

**EFFECT OF INVESTMENT DECISIONS ON EFFICIENCY OF  
DEPOSIT TAKING SAVINGS AND CREDIT COOPERATIVE  
SOCIETIES IN NAIROBI COUNTY, KENYA**

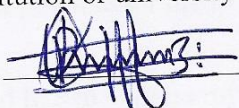
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**A RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD  
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## DECLARATION

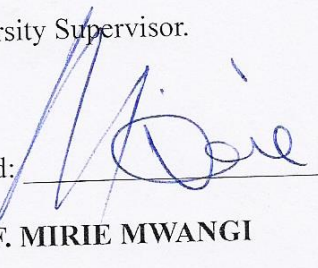
I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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**D63/85894/2016**

This research project has been submitted for examination with my approval as the University Supervisor.

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## **DEDICATION**

I dedicate this project to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. My wife, Dr. Verah Bella Ontita, you have been a constant source of support and encouragement during the challenges of graduate school. I am truly thankful and deeply indebted for having you in my life.

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## **LIST OF ABBREVIATIONS**

<b>ANOVA</b>	Analysis of Variance
<b>DT-SACCO</b>	Deposit Taking Savings and Credit Cooperative
<b>FOSA</b>	Front Office Service Activities
<b>FSD</b>	Financial Sector Deepening
<b>NIM</b>	Net Interest Margin
<b>ROA</b>	Return on Assets
<b>SACCOs</b>	Savings and Credit Cooperative societies
<b>SASRA</b>	Sacco Societies Regulatory Authority
<b>VIF</b>	Variance Inflation Factors
<b>WOCCU</b>	World Council of Credit Unions

## ABSTRACT

With growing competition globally, SACCOs are directing their energies on investments to enhance their efficiency and so as to survive extreme competition. However, the decision to invest is subjective and a wrong investment decision can lead companies even to bankruptcy. Investment choices can also be made in compliance with the conditions in the markets, the portfolio level divergence, the results of fundamental and technical analysis, along with what the investors and managers expect and prefer. This study's intent was to determine how investment decisions impact the efficiency of deposit taking SACCOs in Nairobi. The study's population was all the 43 DT-SACCOs in Nairobi County, Kenya. The independent variable for the study was investment decisions with four measures; investment in real estate, investment in government securities, investment in fixed deposit and investment in shares. The control variables were liquidity, firm size and liquidity. Firm efficiency was the response variable which was the primary focus of the study. The study utilized secondary data from 2014 to 2018 (5 years) on annual basis. A descriptive cross-sectional design together with the multiple linear regression model were used for the analysis of the variables. For this analysis the researcher used the SPSS version 21 software. The findings gave an R-square value of 0.317 meaning that 31.7 percent changes in the efficiency of DT-SACCOs in Nairobi, Kenya can be attributed to the seven selected predictor variables while 68.3 percent changes of efficiency of DT-SACCOs was attributable to other factors outside the scope of the study. It was further revealed that the predictor variables showed a strong correlation with efficiency ( $R=0.563$ ). ANOVA results show that the F statistic was substantial at 5% level with a  $p=0.000$ . This shows the model was suitable for the study to provide an explanation of the variables. The results also showed that investment in real estate, investment in government securities and investment in shares produced positive and statistically substantial values for this study while investment in fixed deposits, liquidity, firm size and age were found to be statistically insignificant determiners of efficiency. This study recommends that measures should be put in place to enhance investment in government securities, real estate and shares as these three have a substantial influence on efficiency of DT-SACCOs in Nairobi.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Investment decisions are one of the key decisions for management of any organization. They are significant decisions for a company since they are hypothesized to influence its efficiency by influencing profitability and risk (Alslehat & Altahtamouni, 2014). Investment decisions largely include acquisition, modernization, extension and replacement of the long-term asset. The investment decisions that a firm makes is vital in firm's efficiency hence making it effective. For a firm to be competitive and efficient it has to make investment decisions key to the business administration (Virlics, 2013). Loof and Heshmati (2008) argue that investment decision affects efficiency of firms positively and significantly.

This study drew support from the portfolio theory, q theory of investment and agency theory. The agency theory by Jensen and Meckling (1976) plays a role of explaining investment decision in that the profit amount available to shareholder for investment will be limited if the firm owners spend on motivating management due to personal gains instead of spending the profit on profitable investment. The Q theory of investment asserts that a firm ought to invest with the expectation that it will produce gains and so forth an effective asset market's valuation of the firm incorporates such prospects (Erickson & Whited, 2000). Thus, the only thing that determines firm investment is the existence of investment opportunities that are profitable (Balfoussia & Gibson, 2016). The portfolio theory by Markowitz (1952) argues that when investors are deciding upon an investment opportunity, they evaluate the returns they expect to get against the attendant risk of the investment.

In Kenya, the number of SACCOs has been on the rise. To ensure efficiency of cooperatives, there is need to secure the principle of maintaining sufficient liquidity levels to cater for current obligations and producing investment income equal to market yields (Stalebrink & Sacco, 2006). Members' savings are the major source of funds in SACCOs which are used by SACCOs in various investments such as loan to members, financial and liquid investments. While undertaking all these investments, managers should ensure safety and good returns for their money (Auka & Mwangi, 2013). The deposit-taking SACCOs in Kenya have mostly invested in real estate, shares, government securities and fixed deposits and therefore the need to conduct an empirical study investigating whether these investments have a significant influence on their efficiency.

### **1.1.1 Investment Decisions**

Investment decisions can be described as the determination of how, when, where and how much capital can be spend in line with the aim of making a profit (Virlics, 2013). On the other hand investment Brown and Reilly (2009) defined investment as the commitment of finances for certain duration of time so as to benefit from future payments that will remunerate the investor for the period the resources are committed. Investment decisions can also be simply defined the process of cash outlay in expectation of future cash inflows (Steve & Chris, 2011). It refers to the determination made by management as to how, when, where and how much capital is to be spent on available opportunities including determining the costs and returns for each option (Asetto, 2014). Investments can also be categorized into capital (or long term) expenditure and current (short term) expenditure, but Levy and Sarnat (1994) states that there is no sharp conceptual difference between the two since all of the firm's expenditures are made in expectation of realizing future benefits.

Investment decisions are strategic in nature and they are that primary choice that shapes the undertaking of a business, to say, the vital decisions in terms of the resources committed, actions in use, or the set standards (Kong, Xiao & Liu, 2010). Among the three most primary decisions that an entity takes on its typical daily operations is investment decisions and the other two are the operational and financing decisions (Alslehat & Altahtamouni, 2014). The choice to invest funds is part of the important drivers of the firm's financial structure. Sound investments that apply well planned strategies are essential to the creation of value to the shareholders, and ought be scrutinized in an appropriate framework as well as good logical methodology (Tewolde, 2008).

Investment is standardized by gross fixed assets level so as to explain for the disparities across entities and so investments are gauged using the fraction of gross fixed investments of an entity throughout the period to the gross fixed assets at period commencement (Jangili & Kumar, 2010). The other major proxies used to measure investment include, the net investment in Plant Property Equipment, the investment summation in addition to the study as well as improvement costs. The net sum of investment is also gauged as the overall investment for plant property and equipment as well as the intangible assets net investment resources and the investments which are net in the field of monetary resources and the company's acquisition (Tempel, 2011). The current study will measure investment decision using the proportions of investments in real estate, government securities, fixed deposit and shares.

### **1.1.2 Firm Efficiency**

Firm efficiency is the ability of a firm to minimize waste and maximize resource capabilities so as to offer to its customer's quality products and services (Kalluru &

Bhat, 2009). It involves the identification of wasteful resources and processes that affects productivity and growth of organizations profits. Firm efficiency entails redesigning new work processes that improves productivity and quality (Darrab & Khan, 2010). According to Cooper and Rhodes (1978), firm efficiency is the maximum ratio of weighted outputs to weighted inputs.

