SASRA, 2016). They are popular among people and groups because they facilitate the movement of funds via financial intermediation (Kamande, 2017). According to Mwangi (2016), Deposit taking Saccos (DT-SACCOs) have an essential role in supporting economic expansion by undertaking their primary service that of savings and credit advancement. A DT-SACCO's efficacy is determined by how efficiently its resources are used to fulfil its objectives, whilst its performance reflects its level and capacity to reach desired goals (Kamande, 2017). The global Sacco penetration has grown to 9.38% with 39,447 Saccos based in Africa and holding 10.7 billion USD and a penetration rate of 13.80% (World Council of Credit Unions, 2019). In Asia, there are 33,004 Saccos with an asset base of 180.8 billion USD and penetration level at 4.34%. Across Europe there are 3,491 Saccos holding 32.9 billion USD in assets and with an average penetration level at 9.16%. In 2017, there were 37,607 Saccos in Africa, with a membership of 29.6 Million (World Council of Credit Unions, 2018). The shares and savings in USD in the same year was 7.9 billion and loans were 9.048 billion. The total asset base was 9.1 billion. The country with high percentage penetration was Togo at 53.09% with Kenya having a penetration of 24.86%. The average penetration in Africa was 9.25% while the world penetration was 9.09% in 2017 (World Council of Credit Unions, 2018).

In Africa, Kenya's SACCO environment has been the most vibrant, ranking first in deposit mobilization, loan size and number of members for several consecutive years (WOCCU, 2018). Kenya's Savings and Credit Cooperatives (SACCOs) sub-sector consist of both non-DT-SACCOs and DT -Saccos. PROCASUR reported that in comparison to non-DT-SACCOs, DT-SACCOs control 81% of total assets, 86% of total deposits and loans (PROCASUR Africa, 2012). However, the penetration rate is much lower than in Senegal and Togo, where the rates are 21% and 51%, respectively (WOCCU, 2013). In addition, membership numbers have declined in recent years. The Fin Access study, done in 2013, showed uptake of DT- SACCOs' as a financial intermediary has reduced dramatically since 2006. The utilization rate was 13.5% in 2009 and dropped by 4.2% in the year 2013 according to the FSD Kenya report. According to the regulator, the total deposits and asset base of DT- Saccos in contrast to non-DT- Saccos, necessitates a thorough grasp of elements influencing effective goal fulfilment among DT-SACCOs in order to assure long-term growth (SASRA, 2013).

With the introduction of regulation in the year 2010 for DT-SACCOs. It has created a harsh situation for certain players (Ngeno, 2019). According to Kilonzi (2012), SASRA has deregistered some DT-SACCOs in Kenya due to poor financial performance, while others have been put into statutory administration. According to Sacco Supervision reports in 2018, at least 100 DT-SACCOs failed to achieve the statutory capital ratio requirement in 2017 (SASRA, 2018). Whereas SASRA (2018) found that just 69 of the 175 DT-SACCOs could satisfy and sustain the mandated minimum institutional capital adequacy (ICA) ratio of 8%, suggesting inadequate performance due in part to firm-specific risks such as credit risk. The investigation helps in comprehending how financial risk affects shareholder value in Kenyan DT- Saccos. Thus, the study examined the effect of financial risk on shareholders wealth of deposit taking saccos in Nairobi City County.

Financial risk refers to the uncertainty that an organization may fail in terms of financial security as a result of mismanagement, which results to a direct reduction of profits or capital (Jorion &Khoury, 1996). In such situations, the said firms are unable to meet their objectives due to the lack of adequate finances to fund operations. According to Bessis and O'Kelly, (2015) risk refers to an investment made with uncertainty in future payoff. Risk determination is crucial for individuals with the desire to quantify the level of uncertainty associated with an

investment so as to determine which risk is worth of an investment. Financial risk is associated with firms' incapacity to meet their financial obligations. To investors and shareholders, materialization of these risk lowers the value of the firm resulting in loss of funds leading to a reduction in its capacity to meet its core objectives. Financial risk management therein means the act of identifying, managing, eradicating, and controlling this risk (Anderson & Terp, 2006).

The current business climate is fraught with uncertainties, which have a direct influence on a DT- Sacco operations. These risks are caused by the business environment changes, and includes risk such as credit, operational, market, liquidity, foreign currency, and interest rate, additionally to the usual business hazards (Khizer, Muhammad, & Shama, 2011). This study investigated the effect of liquidity, credit and capital risk on the shareholder wealth of deposit taking SACCOS based in Nairobi City County. Financial risk in this study comprised of liquidity, credit and capital risk. When there is a probability of loss stemming from the diminution in the capital base due to inadequate capital allocation or a decline in asset values it result to capital risk (Wang, 2021). In a volatile environment, it is crucial for businesses to maintain sufficient capital reserves to absorb unexpected losses and continue operations. Credit Risk, on the other hand, pertains to the potential for default by borrowers, leading to financial losses (Bandyopadhyay, 2016). Especially for financial institutions like DT-SACCOs, an escalation in credit defaults can erode profitability and capital base. Lastly, liquidity risk is the inability to meet short-term financial obligations because of a mismatch between liquid assets and liabilities (Diamond & Rajan, 2005). A firm grappling with liquidity issues might face operational constraints or even insolvency. In the context of Kenyan DT-SACCOs, these risks are of immense significance.

Shareholder wealth refers to the value and financial benefits that shareholders gain from their ownership in a company (Aminah, Laba, & Pakki, 2019). It is a fundamental objective of businesses to enhance shareholder wealth, which is the investment return and the reward for taking on the risks associated with owning equity in a company (Subedi & Farazmand, 2020). Maximizing shareholder wealth is typically achieved through various strategies, such as generating consistent profits, increasing stock prices, and paying dividends. Companies strive to enhance shareholder wealth by implementing effective business strategies, making sound investment decisions, and optimizing operational performance (Udiyana, Astini, Parta, Laswitarni, & Wahyuni, 2022). They aim to generate sustainable profits and improve their financial position, which can lead to increased stock prices and capital appreciation. Shareholder wealth can also be enhanced through dividend payments, which provide direct financial returns to shareholders (Choong, 2021).

Economic Value Added (EVA) is one of the key measures used to assess shareholder wealth (Subedi & Farazmand, 2020; Sura, Panchal & Lather, 2022; Ahmad, Alam & Yameen, 2019). The objective of using EVA as a metric for evaluating financial performance of a firm is attributed to the fact that it takes into account both the operating profits generated by a company and the capital invested in it hence capturing the true economic value generated by a company (Udiyana, Astini, Parta, Laswitarni, & Wahyuni, 2022). When a firm consistently achieves positive EVA, it indicates that the business is creating value for its shareholders by generating profits that surpass the expected return on the capital invested (Alalade, Ogbebor, & Akwe, 2020). According to Gweyi (2018), constrained growth of shareholder's wealth by DT-SACCOs is occasioned by not managing their financial risk which has significantly reduced sustainability levels. In such situations, the shareholder's investment has been used to sustain the Saccos and this leads to capital impairment (Mwau, 2013). The existence of these financial risk variables adds to total capital impairment and, as a result, lower SACCO profitability. As

a result, it shows the need for exploration of how the risks affect the growth of shareholder wealth performance among Nairobi DT-SACCOs.

1.1 Statement of the Problem

The company's fundamental goal is mainly to enhance the value of its shareholders. Economic Value-Added serves as an important metric that quantifies a company's financial performance, taking into account the economic profit generated after covering the cost of capital (Silvia & Wangka, 2022). However, EVA of DT-SACCOs in Nairobi City County, has depicted a concerning trend as revealed by data spanning from 2011 to 2021 (SASRA, 2022). This data shows a consistent and significant decline in EVA over this eleven -year period. Specifically, the total EVA per annum was at a negative 362,355,828.91 in 2011, and by 2021, it had further declined to a staggering negative 3,998,317,854.32, signifying a considerable decline of shareholder wealth.

The continuous decline in EVA highlights the urgent need for DT-SACCOs to reevaluate their risk management choices to enhance shareholder value. Despite this decline, a knowledge gap was identified: various studies have used different indicators to measure shareholder wealth and none focused on DT-SACCOs based in Nairobi City County. For instance, study conducted by Muthoni, Jagongo and Muniu (2019 established that various financing decisions such as debt, working capital, dividend and equity funding had a significant positive effect on EVA of non-financial firms listed in the Nairobi stock exchange market in Kenya. Alsamhi, Al-Ofairi, Alahdal, and Farhan (2023) assessed the influence of financial risk on EVA in commercial and Islamic banks that operate in Yemen and discovered that liquidity and exchange risk had significant and positive impact on EVA.

On the other hand, Kathini (2020) looked at the impact of credit risk on shareholder's wealth of listed commercial banks in Kenya. The results were that credit risk had a significant and negative effect on wealth of shareholders as assessed using Tobin Q. Similarly, Mogusu, Nkari, and Wabwire (2022) examined the impact of liquidity risk on shareholders wealth for commercial banks listed at the NSE using Tobin's Q as a measure of shareholder wealth. A negative impact of liquidity risk on shareholder's wealth was established. As a result, it became evident that conducting the current study was significant due to the lack of research specifically combining liquidity capital and credit risk and examines the effect of these risk on shareholder wealth in DT-SACCOs based in Nairobi City County, using Economic Value Added. The moderating variable in the study was firm size.

1.2 Research Objectives

The study was guided by the following objectives;

i. To investigate the effect capital risk on shareholder wealth of DT-SACCOs in Nairobi City County.
ii. To determine the effect of credit risk on shareholder wealth of deposit taking SACCOs in Nairobi City County.
iii. To investigate the effect of liquidity risk on shareholder wealth of DT-SACCOs in Nairobi City County.
iv. To examine the moderating effect of firm size on the relationship between financial risk and shareholder wealth of deposit taking SACCOs in Nairobi City County.

1.3 Research Hypotheses

The study tested the following hypotheses;

H_{O1} Capital risk has an insignificant effect on the shareholders' wealth of DT-SACCOs in Nairobi City County.

H_{O2} Credit Risk has an insignificant effect on the shareholders' wealth of deposit taking Saccos in Nairobi City County.

H_{O3} Liquidity Risk has an insignificant effect on the shareholders' wealth of DT-SACCOs in Nairobi City County.

H_{04} Firm size has an insignificant moderating effect on the relationship between financial risk and shareholders' wealth of deposit taking SACCOs in Nairobi City County.

2.0 Literature Review

2.1 Theoretical Review

2.1.1 Stewardship Theory

Advanced by Davis and Donald (1991), stewardship theory is a management theory that emphasizes the importance of managers acting as stewards or caretakers of the organization they are managing. This theory implies that the management of a firm do have a responsibility of ensuring that they act in the best interest of an organization and its stakeholders, rather than pursuing their own interests (Davis & Donald, 1991). Davis, Schoolman and Donald (1997) posit that stewardship theory aims to ensure firms perform to their maximum potential, attain organizational goals and create sustainable competitive advantage. This is accomplished by identifying the collective desires of all stakeholders. The existence of an organization is the outcome of stewardship protection and shareholders' wealth maximization (Davis & Donald, 1991), hence maximizing the utility functions of the stewards. Stewards are the managers in this theory, and it recognizes the role of management in integration of policies aimed at attaining organization goals (Abdullah & Valentine, 2009).