Firm efficiency is determined through calculating the ratio of the actual productivity over the highest anticipated productivity. The highest possible productivity equates to the desired performance. According to Hackman (2008), the steps involved in analyzing the productivity and efficiency analysis is linked to production economics, which seeks to examine and generalize the description of technology in responding to the questions. One may be curious to determine the firm's efficiency before committing a specific amount of inputs and during the scaling of its operations. It is equally important to understand the trend of the company's capability over time. Finally, one might be curious to compare the performance of the firm against its competitors.

There are several ratios of measuring firm efficiency. To begin with, we can use the total asset turnover ratio which measures the company's ability to generate sales with regard to its investment in total assets. The formula for the ratio is dividing net sales by average total assets. Secondly we can use the fixed-asset turnover ratio which is analogous to total asset turnover ratio except that it considers fixed assets only. Fixed-asset turnover is given by division of the net sales by average net fixed assets. Another ratio for measuring firm efficiency is revenue turnover. This ratio measures the ability of the company to spend given its investment in generating revenue. It is calculated as the ratio of total outputs to total inputs. This ratio show whether the firm

is managing inputs efficiently which will ultimately have an influence upon its overall efficiency (Rao & Lakew, 2012). This study will use revenue turnover to measure firm efficiency. The outputs will be total revenue generated from the various investments while the inputs will be the total operating expenses.

### **1.1.3 Investment Decisions and Efficiency**

The decision to make investments in resources is a significant driver of the business system of finance. Sound investments that implement well-planned strategies are important in improving the output per unit of input invested (Tewolde, 2008). Investments are established by the combination of the investment projects, through long-term projects and short-term ones. Any investment that is put into account before directors will be one that relies on precise procedure in investment project's valuation, which considers the major aim of the facility as to maximize on efficiency (Alslehat & Altahtamouni, 2014). Decisions on investments try to find a structure that is optimal alongside with the quantity and quality terms of the firm (Jha & Hui, 2012).

Firm investment decisions are shown to be directly related to efficiency of firms. The q theory of investments explicitly connects investment to the objectives of the firm and supports that the investment behaviour of a firm affects the efficiency of the firm (Twine, Kiiza, & Bashaasha, 2015). The neoclassical model highlights that future net worth of investments influences the efficiency of firms since assets are used to generate revenue (Warström & Niemelä, 2015). The accelerator model of investment contends that to maximize efficiency firms hold a stock of investments which is proportional to the firms level of output (Scholleova, Fotr & Svecova, 2010).

Salawu, Asaolu and Yinusa (2012) argue that investment opportunities affect efficiency of companies positively. Asaolu (2012) size, growth and foreign direct

investment of listed firms positively related with firms' performance while higher income inconsistency raises the risk of the firm not covering its interest payment resulting to higher expected costs of financial agony. Koroti (2014) also agreed that investing decision positively affected financial performance. Koroti (2014) indicated that listed firms in Kenya should increase investment in capital assets with aim of diversifying in other product lines, in order to increase sources of revenue streams and remain competitive while achieving higher financial performance in the long-run.

#### **1.1.4 Deposit Taking Savings and Cooperative Societies in Kenya**

The Savings and Credit Cooperative societies (SACCOs) are one of the most visible and important cooperative societies in Kenya. They are distinct and have unique traits as compared to other cooperatives. Their purpose is to mobilize savings and offer credit facilities of their members. The delivery of savings and credit facilities is part of financial services. SACCOs are grouped together with financial intermediating cooperatives which are housing cooperatives and investments (SASRA, 2018). The SACCO subsector in Kenya is legal. They are divided into two; SACCOs that are distinguished by the nature of deposits and savings that the SACCOs mobilize from their membership and SACCOs that are principally defined. The first segment consists of non-deposit taking SACCOs and the second one consist of deposit taking SACCOs. There are 166 deposit taking SACCOs in Kenya. The SACCOs operating in Nairobi County are 43 (SASRA, 2018).

SACCOs' efficiency has been affected recently by the competitive nature of the industry in Kenya, especially commercial banks (Mugo, Muathe & Waithaka, 2019; Odhiambo, 2019). Banks have gone to an extent of issuing unsecured loans to their clients and non-clients, this non-price competitive tool has posed a challenge on



SACCOs' efficiency, to be efficiently sound, SACCOs have opted venturing into other investments (Munene, Ndambiri & Wanjohi, 2019). Some of the investments SACCOs have ventured into include real estate, fixed deposits, shares and government securities. However it is not clear which of these investment decisions lead to desirable efficiency of these SACCOs hence the study.

## **1.2 Research Problem**

With growing competition globally, SACCOs are directing their energies on investments to enhance their efficiency and so as to survive extreme competition (Irungu & Gatuhi, 2013). However, the decision to invest is subjective and a wrong investment decision can lead companies even to bankruptcy. Investment choices can also be made in compliance with the conditions in the markets, the portfolio level divergence, the results of fundamental and technical analysis, along with what the investors and managers expect and prefer (Rakocevic, Milosevic & Rakocevic, 2014). Thus, investment decisions are risky and very uncertain on whether the costs incurred to invest will be recouped and revenues gained within the specified time period (Virlics, 2013).

SACCOs contribute immensely to the growth of the economy. In Kenya; they promote the saving culture for its members and provide them with loans at a low interest rate to better their living standard. SACCOs' inefficiency has been witnessed recently; deposit-taking SACCOs are continually facing high competition from other deposit-taking institutions in Kenya, especially commercial banks (Mugo, Muathe & Waitthaka, 2019; Odhiambo, 2019). Banks have gone to an extent of issuing unsecured loans to their clients and non-clients, this non-price competitive tool has posed a challenge on SACCOs' efficiency, to be efficiently sound, SACCOs have

opted venturing into other investments (Munene, Ndambiri & Wanjohi, 2019). However it is not clear which of these investment decisions lead to desirable efficiency of these SACCOs hence the study.

There are several global studies conducted on investment decisions but most of these studies have focused on how investment decisions influence financial performance which is not the main objective of a SACCO whose main goal is efficiency. Some of the studies conducted on efficiency of SACCOs did not relate it to investment decisions. A positive relation between efficiency and size was revealed in a study by Ward and Mckillop (2005) who studied the link between performance of UK credit unions and size, age, income of members. Huang et al., (2006) also examined the association between firm performance and information technology investment. The study found that companies with huge investments in infrastructure, information technology and skilled personnel in information technology resources have a greater relationship with benefits associated with information technology and not the performance of a firm. The authors however, focused on investment in information technology by firms. Lööf and Heshmati (2008) explored the causal relationship of performance and investment indicators at the firm level. The study found a two-way underlying relationship between the two but the scope of the study was not SACCOs.

Locally, research on investment decisions has mostly focused on its relationship with profitability which is not the main goal of a SACCO. In addition, some of the studies on investment decisions have focused on other contexts and not SACCOs. Hussein (2017) associated investment with commercial banks' returns; the outcome indicated insignificant negative relationship between investment in government securities, properties and profitability. Mella (2016) studied on pension funds' performance in

relationship with real estate investment and established that real estate were most preferable due to the high returns. Odhiambo (2015) on his study on real estate investment and financial performance of SACCOs indicated a negative relationship between the two variables. Although a study by Mwangi (2014) focused on efficiency of SACCOs in Kenya, investment decisions were not considered as determinants of efficiency. While the above findings provide valuable insights on investment decisions, it is only partial. The current study leveraged on this gap by answering the research question; what is the effect of investment decisions on efficiency of deposit-taking SACCOs in Nairobi County, Kenya?

### **1.3 Research Objectives**

This study's intent was to determine how investment decisions affect the efficiency of deposit-taking SACCOs in Nairobi.

### **1.4 Value of the Study**

The results of the research are critical to the future researchers, since it can be a point of reference. The findings might also be significant to scholars and researchers, in identifying the research gaps on the related topics of the study as well as reviewing of the empirical literature to institute further areas of research.

The stakeholders of the cooperatives sector will find this research very useful as this study will generate vital information in management of the industry. These stakeholders include investors, managers in the sector and the legislative authorities in the sector. The management of deposit-taking SACCOs will derive the most out of this since it illuminates ways in which they can utilize investment decisions as a channel to improve efficiency in their DT-SACCOs.

To the government and other policy makers, this study's inference will help them to guide and formulate policies and guidelines that would assist deposit-taking SACCOs and other financial firms in the sector adopt investment decisions that will enhance their efficiency and therefore contribute to the sector performance.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

A review of theories which form the foundation of this study will be presented in this section. In addition, previous research carried before on this research topic and related areas are also discussed. The other sections of this chapter include determinants of efficiency, conceptual framework showing the relationship between study variables and a literature review summary.

### **2.2 Theoretical Review**

This chapter is a review of the theories explaining the relation between investment decisions and efficiency. The theoretical reviews covered are agency theory, the Q theory of investment and the portfolio theory.

#### **2.2.1 Agency Theory**

The initiators of this theory was Jensen and Meckling in 1976. The theory collaborate the investment decision variable of the study. The basis of this theory is the association among the managers and the owners. The distinction of tenure from executive in contemporary businesses offers the framework for the utility of the agency theory. The present businesses have scattered and broad form of ownership in the shape of investors who are not usually concerned with the running of their firms. In such a case the manager is tasked with the control of day to day processes of the firm. This clarification among the tenure and the management generates the possibility for divergence of welfares among the managers and the owners caused by fees linked with mitigating these disagreements (Jensen & Meckling, 1976).

The backbone for this theory is that the agents are normally enticed by their individual achievements and job to use their individual welfares instead of taking into account the investor's welfares and while optimizing the investor worth. For instance, agents may be enticed to purchasing luxurious workplaces, corporation automobiles and other thrifty things as the effect is taken care of by the principals. Therefore, a significant dilemma shown by this theory is making sure that agents follow the welfare of investors and not just their individual well-being. According to Leuzet al., (2003) impact such activities eventually reveal itself in the profits of the firm. Thus greater strategic involvement of the board would serve to reduce cases of pursuit of counterproductive strategies leading to less conflict between stakeholders and management.

This theory is useful to the study in providing an understanding to the independent variable of investment decisions as the agents are greatly enticed by their own achievements subsequently leading to a reduction in the quantity to be used in making meaningful investment as the greater the expenses to entice the administration the greater the overall expenditure of the firm and as a result the cumulative returns accessible to the investors will be inadequate.

### **2.2.2 Q Theory of Investment**

This theory was proposed by Tobin and Brainard (1968). The hypothesis emanates from neoclassical theory as it integrates the alteration cost which explains output losses. Twine, Kiiza and Bashaasha (2015) argued that organizations select levels of investment which makes use of the present firm value. The hypothesis proposes that market approximation of equities is the main element of firms' investment. Therefore,

decisions of investment are stimulated when funding bases are extremely valued in the market residence than it would charge to produce it (Erickson & Whited, 2000).

The hypothesis is related to the rate of investment of Q function. Q function is the ratio of market price of fresh added investment capitals to their extra cost. According to Eklund (2013) the theory of investment gives suggestion that metric q done to recap the existence of occasions for investments for exact organizations. Tobin also argued that q is greater than 1 which means that fixing new capital will have more profit to the exact organization. Henceforth  $1 < q$  shows that the firm should accumulate more wealth and vice versa (Balfoussia & Gibson, 2016).

The hypothesis further argued that decision of investment is dependent on the marginal Q level. Marginal Q level refers to looming marginal yields of investment over the current marginal investment cost. In addition, the hypothesis proposed that the organization market worth is higher than the replacement cost of firms (Warström & Niemelä, 2015). In this study, the Q theory of investment will be critical to explaining if the investment levels chosen by a firm enhances its efficiency.

### **2.2.3 Portfolio Theory**

The portfolio theory was initiated by Harry Markowitz in 1952 where he argued that when investors are deciding upon an investment opportunity, they evaluate the returns they expect to get against the attendant risk of the investment. It assumes that all investors are strictly rational in nature in that they seek to maximize their own utility and have the ability to do so in a consistent and transitive way.

For an assumed risk level, investor's desire more revenues to lesser revenues or for a specified level of probable revenue, they prefer less risk to more risk. It also assumes that investors are risk antagonistic. This means that investors hold well spread

portfolios instead of financing their full capital on a single or few assets. Another assumption the theory makes is that there are no transaction costs, and that there are no taxes (Ryan, 2007).

Portfolio theory is concerned with the construction of portfolios; i.e. collections of investments (Lumby & Jones, 2011). A portfolio is a bundle or a combination of individual assets or securities. The theory is based on mathematical models that demonstrate risk reduction or elimination effects of diversification; that the risk of a combination of several investments i.e. portfolio is less than the weighted average risks of individual constituent investments (Pandey, 2010).

According to Lumby and Jones (2011), the statistical result upon which portfolio theory is based supports the notion of not keeping all your eggs (investments) in one basket. Deposit-taking SACCOs in their investment efforts can be guided by the principle objective of this theory: maximizing output from the invested inputs. They need to choose investment opportunities that will minimize their risk exposure while not reducing their efficiency.

### **2.3 Determinants of Efficiency**

A firm's efficiency can be impacted by factors either internal or external to the firms that define the level of output. The internal factors are unique to each firm and determine how efficient it is. Managerial decisions together with the board are the major sources of these factors. Some of the internal factors are investment decisions, the size of the firm, liquidity, age of the firm among others. Management has no control of external factors. They are factors that the firm does not have control over them but rather they need to develop strategies to deal with them (Athanasoglou, Brissimis & Delis, 2005).



### **2.3.1 Investment Decisions**

The decision to make investments in resources is a significant driver of the business system of finance. Sound investments that implement well-planned strategies are important in improving the output per unit of input invested (Tewolde, 2008). Investments are established by the combination of the investment projects, through long-term projects and short-term ones. Any investment that is put into account before directors will be one that relies on precise procedure in investment project's valuation, which considers the major aim of the facility as to maximize on efficiency (Alslehat & Altahtamouni, 2014). Decisions on investments try to find a structure that is optimal alongside with the quantity and quality terms of the firm (Jha & Hui, 2012).

Firm investment decisions are shown to be directly related to efficiency of firms. The q theory of investments explicitly connects investment to the objectives of the firm and supports that the investment behaviour of a firm affects the efficiency of the firm (Twine, Kiiza, & Bashaasha, 2015). The neoclassical model highlights that future net worth of investments influences the efficiency of firms since assets are used to generate revenue (Warström & Niemelä, 2015). The accelerator model of investment contends that to maximize efficiency firms hold a stock of investments which is proportional to the firms level of output (Scholleova, Fotr & Svecova, 2010).

### **2.3.2 Firm Size**

The most fundamental question underlying firm policy is at what size is firm efficiency maximized. The expansion of the size of the firm increases its efficiency up to a certain level where any further increase becomes harmful since bureaucratic and other managerial issues and challenges set in. Hence the relationship between size and efficiency is nonlinear in nature. We utilize the logarithm of the assets of the firm

(logarithm) and their square so as to curb this likely non-linear association (Yuqi, 2007).

According to Amato and Burson (2007), the size of an organization is primarily determined by the amount of assets it owns. An argument can be made that the larger the assets a firm owns, the more its ability to undertake a large number of projects with greater returns in comparison with small firms with a smaller amount of assets. Additionally, the bigger the firm, the larger the amount of collateral that can be pledged in a move to access credit facilities in comparison to their smaller competitors (Njoroge, 2014). Lee (2009) concluded that the amount of assets in control of a firm has an influence on the level of profitability of the said firm from one year to the next.

### **2.3.3 Liquidity**

Liquidity is defined as the degree in which an entity is able to honor debt obligations falling due in the next twelve months through cash or cash equivalents for example assets that are short term can be quickly converted into cash. Liquidity results from the managers' ability to fulfill their commitments that fall due to creditors without having to liquidate financial assets (Adam & Buckle, 2003).