The theory's core premise is that when an organization achieves its objectives, its managers and leaders are completely happy and driven. The theory calls for strong governance structures to ensure managers are empowered and have maximum independence (Davis, Schoolman, & Donald, 1997). It places a strong emphasis on staff members operating independently in order to maximize shareholder returns. This reduces expenses and regulates employee behavior. To preserve their reputation, managers must increase the company's financial stability and shareholder earnings. So, it is asserted that the financial performance of a firm have a direct impact on a steward's personal performance (Aduda, Odera, &Onwonga 2012). How managers effectively serve as stewards of their particular firms is taken into account by stewardship theory. The board of a SACCO must also play a strategic role in order to enhance top-level decision-making in light of stewardship philosophy (Abdullah & Valentine, 2009). The Stewardship Theory contributes to the study by highlighting senior management's (stewards') responsibility for maximizing members' wealth. To achieve this reliable internal control measures are put into place to safeguard the wealth of SACCO members. This theory was key in examining the shareholder wealth of DT-SACCOS institutions in Nairobi City County.

2.1.2 Buffer Theory of Capital Adequacy

As outlined by Calem and Rob (1996), the theory envisages that companies that fulfil minimum capital requirements may be incentivized to increase capital, reducing the risk associated with expenditures expended to pay for capital ratio violations. This theory suggests that financial institutions, in an effort to avoid falling under the legal regulatory requirement may ultimately make the decision to hold excess capital (Duane, 2010). This theory also posits that for a

financial institution to increase public confidence they must create a buffer as this will eliminate them from being flagged off by the authority on non-compliance (Uyen, 2011). Abdallah and Obeidat (2013) agree that capital is key in improving a financial institution's stability as it forms a cushion for customer's funds should a firm incur any unexpected losses. The law requires that SACCOS have a buffer of a certain threshold of capital in order to run as deposit taking. The minimum being Ten million Kenya shillings or a core capital of 10% of total assets as core capital and an institutional capital of 8% of total assets (KGS, 2008). Non-compliance especially with the minimum share capital causes a SACCO not to be licensed. This theory addresses several methods of reducing capital risk in order to boost profitability and was thus critical in investigating effect of capital risk and wealth development among deposit taking SACCOs in Nairobi County.

2.1.3 The Shiftability Theory of Liquidity

As stipulated by Moulton (1918), the theory posits that liquidity risk instead of being an innate characteristic of an asset or liability, can be transferred or shifted from one entity to another via financial markets or intermediaries. Therefore, according to this theory, the liquidity risk of an asset or liability is fundamentally a function of the market in which it is traded, influenced by the presence and activity of potential buyers or sellers (Douglas & Rajan, 2001). According to Moulton (1918), holding credit instruments as a kind of liquidity reserve is required to guard against specific dangers that financial institutions confront; this form of reserve should have a secondary market ready and available (Maaka, 2021). The liquidity of financial institutions therefore depends on how well it can shift its assets to another party without incurring additional losses should the need arise. Theoretically, a financial institution's liquidity can be determined by how easily it can convert its assets into cash at a fair price (Casu, Girardone, & Malyneux, 2006). According to Moulton (1918), in order to reach minimal reserves, it is necessary to develop existing assets which maintains their quality thus ensuring that they can be shifted to other institutions with relative ease should it be deemed necessary. The condition is only fulfilled when the likelihood of immediate transferability occurs with no significant capital loss to the firm. When there is a general liquidity crisis, the regulator will make sure that the Saccos have assets that have a high possibility of being liquidated. The theory influences the use of liquidity measures when employed as performance indicators for financial institutions, such as the liquidity coverage ratio. Incapacity of financial institutions to meet credit requests is shown by high loan-to-deposit ratios or low liquid asset ratios (Moore, 2010). The theory backs up the study by arguing that financial institutions can base their capacity to sell assets and their liquidity on the conditions of the market, in addition to maintaining the minimal amount of liquidity required by prudential requirements. This theory makes the case why liquidity risk is a key financial risk that may affect the shareholder wealth.

2.1.4 Modern Portfolio Theory

According to the Modern Portfolio Theory (MPT), the brainchild of Markowitz (1952), diversification is accomplished by investing in multiple stocks which reduces the associated risk in the portfolio as represented by variance. This strategy reduces the susceptibility of the firm to economic shocks in one sector by allowing the firm to rely on earnings in another sector. It aims to identify the most effective asset pairings to ensure that certain risk taken lead to maximum gains (Elton & Gruber, 1997). It quantifies the benefits of diversification (Omisore, Yusuf, & Nwufo, 2012). The theory however asserts for a wide application, although being formulated to enhance securities management. When it is said that spreading out risk is important to lessen the variance in income produced by the related risk, it is utilized in the evaluation of linear expansion. The theory asserts that returns of diversified firm's

unsystematic variance will significantly decrease when two unrelated enterprises are integrated (Lubatkin & Chatterjee, 1994). The portfolio theory is a significant motivator for why SACCOs may diversify into various credit products since its main aim is to increase the income that the firm may realize at a particular time. With time, DT- SACCOs have opened their common bond and offers various credit products to their members with an aim of ensuring they manage risk by diversification and explored into non-interest income to manage unforeseen risk. However, this theory assumes rationality among investors and efficiency in the market (Kiaritha, 2015). Yet, markets are ineffectual and defective in actuality, limiting the theory's application.

2.2 Empirical Review

The main objective of the research by Buluma, Mungai and Kung'u (2017) was to determine how the SASRA regulations affect financial performance of DT-SACCOS in Nyandarua county Kenya. The research considered use of inferential analysis on panel data as derived from audited books of account. Investigating the relationship between meeting core capital requirements and return on assets in savings and credit cooperative organisations (SACCOs), indicated that a positive correlation exists between the two variables. The present study differs from this research in that it concentrates on shareholder wealth as measured using Economic Value Added (EVA) for Nairobi City County DT-SACCOS which includes a larger population than those of Nyandarua. Moreover, Wang (2021) performed a study on risk-based capital components influencing firm performance in Malaysia. The research adopted a time-series analytic methodology, employing data obtained from the years spanning 2016 to 2020. The investigation established that capital risk significantly affects performance.