According to Liargovas and Skandalis (2008), liquid assets can be used by firms for purposes of financing their activities and investments in instances where the external finance is not forthcoming. Firms with higher liquidity are able to deal with unexpected or unforeseen contingencies as well as cope with its obligations that fall. Almajali et al., (2012) noted that firm's liquidity may have high impact on efficiency of firms; therefore firms should aim at increasing their current assets while decreasing

their current liabilities as per his recommendation. However, Jovanovic (1982) noted that an abundance of liquidity may at times result to more harm.

#### **2.3.4 Firm Age**

According to Sorensen and Stuart (2000), company's age may have an effect on firms' efficiency. They further noted that older firms may have organizational inertia which tends to make them inflexible which may result to their inability to appreciate the changes that occur in changing environment. However, Liargovas and Skandalis (2008), noted that older firms may have more skills because they have been in operation longer thus have more experience having enjoyed the benefits that come from learning and aren't easily prone to the liabilities that result from newness, therefore they tend to have performance that is superior as compared to newer firms.

According to Loderer, Neusser, and Waelchli (2009), the relationship that exists between the age of a company and efficiency is positive. However, it has also been observed that a firm's efficiency may at times decline as companies grow older due to the fact that old age may lead to knowledge, abilities and skills being obsolete thereby resulting to decay in organizations. Agarwal and Gort (2002) this may explain why some older companies are usually taken over.

### **2.4 Empirical Review**

Local and international studies have been done on investment decisions but most of these studies have focused on their effect on financial performance which is not the main goal of a SACCO.

#### **2.4.1 Global Studies**

Zehir et al., (2010) studied the relationship between IT level of investment, information technology perception, and information technology use, information

technology at course of decision-making, performance of the firm, orientation of technology and future orientation. The study collected data using questionnaires from 158 National and Multinational Companies in Turkey. Through the ordinary least squares method, the study finding indicated that information technology investments are vital component of firm performance. The study concluded that if companies manage information technology investments fruitfully, they would improve firm performance. The study however focused on investment in information technology.

Grazzi, Jacoby and Treibich (2013) carried as study to compare the effect of investment policies on the economic growth of the firms in France and Italy. The study results revealed that investment policies had a significant association with economic growth of the firms in France and Italy. The study findings also revealed that branch expansion was inversely related to firm performance.

Parimalakanthi and Kumar (2015) evaluated on the investment preference and individual attitude in Coimbatore City, India. Friedman test, Garratt ranking and factor analysis were used to analyze the primary collected data. Investment avenues investigated were; corporate bonds, government securities, savings account, fixed deposit account, Shares, gold and silver, chit funds, commodities, insurance policies and real estate. The study established that investors prefer bank deposits closely followed by investment in Gold and silver.

Mukarushema, Kule and Mbabazize (2016) examined the effect of financial statements analysis in investment decision making by commercial banks in Rwanda. They employed detailed survey design and sampled 110 respondents using stratified random sampling. Data for the research was collected using a questionnaire. Through the regression model, findings of the research indicated that the most important thing

in making decision of investment is financial statement analysis. The research concluded that, a combined 82% of the investment decision making by commercial banks are based on financial statements analysis. The study focused on impact of financial statement analysis on investment by banks.

Shrestha (2018) looked at investors' interest in the government securities in Nepal. Descriptive and analytical research design was employed with a target population being all the government securities investors. Judgmental sampling was used to choose investors and a sample size of 200 was achieved. The outcome indicated that both the poor and the rich were interested in the government investment. A conclusion was drawn that; income is the major factor in the government securities investment.

#### **2.4.2 Local Studies**

Odhiambo (2015) examined Kenya commercial banks returns focusing at the real estate as an investment. Information for 9 such institutions banks was collected over 5 year duration. Panel data analysis was used on the collected data. Results showed that financial performances of these institutions were not significantly affected by such an investment. Factors which were found to significantly contribute to profitability include; operational expenses, size and market structure, the study concluded that profitability of these institutions is not affected by real estate investment.

Mella (2016) studied pension funds' financial soundness looking at real estate as an investment in Kenya. A descriptive survey research design was used; all pension funds that had been directed towards real estate investment were part of the study, making a sum of 48 by Dec 2015. Multiple regression model as a tool for data analysis was used. Results revealed such an investment contributed positively in return on equity. Offshore investments positively influenced pension funds'

performance as international investments increased the returns although in a small percentage. Treasury bills and bonds and fixed deposits had a very strong positive relationship with performance of pension funds this is due to their liquid nature hence attracting low returns due to low risk attached to them and their susceptibility to inflation. Equity posed a negative influence of pension funds' returns as they are too risky and performed poorly during the study period.

Kipkorir et al., (2016) evaluated SACCOs' profitability looking at various investments in Baringo County. The predictor variables were; Loans to members, government securities and Shares on profitability of the registered SACCOs. A descriptive survey design was used targeting 316 members from the 73 registers SACCOs. Stratified sampling was adopted in coming up with a sample size of 177 correspondents. Primary source of data was used. Descriptive and inferential statistics were employed in analysis of the collected data. It was noted that the above factors had a perfect influence on performance of SACCOs with FOSA taking lead followed by lending to members then lending to the government, real estate lagged behind.

Kibet and Maina (2018) investigated how deposit taking SACCOs profitability is influence by fixed deposit management in Kenya. Cross-sectional survey method was adopted with the target population being all deposit taking SACCO societies, primary and secondary data were used data collection. Inferential and descriptive statistics were used in data analysis. Results indicated that fixed deposit management positively impacted financial performance.

A study on sustainability of universities in relationship to investment strategies was conducted by Chumba, Muturi and Oluoch (2019). Descriptive and cross-sectional survey analysis was adopted. Primary and secondary data were used in the study; all

the 71 universities were used as study population targeting 142 respondents that is, 71 vice-chancellors and 71 financial officers from each university. The study established that universities had greatly invested in real estate investment followed by investment in Shares. Low investment levels were observed in fixed deposit account followed by investment in catering services.