Muthoni, Jagongo, and Muniu (2019) sought to investigate the impact of financing decisions on shareholder value creation in listed non-financial firms on the NSE. Utilizing an explanatory research design financial statements from a collection of 40 firms were analyzed over the period between 2008 to2014. For this research, a regression analysis was carried out with the objective of finding if any financing strategies have an impact on shareholder value generation. The study's findings reveal that the various financing decisions that is debt, working capital, dividend and equity have a significant positive influence to Economic Value Added (EVA). In contrast, the present research is centred on shareholder value and examines how financial risks affect economic value added of deposit taking SACCOs based in Nairobi County. Kiprono and Njeru (2022) investigated the impact of credit risk monitoring on the SACCO's shareholders wealth in Nairobi City County. Utilizing primary data, the research adopted regression analysis whose outcome indicated that there exists a significant positive relationship between credit risk monitoring and increase in wealth of SACCO shareholders.

Additionally, Otuya, Mugo and Lagat (2013) explored how financial risk mitigation influences the loan portfolio of Nakuru based SACCOs. They applied regression to establish the impact of financial risk mitigation to loan portfolio. The research suggested that risk identification, analysis, and monitoring significantly affect SACCOs' lending portfolios. However, risk evaluation had an insignificant impact. The study mainly highlighted the need for proper credit management practices but failed to offer guidelines on its effects on the growth of shareholders' wealth. Kathini (2020) examined the effect of credit risk on shareholder wealth of commercial banks in Kenya. Deploying panel data and multiple linear regression to conduct research for a span of five years from 2014-2018. The researcher established that there existed a negative significant relationship between credit risk and shareholders wealth. Whereas a positive significant relationship existed between capital adequacy and shareholder wealth.

Aminah, Laba, and Pakki (2019) explored on the effect of liquidity, debt to equity ratio and total assets on firm value of listed telecommunication companies in the Indonesian Stock Exchange. Extracting data from the audited books of accounts of the said firms spanning for six years from 2012-2017. The research established that there existed a statistically significant positive association between liquidity and corporate value. However, the study conducted differs from the current one which is based in Kenya with a focus on the DT-SACCOs in Nairobi City County. The period in the current study spans 11 years, offering a more extended period of analysis. Keben and Maina (2018) conducted a research on DT-SACCOs in the county of Uasin Gishu in Kenya, aiming to investigate how management of liquidity affects profitability. It employed descriptive and inferential statistics for the analysis. The research established that liquidity risk management significantly improves SACCO financial profitability. The current study differed with this study as it focused on Nairobi-based DT-SACCOs and aims to measure the generation of shareholders' wealth. Muturi and Omenyo (2019) conducted research on the listed manufacturing firms in Kenya aiming to determine firm size effect on the firms' financial performance. Using panel descriptive statistics, they analyzed data extracted from audited books of account of the firms spanning for seven years from 2012- 2018. The conclusion of the research was that the financial position proxied by the asset base of a firm, rather than the number of employees, significantly affected financial performance. This study affirms the use of asset base as a measurement of firm size due to its significance on an organization financial performance.

2.3 Conceptual Framework

The conceptual framework illustrates the presumed relationships between independent and dependent variables in a study. Figure 1 presents the conceptual framework.

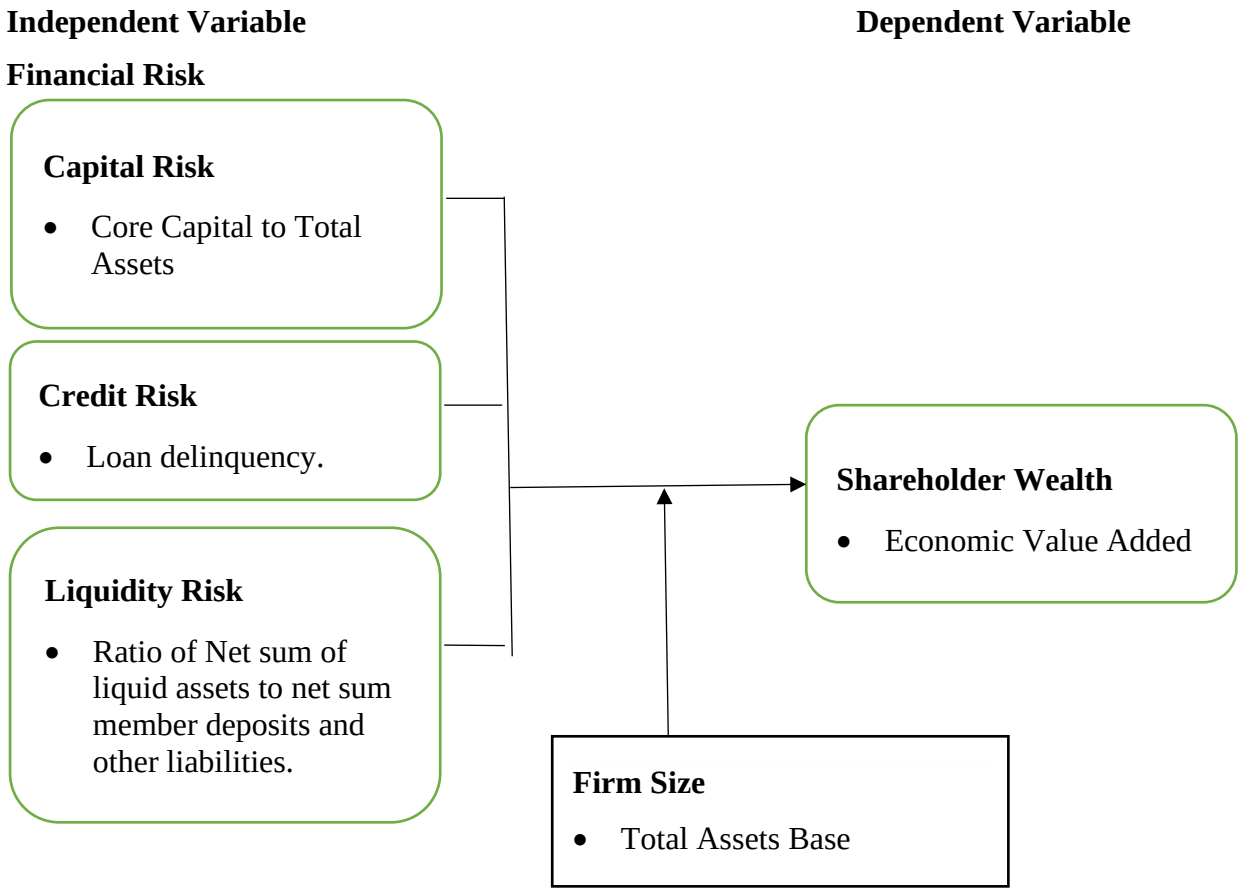

Figure 1: Conceptual Framework
Source: Author (2023)