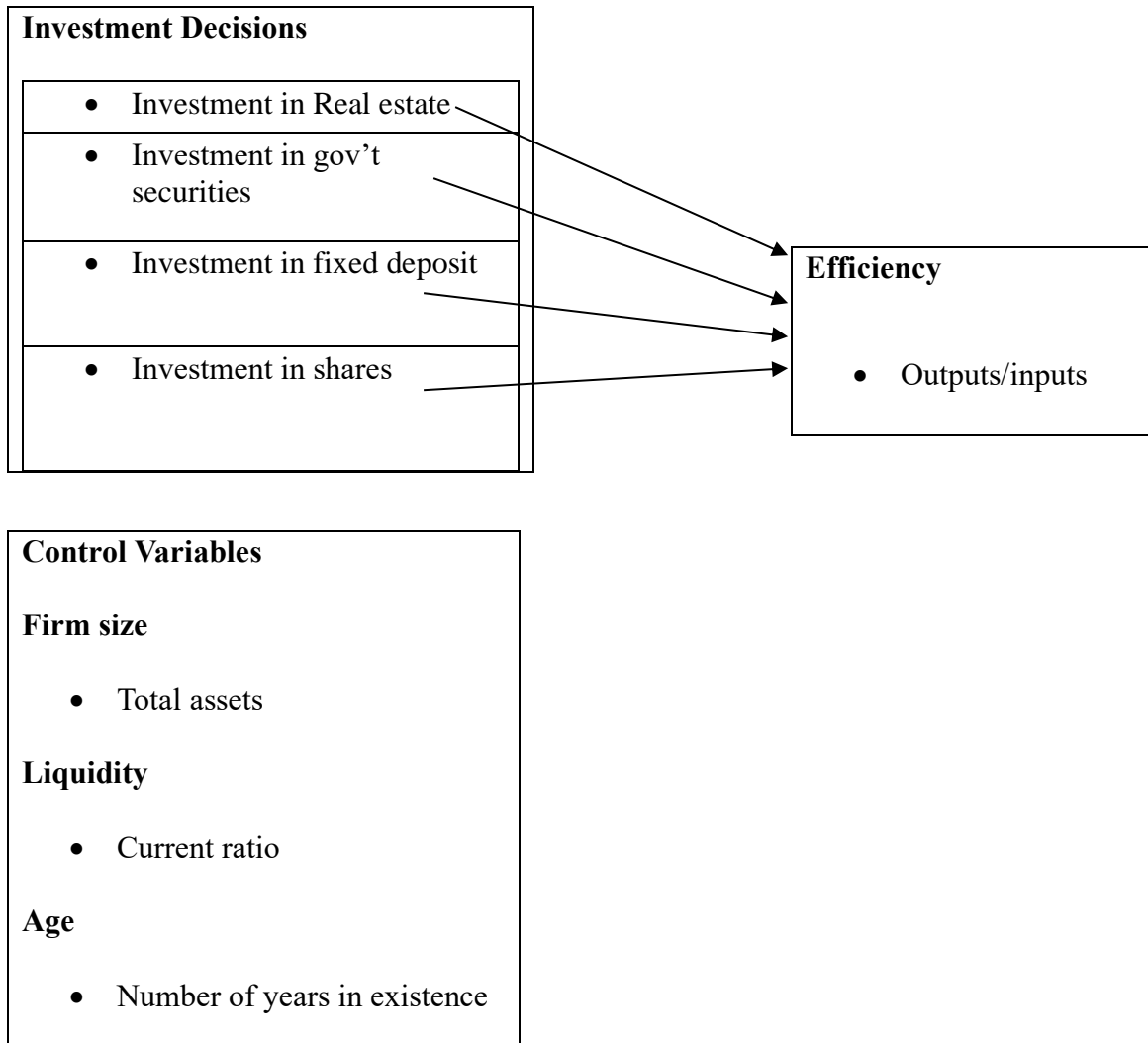
## **2.5 Conceptual Framework**

The conceptual model developed below portrays the expected association existing between the variables. The predictor variables will be investment decisions as given by investment in real estate, government securities, shares and fixed deposit. The control variables will be firm size as given by total assets, age of the firm and liquidity as measured liquid assets divided by customer deposits. Efficiency was the response variable that the study intended to explain and it was given by the ratio of outputs to inputs.

**Figure 2.1: The Conceptual Model**

**Predictor variables**

**Response variable**



**Source: Author (2019)**

## **2.6 Summary of the Literature Review**

A number of theoretical frameworks have explained the theoretically expected relationship between investment decisions and firm efficiency. The theories covered in this review are; agency theory, the q theory of investment and portfolio theory. Some of the primary influencers of efficiency have also been explored in this chapter.



A number of local and international empirical studies have been carried out on investment decisions. The findings of these studies have also been explored in this section. The lack of local studies on the effect of investment decisions on efficiency of deposit-taking SACCOs was the motivation for conducting the current study.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

To ascertain how the efficiency of deposit taking SACCOs in Nairobi is affected by investment decisions, a research methodology was necessary to outline how the research was carried out. This chapter has four sections namely; research design, data collection, diagnostic tests and data analysis.

### **3.2 Research Design**

The research utilized a descriptive cross-sectional research design. Descriptive design was utilized as the researcher is interested in finding out the state of affairs as they exist (Khan, 2008). This design is more appropriate since the researcher is familiar with the phenomenon under study but was more interested in finding out the nature of relationships between the study variables. In addition, a descriptive research aims at providing a valid and accurate representation of the study variables and this helps in responding to the research question (Cooper & Schindler, 2008).

### **3.3 Population**

A population is the totality of observations of interest from a collection such as persons or events as specified by a research investigator (Burns & Burns, 2008). This study's population comprised of the 43 deposit taking SACCOs in Nairobi County, Kenya as at 31<sup>st</sup> December 2018 (SASSRA, 2018). Since the population is relatively small, a census of the 43 deposit taking SACCOs was undertaken for the study (see appendix I).

### **3.4 Data Collection**

The study relied on secondary data. The source of the secondary data was the

published annual financial reports published by the deposit taking SACCOs between January 2014 and December 2018 and captured in a collection schedule. SASRA and individual deposit taking SACCOs annual reports were used to derive the data. The end result was annual information concerning the predictor variables and the response variable for the 43 deposit-taking SACCOs in Nairobi.

### **3.5 Diagnostic Tests**

The assumption of linearity states that an association between two variables X and Y can be illustrated using an equation  $Y=bX$  with c as a constant factor. The linearity test was obtained through the scatterplot testing or F-statistic in ANOVA. Stationarity test is a process where the statistical properties such as mean, variance and autocorrelation structure do not change with time. Stationarity was obtained from the run sequence plot. Normality tests the presumption that the residual of the response variable have a normal distribution around the mean. The test for normality was done by the Shapiro-wilk test or Kolmogorov-Smirnov test. Autocorrelation measures how similar a certain time series is in comparison to a lagged value of the same time series in between successive intervals of time. This was measured by the Durbin-Watson statistic (Khan, 2008).

Multicollinearity occurs when an exact or near exact relation that is linear is observed between two or several predictor variables. The determinant of correlation matrices were used as a test for multicollinearity which ranges from zero to one. Orthogonal predictor variable indicates that for a complete linear dependence to be ascertained between the variables, the determinant should remain one while it is at zero and multicollinearity increases as it moves closer to zero. Variance Inflation Factors (VIF)

and the levels of tolerance were determined to show how strong multicollinearity is (Burns & Burns, 2008).

### 3.6 Data Analysis

SPSS software version 22 was used in the analysis of the data. The researcher quantitatively presented the findings using graphs and tables. Descriptive statistics were employed for summarizing and explaining the study that was observed in the deposit-taking SACCOs. The results were presented by use of percentages, frequencies, measures of central tendencies and dispersion displayed in tables. Inferential statistics included Pearson correlation, multiple regressions, ANOVA and coefficient of determination.

#### 3.6.1 Analytical Model

The regression model below was used:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon.$$

Where: Y = Efficiency given by the ratio of outputs to inputs on an annual basis. The

outputs will be the summation of interest income and other incomes while inputs will be interest and dividends paid to members plus other operating expenses. This formula has been used before by Darrab and Khan (2010)

$\beta_0$  = y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$  = are the slope of the regression

$X_1$  = Investment in real estate as measured by the proportion of investments held in real estate divided by total investments

$X_2$  = Investment in government securities measured as a proportion of investment held in government securities divided by total investments

$X_3$  = Investment in fixed deposit measured as a proportion of investment held

in fixed deposits divided by total investments.

$X_4$  = Investment in shares measured as a proportion of investment held in shares divided by total investments

$X_5$  = Liquidity as measured by total loans to total members deposits ratio on an annual basis

$X_6$  = Size of the deposit-taking SACCO as measured by the natural logarithm of total assets on an annual basis

$X_7$  = Age of a deposit-taking SACCO measured by the number of years the SACCO has been in existence

$\varepsilon$  =error term

### **3.6.2 Tests of Significance**

Parametric tests were carried out by the researcher to establish the statistical significance of both the overall model and individual parameters. The F-test was used in the determination of the significance of the overall model and it was obtained from Analysis of Variance (ANOVA) while a t-test established statistical significance of individual variables.

## **CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS**

### **4.1 Introduction**

The analysis, findings and interpretation of the data collected from SASRA and individual deposit taking Sacco's financial reports will be presented in this section. The study's intent was to establish how investment decisions impact the efficiency of deposit taking SACCOs operating in Nairobi. The predictor variables for the study were the measures of investment decisions while the financial performance was the response variable as measured by the ratio of outputs and Inputs. Regression analysis was adopted to establish how the variables of study responded in relation to the study's objectives. Analysis of variance was used to test the goodness of fit of the analytical model. The results were presented in tables and figures.

### **4.2 Descriptive Analysis**

This gives a representation of the mean, minimum and maximum values of variables presented along with standard deviations. Table 4.1 below shows the statistics of the variables used. An output of all the variables was extracted using SPSS software for a five year time frame (2014 to 2018) on an annual basis.