3.0 Research Methodology

The study opted for a positivist research philosophy over interpretivism and realism, focusing on the objective analysis of quantifiable data to test hypotheses concerning the relationship between financial risk, firm size, and shareholder wealth in Nairobi's DT-SACCOs. This positivism approach facilitated a clear, empirical examination of causal relationships within a structured explanatory research design, targeting a specific population of 43 licensed DT-SACCOs. A comprehensive census survey was conducted, including all entities and utilizing a data extraction form to collect a decade's worth of financial data. The data collection process was meticulous, ensuring all regulatory approvals and liaising with the relevant authorities for access to necessary documents. Analysis was conducted using Stata 16 after preliminary organization and cleaning in Microsoft Excel, with findings presented descriptively in tables. Ethical considerations were paramount, with strict adherence to confidentiality and proper authorization processes, ensuring the research upheld the highest standards of integrity and respect for participants' rights.

4.0 Data Analysis, Presentation and Interpretation

4.1 Descriptive Analysis

A summary of the descriptive results is presented in table 1

Table 1: Descriptive Analysis

Variables	Mean	Std Dev.	Min	Max	Skewness	Kurtosis
Economic Value Added (Shareholder Wealth)	-9.79E+08	2.77E+09	-3.68E+10	2.77E+09	-7.41E+00	81.83323
Capital risk	0.066556	1.772533	-36.6937	5.234778	-20.0974	418.6849
credit risk	0.1757974	2.12638	0	44.34258	20.67192	429.8621
liquidity risk	0.1915034	0.2051909	-0.03	1.434727	2.674522	12.23449
Firm Size (Total Assets)	6.51E+09	9.81E+09	1.15E+08	6.09E+10	2.767465	11.69819

Source: Research Data (2023)

Table 1 highlights the descriptive statistics of the variables under consideration and do have significant implications for the 43 DT- SACCO based in the County of Nairobi, studied for the years 2011 to 2021. The mean of Economic Value Added (EVA), which measures Shareholder Wealth, was found to be -9.79E+08. This negative mean value implies that, on average, the SACCOs in the study did not generate a positive EVA during this period, which might suggest a decrease in shareholder wealth. The large standard deviation of 2.77E+09 reveals significant differences in shareholder wealth across the SACCOs. A minimum value of -3.68E+10 and a maximum value of 2.77E+09 indicates that the range is extensive, signifying wide disparities in shareholder wealth among the SACCOs. The skewness of -7.41E+00 and kurtosis of 81.83323 suggests that the data points are heavily skewed to the left with extreme low values and have a highly peaked distribution with heavy tails.

Secondly, Capital Risk, reflected in the mean value of 0.066556, was relatively low among the SACCOs. This low average suggests that these SACCOs have generally maintained a lower

capital adequacy ratio than is recommended by the regulator that is a minimum of 10% of total asset base (KGS, 2008). This is an indication of capital risk exposure among DT- Saccos in the study. A standard deviation of 1.772533 however shows a considerable variation in capital adequacy among the SACCOs. This could be attributed to the different approaches the DT-Saccos have adopted in their capital management practices. The high negative skewness (-20.0974) and kurtosis (418.6849) values further demonstrate the disparities among the SACCOs, indicating an irregular and peaked distribution with several institutions experiencing higher than average capital risk.

In the case of Credit Risk, with a mean value of 0.1757974, the level was slightly higher than the prudent minimum requirement by the regulator of less than or equal to 0.05. This higher mean indicates a larger average level of credit risk across the SACCOs, suggesting that loan defaults might be an area of concern. The standard deviation of 2.12638, and skewness and kurtosis of 20.67192, and 429.8621 respectively highlight differences among SACCOs' credit risk levels, indicating that some SACCOs may be dealing with exceptionally high credit risks. Liquidity Risk, represented by a mean of 0.1915034, signifies a moderate level of liquidity adequacy among SACCOs on average. The moderate level suggests that, overall, DT-SACCOs are able to fulfill their short-term commitments reasonably well. The standard deviation of 0.2051909, though smaller compared to the other risks, indicates some variation in liquidity risk. The positive skewness and moderate kurtosis indicate a slightly right-skewed distribution and fewer outliers, suggesting that most SACCOs manage their liquidity risk within a similar range. Finally, looking at the firm size, as based on the DT-SACCOs total assets the mean value of 6.51E+09 suggests that the SACCOs have substantial asset holdings on average. The high standard deviation of 9.81E+09 indicates a significant variation in DT-SACCO size, with some institutions holding considerably larger assets than others. The skewness and kurtosis values of 2.767465 and 11.69819, respectively, demonstrate a right-skewed and moderately peaked distribution, revealing that there are a few very large SACCOs, while the majority maintain a relatively modest asset base.

4.2 Diagnostic Analysis

In the study, it was essential to conduct diagnostic tests to ascertain that the data observed met the standard requirements before undertaking regression analysis. These tests are crucial and aims to verify that the regression model is reliable and valid to ensure accurate interpretation of the results. The diagnostic analysis incorporated normality, auto-correlation, homoscedasticity, stationarity, multicollinearity and Hausman specification tests, each designed to ascertain the data's integrity and validity of the regression model.