The highest value for efficiency is 36.5% while the lowest value is -32.7%. The following measure of central tendency was exhibited; a mean of 7.53%. Also, the value of the standard deviation depicts variability in the efficiency of  $\pm 0.12\%$ . This implies that DT-SACCOs in Nairobi are generally efficient because their average efficiency is positive even after factoring in the aspect of standard deviation.

From the descriptive results, the findings further reveal that the highest value of the real estate investment is 5.45 billion while the lowest value is 75 million. The

following measure of central tendency was exhibited; a mean of 1.16 billion. Also, the value of the standard deviation depicts variability in the real estate investment of  $\pm 870.1$ . This implies that the real estate investment of DT-SACCOs in Nairobi is moderate going by the mean ratio. However, the great variability in the ratio displayed by the standard deviation indicates that the various DT-SACCOs have varying levels of investment in real estate.

The highest value of investment in government securities is 1.628 billion, while the lowest value is 151 million. The following measure of central tendency was exhibited; a mean of 476 million. Also, the value of the standard deviation depicts variability in the value at risk of  $\pm 197$ . This implies that the investment on government securities of deposit-taking SACCOs in Nairobi County is moderate going by the mean value. However, the great variability in the value displayed by the standard deviation indicates that the various deposit-taking SACCOs have varying levels of investment in government securities.

The highest value of investment in fixed deposit is 5.02 billion, while the lowest value is 51 million. The following measure of central tendency was exhibited; a mean of 2.67 billion. Also, the value of the standard deviation depicts variability in the fixed deposit investment of  $\pm 1.46$  billion. The great variability displayed by the standard deviation indicates that the various deposit-taking SACCOs have varying levels of fixed deposit investments.

The results from the findings point out that the highest value of investment in shares is 5.02 billion, while the lowest value is 51 million. The following measure of central tendency was exhibited; a mean of 3.44 billion. Also, the value of the standard deviation depicts variability in the variable of  $\pm 2.21$  billion. This implies that the

investment on shares by DT-SACCOs in Nairobi is moderate going by the mean ratio. However, the great variability in the ratio displayed by the standard deviation indicates that the various deposit-taking SACCOs have varying levels of shares investment.

**Table 4.1: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Efficiency (ratio)	215	-.3270	.3650	.075351	.1204852
Real estate (ln)	215	4.317	8.604	6.87170	.580538
Gov't securities (ln)	215	5.0182	7.3953	6.081809	.4131953
Fixed deposit (ln)	215	3.932	8.522	7.64196	.854200
Shares (ln)	215	5.087	9.618	7.98148	.582619
Liquidity (ratio)	215	.0074	3.2957	1.095325	.5507502
Firm size (ln)	215	6.0724	8.7303	7.772521	.5761002
Age (ln)	215	.0000	2.0000	1.338134	.3497706
Valid N (listwise)	215				

**Source: Research Findings (2019)**

### 4.3 Diagnostic Tests

The data collected was subjected to diagnostic tests. The study presumed a 95% confidence interval or 5% level of significance so as to make variable deductions on the data adopted. Diagnostic tests were useful for ascertaining the falsity or truth of the data. Therefore, the nearer to 100% the confidence interval, the more accurate the data used is presumed to be. In this case, the tests conducted were Multicollinearity, normality, autocorrelation and Heteroskedasticity tests.

#### 4.3.1 Multicollinearity Test

This is a statistical state where two or more predictors in a multiple regression model have a high correlation. It is an unwanted situation where a strong correlation exists among the predictor variables. A combination of variables is said to exhibit high



Multicollinearity in case there is one or more exact linear correlation among the study variables.

**Table 4.2: Multicollinearity Test**

<b>Collinearity Statistics</b>		
<b>Variable</b>	<b>Tolerance</b>	<b>VIF</b>
Real estate	0.724	1.382
Government securities	0.684	1.463
Fixed deposit	0.697	1.434
Shares	0.703	1.422
Liquidity	0.661	1.513
Firm size	0.634	1.577
Age	0.582	1.717

**Source: Research Findings (2019)**

VIF value and Tolerance of the variable were utilized where the values below 10 for VIF and values more than 0.2 for Tolerance imply no Multicollinearity. From the results, all the variables had a VIF values <10 and tolerance values >0.2 as illustrated in table 4.2 suggesting that no Multicollinearity.

#### **4.3.2 Normality Test**

Shapiro-wilk test and Kolmogorov-Smirnov test was utilized to test this. The level of significance in the study was 5%. The output of the test is depicted in Table 4.3. The null hypothesis is that the data is normally distributed. In case the Shapiro-wilk test and Kolmogorov-Smirnov tests contradict, the later test is picked over the former because it is more statistically sound. Since the p value in both tests of all the variables is greater than the  $\alpha$  (0.05), then the null hypothesis is not rejected. Hence the data series of all the variables is normally distributed.

**Table 4.3: Normality Test**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Efficiency						
Real estate	.161	215	.300	.869	215	.853
Government securities	.173	215	.300	.918	215	.822
Fixed deposit	.178	215	.300	.881	215	.723
Shares	.175	215	.300	.874	215	.812
Liquidity	.176	215	.300	.892	215	.784
Firm size	.178	215	.300	.893	215	.787
Age	.181	215	.300	.896	215	.792

a. Lilliefors Significance Correction

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**Source: Research Findings (2019)**

#### 4.3.3 Autocorrelation Test

To test for autocorrelation, Durbin-Watson statistic was applied which gave an output of 1.717 as displayed in Table 4.4. The Durbin-Watson statistic stands between 0 and 4. A value of 2 confirms the inexistence of this in the sample. Values from 0 to less than 2 indicates that it is positive for autocorrelation and values from more than 2 to 4 indicates that it is negative for autocorrelation. The standard criteria is that the value in the range of 1.5 to 2.5 is normal. Values beyond this range could be troubling. Field (2009) however, suggests that values that are less than 1 or greater than 3 are a definite cause for concern. Therefore, the data used in this panel is not serially auto correlated since it meets this threshold.

**Table 4.4: Autocorrelation Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.563 <sup>a</sup>	.317	.294	.1012688	1.717

a. Predictors: (Constant), Age, shares, Govt securities, Fixed deposit, Firm size, Liquidity, Real estate  
b. Dependent Variable: Efficiency

**Source: Research Findings (2019)****4.3.4 Heteroskedasticity Test**

Heteroskedasticity was tested to establish if the error terms are correlated across the data observations. The error terms derived from the regression model should portray constant variance called Homoscedastic. Thus, for ensuring if the residuals met these criteria, the Breusch-Pagan test was employed for Heteroskedasticity whereby the null hypothesis stated that residuals are Homoscedastic. There is constant variance if p-value is  $>0.05$  (Breusch & Pagan, 1979). Hence, the research did not reject the null hypothesis at a critical p value of 0.05 because value attained was 0.4851. Therefore the data was not affected by heteroscedasticity as revealed in Table 4.5.

**Table 4.5: Heteroskedasticity Test**

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.744004	Prob. F(7,215)	0.4851
Obs*R-squared	1.569856	Prob. Chi-Square(2)	0.4562
Scaled explained SS	2.407661	Prob. Chi-Square(2)	0.3000

**Source: Research Findings (2019)**

#### 4.4 Correlation Analysis

Correlation analysis establishes whether there exists an association between two variables lying between (-) strong negative correlation and (+) perfect positive correlation. Pearson correlation was employed to analyze the level of association between efficiency and investment decisions. The study employed a Confidence Interval of 95%, as it is the most utilized in social sciences. A two tailed test was utilized. Table 4.6 shows the outcome.

The existence of a positive and statistically significant correlation ( $r = .178$ ,  $p = .009$ ) was found between real estate investment and efficiency. Further a positive and substantial correlation between investment in government securities and deposit-taking SACCOs' efficiency as demonstrated by ( $r = .328$ ,  $p = .000$ ) existed. Investment in shares was also noted to have a positive and significant association with efficiency as evidenced by ( $r = .418$ ,  $p = .000$ ). Only fixed deposit was found to have a positive but insignificant link with efficiency as evidenced by ( $r = .077$ ,  $p = .262$ ).