4.2.1 Normality Tests

Table 2 presents the results of the normality test.

Table 2: Normality Test

Variable	No. of Observation	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Economic Value Added (Shareholder Wealth)	473	0.0000	0.0000	18.57	0.0701
Capital risk	473	0.0000	0.4012	8.91	0.5960
credit risk	473	0.0125	0.0001	20.01	0.9761
liquidity risk	473	0.0003	0.0146	29.96	0.2107

Firm Size (Total Assets)	473	0.1728	0.0948	4.65	0.0976

Source: Research Data (2023)

The p-values for all variables in Table 2 were above 0.05, indicating that the data utilized in the study adhered to normal distribution.

4.2.2 Autocorrelation Test

The results of autocorrelation test are presented in Table 3.

Table 3: Autocorrelation Test

Wooldridge test for autocorrelation
H0: no first-order autocorrelation
F (1, 41) = 7.548
Prob > F = 0.1089

Source: Research Data (2023)

The findings shown in Table 3 revealed a p-value of 0.1089, suggesting that, at a significance level of 5%, the F-test does not exhibit statistical significance. Consequently, the null hypothesis is accepted. The proposition is made that there exists no autocorrelation within the residuals.

4.2.3 Heteroskedasticity Test

Table 4 depicts results of heteroskedasticity test.

Table 4: Heteroskedasticity test

Breusch- Pagan test for heteroskedasticity
Ho: Constant Variable
Variables: Fitted vales of of EVA
chi2 (1) = 1.1e+08
Prob > chi2 = 0.4178

Source: Research Data (2023)

Table 4 displays a p-value of 0.4178, indicating a value greater than 0.05. This outcome resulted in the acceptance of the null hypothesis, affirming the absence of heteroskedasticity within the data used in the study.

4.2.4 Stationarity Test

The findings of the stationarity test are presented in table 5.

Table 5: Stationarity Test

Variable name	Statistic (adjusted)	P-value	Comment
Economic Value Added (Shareholder Wealth)	8.7494	0.000	Stationary
Capital risk	9.1950	0.000	Stationary
credit risk	4.035	0.004	Stationary
liquidity risk	9.954	0.000	Stationary

Firm Size (Total Assets)	3.001	0.017	Stationary

Source: Research Data (2023)

Using the Levi Lechun a unit root test was conducted test to check if the variables under consideration were stationary. The null hypothesis was formulated that all the panels presented unit roots in their original form. As depicted in Table 4.6, p-values of all variables were observed to be less than the cut-off level of .05. As such, this implies that all the variables demonstrate stationarity and the absence of unit roots at 5% level of significance.

4.2.5 Multicollinearity Test

Table 6 presents the results of multicollinearity test

Table 6: Multicollinearity Test

Variable	VIF	1/VIF
Capital risk	1.00	0.995878
Credit risk	1.27	0.787401
Liquidity risk	1.00	0.998076
Firm Size (Total Assets)	1.01	0.994870

Source: Research Data (2023)

To test for multicollinearity the study used VIF. The VIF values for all variables as indicated in table 6 were below 10, indicating no presence of multicollinearity among the variables. VIF values exceeding 10 suggest the presence of multicollinearity (Strijov and Katrutsa (2017). Thus, the data used for the study does not suffer from multicollinearity.

4.3 Correlation Analysis

A correlation analysis was conducted to investigate the relationship between the variables. Findings are presented in Table 7

Table 7: Correlation Analysis

Variables	Economic Value Added (Shareholder Wealth)	Capital risk	Credit risk	Liquidity risk	Firm Size (Total Assets)
Economic Value Added (Shareholder Wealth)	1.0000				
Capital risk	0.0832	1.0000			
Credit risk	-0.0060	-0.0112	1.0000		
Liquidity risk	-0.0338	0.0001	0.0287	1.0000	
Firm Size (Total Assets)	0.4385	0.0631	0.0067	-0.0329	1.0000

Source: Research Data (2023)

Table 7 presents the correlation analysis results, illustrating the following observations. Capital risk has a positive correlation with shareholder wealth operationalized as Economic Value Added (EVA), demonstrated by a correlation coefficient of 0.0832. This result infers that an increase in capital risk corresponds with an increase in EVA, potentially enhancing shareholder wealth. On the other hand, credit risk correlates negatively with EVA, as suggested by a correlation coefficient of -0.0060. This indicates that an increase in credit risk might result in

decline of EVA therefore having a negative effect on shareholders' wealth. Similarly, liquidity risk correlates negatively with EVA, evidenced by a correlation coefficient of -0.0338, this suggests that amplified liquidity risk could lead to a reduction in EVA, thus possibly affecting shareholder wealth negatively. Lastly, firm size, as determined by the logarithm of total assets, displays a positive correlation with EVA, evidenced by the correlation coefficient of 0.4385. This indicates that larger firms, as determined by their total assets, are likely to register higher EVA, illustrating a positive correlation between firm size and shareholder wealth.

Prior studies by researchers such as Buluma et. al (2017), established that complying with the Authority's core capital requirement had a positive correlation with the return on assets for SACCOs. Kathini (2020) identified a negative influence of credit risk on shareholder wealth. Further, Kalu et. al (2018) established that management and reduction of credit risk did not significantly alter firm performance, while Ogundajo, Adefisoye, and Nwaobia (2020) discovered that both operating efficiency risk and credit risk had detrimental impact on market value. Study by Mogusu, Nkari, and Wabwire (2022), revealed a negative effect of liquidity risk on shareholders' wealth. Muturi and Omenyo (2019) suggested that firm size, defined by financial position rather than employee count, significantly affected financial performance. In a similar vein, Babalola (2013) found that larger entities reported better financial returns compared to their smaller counterparts.

4.4 Hausman Test

The Hausman test results are presented in table 8.

Table 8: Model Specification

Variables	**(b)** Fixed	**(B)** Random
Capital risk	-9.80e+07	-9.44e+07
Credit risk	7879950	-9324950
Liquidity risk	1.13e+09	6.17e+08
Firm Size (Total Assets)	-5.14e+09	-2.61e+09
chi2(4) = (b-B)'[(V_b-V_B) ^(-1)] (b-B) = 17.51		
Prob>chi2 = 0.0815		

Source: Research Data (2023)

Table 8 reveals that p-value was 0.0815, surpassing the level of significance of 0.05. Therefore, the null hypothesis was not rejected in this study. Hence, random effects model was the best fitting model for this research. The advantage of random effects model is that it can be used on variables with within time variation and those without variation. However, the fixed effect model is only concerned with variables that do not change or constant values (Kartikasari, 2017). This means that the random effects model estimates the variables jointly, unlike fixed effects models which entail estimating a parameter for every unit resulting in enhanced standard errors of the coefficients' estimates (Baltagi, 2001). Therefore, the random effect model was adopted as the best fit for conducting multiple regression analysis as it incorporated researching the variables concurrently,

4.5 Panel Regression Analysis

The research adopted the random effects model as it was deemed the most appropriate option. The researcher conducted panel regression analysis to determine the effect of financial risk (capital, liquidity and credit risk) on economic value added (shareholder wealth) as presented in Table 9

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Table 9: Panel Regression Analysis

Economic Value Added	Standardized Coefficients	Std. Err.	z	P>z
Capital risk	1.1400	0.42222	2.7000	0.0090
Credit risk	-2.6600	5.65957	0.4700	0.6350
Liquidity risk	-5.7600	1.17551	4.9000	0.0000
Cons	1.0900	0.27735	3.9300	0.0000
R squared=	**0.1780**			
F (3, 473) =	**3.6900**			
Prob=	**0.0297**			

Source: Research Data (2023)

The model was.

$SW_{it} = 1.0900+1.1400\ CR_{it}-2.6600CRR_{it}-5.7600\ LR_{it}$

Where;

SW_{it}= Shareholder wealth (Economic Value Added)

CR_{it}= Capital risk

CRR_{it}= Credit risk

LR_{it}= Liquidity risk

In Table 9, the R-squared value of 0.1780 suggests that the model's independent variables—capital risk, credit risk, and liquidity risk—collectively account for about 17.80% of the variance in Economic Value Added (EVA). Additionally, the F-statistic of 3.6900, with a p-value of 0.0297, indicates that the regression model, as a whole, is statistically significant, implying that the relationship between these risk factors and EVA is unlikely to be due to random chance.

4.5.1 Capital Risk and Shareholder Wealth

The first hypothesis of the research was that capital risk has an insignificant effect on the shareholders' wealth of DT-SACCOs in Nairobi City County Kenya. Nonetheless, according to the results presented in Table 9, the coefficient of capital risk (β1) was found to be 1.1400 and its associated p-value equals 0.0090. This p-value (0.0090) is lower than the predetermined significance level of 0.05, leading to the rejection of the null hypothesis thus confirming that capital risk has a significant effect on shareholders' wealth of DT-SACCOs based Nairobi City County Kenya. The findings of the study corroborate with Wang (2021) that capital risk have significant influence on performance. According to Muthoni et al (2019), different types of financing decisions that is equity, debt, working capital and dividend financing were statistically positively related to Economic value added. Moreover, Buluma et al (2017) demonstrated that meeting of the core capital requirements had a direct correlation with ROA in Saccos.

4.5.2 Credit Risk and Shareholder Wealth

Secondly, the study hypothesized that there is no significant influence of credit risk on shareholders' wealth of DT-SACCOs in Nairobi City County Kenya. The Table 9 indicates the

findings on the second hypotheses and credit risk has an insignificant effect to shareholder wealth of DTS institutions in the county. With a variable β2 and p value of -2.6600 and 0.6350 respectively. Therefore, the study does not provide evidence to reject the null hypothesis, p value (0.6350) > 0.05 significance level. Therefore, the impact of credit risk on shareholders' wealth of DT-SACCOs in Nairobi City County Kenya is insignificant. These results are consistent with the research by Kathini (2020), where the researcher observed that credit risk negatively affects shareholder wealth, as indicated by the F-statistic results. Kalu, Shieler, and Amu (2018) indicated that monitoring and mitigating credit risk was not statistically associated with company performance. Ogundajo et al (2020) established that credit risk and operating efficiency risk both impact market value negatively.

4.5.3 Liquidity Risk and Shareholder Wealth

The third hypothesis of the research was that liquidity risk has no significant effect on the shareholders' wealth of DT-SACCOs in Nairobi City County Kenya. The study findings in Table 9 depicted the beta coefficient of -5.7600 and P value – 0.0000 that indicated a statistically significant negative impact of liquidity risk on shareholder's wealth in DTS institution in Kenya. Consequently, since the p value (0.0000) is less than 0.05 (predetermined significance threshold); this study's null hypothesis was rejected. Therefore, liquidity risk has a negative significant influence on the wealth creation to shareholders of DT-SACCOs in Nairobi City County. This is consistent with Mogusu, Nkari, and Wabwire (2022) who found a negative impact of liquidity risk on shareholders' wealth. Amina et al. (2019) revealed that liquidity risk significantly affects firm value.

4.6 Moderating Effect of Firm Size

The study used a stepwise regression procedure to analyze the moderating role of firm size on capital, credit and liquidity risk with respect to shareholders' wealth in DT-SACCOs operating in Nairobi City County. The interaction terms (capital risk*firm size, credit risk*firm size and liquidity risk*firm Size) were analysed for their p-values. The p-values were all found to be less than 0.05, leading to the null hypothesis been rejected. This implies that the relationship between each of these financial risk and shareholders' wealth is indeed significantly moderated by firm size. Table 10 summarizes results on the moderating effect of firm size.