The three selected control variables (liquidity, firm size and age) exhibited positive but statistically insignificant correlations with efficiency of the SACCOs. The study further found that although there was an association between the independent variables, the association was not strong enough to cause Multicollinearity. Multicollinearity is a statistical phenomenon which makes the assumption that in there exists a perfect or exact relationship between the predictor variables. When this is so, it is difficult to obtain an estimate of the individual coefficients which can be relied upon. Thus, it will cause incorrect conclusions about how the response variable and predictor variables relate.

**Table 4.6: Correlation Analysis**

		Efficiency	Real estate	Govt securities	Fixed deposit	shares	Liquidity	Firm size	Age
Efficiency	Pearson Correlation	1							
	Sig. (2-tailed)								
Real estate	Pearson Correlation	.178**	1						
	Sig. (2-tailed)	.009							
Govt securities	Pearson Correlation	.328**	.175**	1					
	Sig. (2-tailed)	.000	.010						
Fixed deposit	Pearson Correlation	.077	-.042	.017	1				
	Sig. (2-tailed)	.262	.535	.800					
shares	Pearson Correlation	.418**	.275**	.044	.017	1			
	Sig. (2-tailed)	.000	.000	.524	.803				
Liquidity	Pearson Correlation	.000	.199**	.064	.104	.055	1		
	Sig. (2-tailed)	.994	.003	.347	.129	.425			
Firm size	Pearson Correlation	.044	.235**	.104	.118	.051	.020	1	
	Sig. (2-tailed)	.521	.001	.127	.084	.460	.775		
Age	Pearson Correlation	.016	.099	.083	.132	.021	.319**	.083	1
	Sig. (2-tailed)	.811	.148	.227	.054	.761	.000	.224	

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
b. Listwise N=215

**Source: Research Findings (2019)**

#### 4.5 Regression Analysis

A regression analysis was performed between efficiency against the seven predictor variables chosen for the study. The regression analysis was performed a 5% level of significance. The F critical value was compared against the F calculated.

**Table 4.7: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.563 <sup>a</sup>	.317	.294	.1012688	1.717

a. Predictors: (Constant), Age, shares, Govt securities, Fixed deposit, Firm size, Liquidity, Real estate  
b. Dependent Variable: Efficiency

**Source: Research Findings (2019)**

From the output in table 4.7, the  $R^2$  value was 0.317, implying that 31.7% of the deviations in deposit-taking SACCOs' efficiency is caused by changes in investment in government securities, real estate, shares, fixed deposit, liquidity, firm size and age. Other variables not incorporated in the model explain 68.3% of the variations in DT-SACCOs' efficiency. The correlation coefficient (R) value of 0.563 shows that there exist a strong relationship between the independent variables included in the study and efficiency.

Table 4.8 provides the outcomes of the ANOVA, F-test was used to establish the significance of the overall model. The formulae for calculating the critical value for the F test is;

$$F = (SSE_1 - SSE_2 / m) / SSE_2 / n-k$$

Where;

SSE = Residual sum of squares,

m = Number of restrictions

k = Number of independent variables.

A critical value of 2.37 was obtained from the F-Test tables. The F statistic indicated in the study findings is greater than the critical value, thus the overall model is significant to predict efficiency.

**Table 4.8: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.984	7	.141	13.703	.000 <sup>b</sup>
	Residual	2.123	207	.010		
	Total	3.107	214			

a. Dependent Variable: Efficiency  
b. Predictors: (Constant), Age, shares, Govt securities, Fixed deposit, Firm size, Liquidity, Real estate

**Source: Research findings (2019)**

The research used t-test to determine how significant each individual variable employed in this research was to predict efficiency of DT-SACCOs in Kenya. The p-value was utilized as an indicator of how significant the relationship between the response and the predictor variables were. At 95% level of confidence, a  $< 0.05$  p value was interpreted as an index of statistical significance of the concepts. Therefore, a p-value  $> 0.05$  depicts a statistically unsubstantial association between the response and the predictor variables. The outcomes are demonstrated in table 4.9.

**Table 4.9: Model Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.161	.209		-.773	.441
	Real estate	.029	.013	.138	2.175	.031
	Govt securities	.107	.017	.368	6.268	.000
	Fixed deposit	.010	.008	.071	1.213	.226
	Shares	.082	.012	.395	6.605	.000
	Liquidity	.007	.014	.030	.480	.632
	Firm size	.005	.013	.022	.359	.720
	Age	.003	.021	.010	.157	.876

a. Dependent Variable: Efficiency

**Source: Research Findings (2019)**

The Coefficients are used as an indicator of the magnitude and direction of the relationship between the predictor variables and the response variable. The T values

were used to establish how significant the relationship of the independent variable to the dependent variable was. The values obtained are contrasted to the critical values. A confidence interval of 95% and a two tailed T test critical value of  $\pm 1.960$  were obtained from the T test tables. A T test value that lies out of this range is significant.

The results revealed that real estate investment, government securities investment and share investment have positive and significant influence on efficiency. The findings further revealed that investment in fixed deposit, liquidity, firm size and age had a positive but insignificant impact on efficiency. This shows that a unit increase in real estate investment, government securities investment and investment in shares would lead to a 0.029, 0.107 and 0.082 increase in efficiency respectively while investment in fixed deposit would not have a significant influence. The constant coefficient - 0.161 implies that when the seven selected independent variable have a zero value, efficiency would be equal to the figure.

The equation below was thus estimated:

$$Y_i = -0.161 + 0.029X_1 + 0.107X_2 + 0.082X_3$$

Where;

$Y_i$  = Efficiency

$X_1$  = Real estate investment

$X_2$  = Government securities investment

$X_3$  = Shares investment

#### **4.6 Discussion of Research Findings**

The researcher was seeking to determine the influence of investment decisions on the



deposit-taking SACCOs' efficiency. Real estate investment, investment in government securities, fixed deposit investments, and investment in shares were the predictor variables in this study while efficiency of deposit-taking SACCOs measured by the ratio of outputs to inputs was the dependent variable. The control variables were liquidity, firm size and age. The adequacy of the overall model in predicting efficiency was examined. The influence of each predictor variable on the dependent variable was also examined with respect to strength and direction.

The Pearson's correlation coefficient between real estate and efficiency of quoted banks revealed a weak positive and significant correlation between the two variables. The Pearson's correlation coefficient between government securities investment and efficiency of revealed a moderate positive and significant correlation between the two variables. The Pearson's correlation coefficient between shares and efficiency revealed a moderate positive and significant correlation between the two variables.

The multiple linear regressions exhibited significant relationship between real estate investment and efficiency of DT-SACCOs. This implies that real estate has a substantial impact on efficiency. The multiple linear regressions exhibited a significant relationship between investment in government securities and efficiency of DT-SACCOs in Nairobi. This implies that investment in government securities has a significant impact on efficiency. The multiple linear regressions exhibited a significant positive relationship between shares and efficiency of deposit-taking SACCOs. This implies that shares have a significant impact on efficiency, an increase in shares leads to increased efficiency.

The Pearson's correlation coefficient between fixed deposit and efficiency of deposit-taking SACCOs revealed weak, positive and insignificant correlation between the two

variables. The multiple linear regressions exhibited an insignificant relationship between fixed deposit investment and efficiency of deposit-taking SACCOs. This implies that fixed deposit investment has no significant impact on efficiency. The control variables; liquidity, firm size and age were also found to have a positive but statistically insignificant influence on efficiency of DT-SACCOs in Nairobi.

This study agrees with Mella (2016) who studied pension funds' financial soundness looking at real estate as an investment in Kenya. A descriptive survey research design was used; all pension funds that had been directed towards real estate investment were part of the study, making a sum of 48 by Dec 2015. Multiple regression model as a tool for data analysis was used. Results revealed such an investment contributed positively in return on equity. Offshore investments positively influenced pension funds' performance as international investments increased the returns although in a small percentage. Treasury bills and bonds and fixed deposits had a very strong positive relationship with performance of pension funds this is due to their liquid nature hence attracting low returns due to low risk attached to them and their susceptibility to inflation. Equity posed a negative influence of pension funds' returns as they are too risky and performed poorly during the study period.