Table 10: Moderating Effect of Firm Size

Variable	Coefficient	Std. Error	Z	P>|z|
Capital Risk	6.5100	3.8750	1.68	0.0940
Credit Risk	-1.2100	1.0804	1.12	0.2610
Liquidity Risk	-1.3300	0.5708	2.33	0.0330
Firm Size (Total Assets)	2.8700	0.3816	7.52	0.0000
Capital Risk*Firm Size	5.8000	1.4573	3.98	0.0050
Credit Risk*Firm Size	1.2500	0.5896	2.12	0.0262
Liquidity Risk*Firm Size	1.5600	0.6047	2.58	0.0115
_cons	2.5900	0.3607	7.18	0.0000
R squared=	**0.2087**			
F (7, 473) =	**77.78**			
Prob=	**0.0000**			

Source: Research Data (2023)

Panel regression model with a moderating variable:

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SW_{it}= 2.5900+6.5100CR_{it}-1.2100CRR_{it}-1.3300LR_{it}+2.8700FS_{it}+5.8000(FSi_t*CR_{it})+ 1.2500(FS_{it}*CRR_{it}) + 1.5600 (FS_{it}*LR_{it})

Where;

SW_{it}= Shareholder wealth (Economic Value Added)

CR_{it}= Capital risk

CRR_{it}= Credit risk

LR_{it}= Liquidity risk

FS_{it}=Firm Size

The results presented in Table 10 indicate that when the interaction terms between the independent variables and the moderating variable was introduced, the coefficient of determination (R squared) increased from 17.80% to 20.87%. Before considering the moderating effect of firm size, the F-statistic value was 3.6900 with a p-value of 0.0297 (Table 4.9). However, after introducing the moderating variable firm size, the F-statistics value increased to 77.78 with a p-value of 0.0000 (Table 4.10). These results suggest that capital, credit, and liquidity risk, firm size (total assets), and the interactions of firm size with capital risk, credit risk, and liquidity risk are significant in explaining variations in shareholder wealth (economic value added). Furthermore, the interaction terms capital risk*firm size ($p=0.0050<0.05$), credit risk*firm size ($p=0.0262<0.05$), and liquidity risk*firm size ($p=0.0115<0.05$) have a significant effect. Therefore, the null hypothesis is rejected. The conclusion established is consistent with the study conducted by Mwangi (2018), which highlighted a positive correlation between firm size and the performance of commercial banks in Kenya. Lamuda, et al, (2020) findings, also pointed out a significant positive relationship between the structure of wealth and value of a firm. Echoing this, Muturi and Omenyo (2019) suggested that a firm's size, assessed by its financial position rather than employee count, significantly influences its financial

5.0 Conclusion

The study concludes that an increase in capital adequacy correlates with a rise in shareholder wealth, indicating that SACCOs with a higher capital adequacy ratio are likely to generate greater shareholder wealth. This finding underscores the importance of prudent capital management practices for SACCOs to enhance shareholder wealth. For DT-SACCOs, it is critical to assess and manage their capital structure effectively to achieve an optimal balance between risk and return. Maintaining an appropriate level of capital helps DT-SACCOs strengthen their financial position, mitigate risk, and foster the growth of shareholder wealth. However, the regression analysis reveals that changes in credit risk do not significantly impact shareholder wealth. While credit risk evaluation remains a key aspect of financial management, it may not be a predominant factor influencing shareholder wealth growth in DT-SACCOs located in Nairobi City County. Additionally, the study finds that an increase in liquidity risk is associated with a decrease in shareholder wealth. This suggests that lower liquidity adequacy ratios could adversely affect the growth of shareholder wealth in DT-SACCOs.

Consequently, effective liquidity risk management is vital for SACCOs to protect and enhance shareholder wealth. DT-SACCOs are advised to maintain healthy liquidity levels and implement robust liquidity risk management practices, including diversifying funding sources, to mitigate risk and enhance financial resilience. The research also reveals that firm size significantly moderates the relationship between financial risk and shareholder wealth in DT-SACCOs operating in Nairobi County. The interaction terms between firm size and financial

risks (capital, credit, and liquidity risk) are significant, illustrating that firm size plays a crucial role in the impact of these risks on shareholder wealth. The data suggests that larger SACCOs, with higher levels of shareholder wealth, are more adept at managing and mitigating financial risks, thus safeguarding and enhancing shareholder wealth. In contrast, smaller SACCOs may require more stringent risk management practices and strive for growth to increase their firm size and, subsequently, their shareholder wealth.

6.0 Recommendations

The study recommends that SACCOs should prioritize the establishment and maintenance of an optimal level of capital, to ensure that they can generate maximum shareholder wealth. The study suggests that ignoring capital risk could lead to a deterioration of shareholder value. Therefore, prudent capital management practices should be adopted, including regular evaluations of capital adequacy ratios and timely adjustments to the capital structure to balance risk and return effectively. Additionally, since the null hypothesis was rejected, this indicates that SACCOs should be more cautious about the levels of capital they hold, as it directly influences the wealth of shareholders. In addition, SACCOs should rigorously monitor their liquidity levels to ensure that they are aligned with their financial objectives and do not erode shareholder wealth. An optimal liquidity management strategy should be adopted to balance the need for liquid assets against the potential loss of shareholder value. The institutions should also conduct frequent reviews of their liquidity adequacy ratio to ensure that they are within acceptable limits. A high retention of member deposits and or short-term liabilities in liquid assets can result in a significant opportunity cost in terms of potential investment opportunities. As demonstrated by the study, this can have a negative effect on shareholder wealth.

Moreover, the study recommends that DT-SACCOs should consider the impact of firm size when developing their financial risk management strategies. Larger DT-SACCOs tend to have higher levels of shareholder wealth, suggesting that they have greater capacity and resources to effectively manage and mitigate financial risks. However, smaller DT-SACCOs should focus on growth strategies to increase their firm size and improve shareholder wealth. This can be achieved by ensuring proper capital adequacy ratios are maintained in order to enhance investor confidence. Further, DT-SACCOs should maintain a right balance of liquid assets as a decline in liquidity adequacy have a negative effect on shareholder wealth

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