The study agrees with one done by Kipkorir et al., (2016) who evaluated SACCOs' profitability looking at various investments in Baringo County. The predictor variables were; Loans to members, government securities and Shares on profitability of the registered SACCOs. A descriptive survey design was used targeting 316 members from the 73 registers SACCOs. Stratified sampling was adopted in coming up with a sample size of 177 correspondents. Primary source of data was used. Descriptive and inferential statistics were employed in analysis of the collected data.

It was noted that the above factors had a perfect influence on performance of SACCOs with FOSA taking lead followed by lending to members then lending to the government, real estate lagged behind.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

The study's main objective was to determine the effect of investment decisions on the efficiency of DT-SACCOs in Nairobi. The section presents a summary of study findings, the conclusions made, and the recommendations for policy and practice. It also highlights limitations encountered and suggestions for future studies.

### **5.2 Summary of Findings**

The aim of the research was to determine how investment decisions influences efficiency of DT-SACCOs in Nairobi. To conduct the study, investment decisions were broken down into four independent variables namely investment in real estate, government securities, fixed deposit and shares. The control variables were liquidity, firm size and age. The researcher reviewed available theoretical foundations and empirical reviews to get an understanding on the generally accepted relationship among the selected dependent and independent variables. From this review, a conceptual framework was developed that hypothesized the expected association between the study variables.

The research employed a descriptive design. The population was all the 43 DT-SACCOs operating in Nairobi, as at 31<sup>st</sup> December 2018. Secondary data was obtained from SASSRA and individual SACCOs financial reports for a time frame 5 years (January 2014 to December 2018). The researcher carried out descriptive, correlation and regression analysis. To confirm that the data is fit for analysis the researcher transformed the data using natural logarithms and conducted diagnostic tests to ensure that the data has the required characteristics before conducting

inferential statistics. Regression analysis was used to test the strength of the association between the study variables and to test both the significance of the overall model and individual parameters. SPSS software version 21 was used to carry out the analysis.

From the correlation analysis, the study showed existence of a positive and statistically significant correlation between real estate investment and efficiency. Further a positive and significant correlation between government securities investment and efficiency existed. Share investment was found to have a positive and statistically significant link with efficiency. Fixed deposit investments, liquidity, firm size and age of the firm were to have a positive but insignificant correlation with firm efficiency.

The coefficient of determination (R square) shows the variations in the response variable caused by variations from the predictor variable. From the results, R square was found to be 0.317, a revelation that 31.7% of the changes in efficiency stems from variations in investment in real estate, government securities, fixed deposit and shares, liquidity, firm size and age. Alternative factors beyond those in the model justify for 68.3% of these changes in efficiency. The findings showed a strong correlation between the chosen variables and the SACCOs Efficiency ( $R=0.563$ ). Results from the ANOVA test showed that the F statistic was at 5% significance level and a  $p=0.000$  rendering the model was found appropriate for providing an explanation of the relation between the variables studied.

Results showed that real estate investment, government securities investment and share investment have positive and significant influence on efficiency. The findings further revealed that investment in fixed deposit, liquidity, firm size and age had a

positive but insignificant influence on efficiency. This has the implication that a unit increase in real estate investment, government securities investment and investment in shares would lead to a 0.029, 0.107 and 0.082 increase in efficiency respectively while investment in fixed deposit would not have a significant influence. The constant coefficient -0.161 implies that when the seven selected independent variable have a zero value, efficiency would be equal to the figure.

### **5.3 Conclusion**

The findings of this study show that the deposit taking SACCOs efficiency is notably affected by investment in real estate, investment in shares and investment in government securities. This research shows that a unit increase in these variables significantly increases the efficiency of deposit taking SACCOs. The findings of this study also revealed that investment in fixed deposit does not have statistically significant influence on efficiency of DT-SACCOs and therefore this study concluded that investment in fixed deposits does not on average improve efficiency. The study also showed that liquidity, firm size and age were statistically insignificant in determining efficiency and hence the study concluded that these variables do not have a profound effect on efficiency.

The conclusion of this study is that the predictor variables selected (investment in real estate, government securities, fixed deposit and shares, liquidity, firm size and age) to a larger extent have a notable impact on the efficiency of DT-SACCOs in Nairobi. The conclusion is that these variables have a notable impact on the efficiency of the SACCOs given the p value in ANOVA. The fact that 31.7% of the variations in the response variable are from the seven factors listed implies that the 68.3% variations result from other factors outside the model.

The study agrees with one done by Kipkorir et al., (2016) who evaluated SACCOs' profitability looking at various investments in Baringo County. The predictor variables were; Loans to members, government securities and Shares on profitability of the registered SACCOs. A descriptive survey design was used targeting 316 members from the 73 registers SACCOs. Stratified sampling was adopted in coming up with a sample size of 177 correspondents. Primary source of data was used. Descriptive and inferential statistics were employed in analysis of the collected data. It was noted that the above factors had a perfect influence on performance of SACCOs with FOSA taking lead followed by lending to members then lending to the government, real estate lagged behind.

This study differs with Kibet and Maina (2018) who investigated how deposit taking SACCOs profitability is influence by fixed deposit management in Kenya. Cross-sectional survey method was adopted with the target population being all deposit taking SACCO societies, primary and secondary data were collected. Inferential and descriptive statistics were used to analyze data. Results indicated that fixed deposit management positively impacted financial performance.

#### **5.4 Recommendations of the Study**

The following recommendations have been made based on the findings. The study established that there exists a positive and significant influence of real estate investment on efficiency of SACCOs. It is recommended that policy makers should prioritize investment in real estate as it significantly contributes to the goal of DT SACCOs which is to maximize efficiency.

Investment in government securities was found to have a positive and significant association with efficiency of DT-SACCOs in Nairobi. Thus, the study findings were

that investment in government securities does significantly affect efficiency. It is recommended that policy makers should prioritize investment in government securities when crafting policies on efficiency. It can also be recommended to DT-SACCOs, and their boards that investment in government securities should be given more priority when there are inadequate funds as it had the biggest impact on efficiency of all the investment types selected for this research.

The study established that there exists a positive and significant influence of shares investment on efficiency of SACCOs. This implies that an increase in share investment will significantly increase efficiency of SACCOs. It is recommended that policy makers should prioritize investment in shares as it significantly contributes to the goal of DT SACCOs which is to maximize efficiency.

### **5.5 Limitations of the Study**

The period selected in this study was 5 years that is from 2014 to 2018. There is no proof that similar results will remain the same in future. More time would prove more reliable since it will include cases of major economic changes like recession and booms.

The most significant limitation for the study was the quality of data. It cannot be concluded with accuracy from this study that the findings are a true representation of the situation at hand. An assumption has been made that the data used in this study is accurate. Additionally a lot of inconsistency in the measure of the data was experienced due to the prevailing conditions. The study utilized secondary data contrast to primary information. It took into account some factors impacting on efficiency of DT-SACCOs and not all factors because of the limit imposed by data availability.



To complete the analysis of the data, multiple linear regression model was used. Because of the limitations involved when using the model like erroneous and misleading results resulting from a change in variable value, it would be impossible for the researcher to generalize the findings with accuracy. In case of an additional data to the functional regression model, the model may not perform as per the previous.

### **5.6 Suggestions for Further Research**

A suggestion is given that more research ought to include a qualitative analysis of how investment decisions and efficiency of DT-SACCOs in Nairobi relate. That study would deal with interviewing of vital respondents in the DT-SACCOs and this would reveal concealed insights into the fine detailed relationship between investment decisions and efficiency of DT-SACCOs in Nairobi.

The study didn't exhaust all the independent variables influencing efficiency of deposit taking SACCOs in Nairobi and a recommendation is given that more studies be carried out to constitute other variables for instance management efficiency, industry practices, growth opportunities, political stability and corporate governance of the firm. Determining the impact of each variable on efficiency shall enable the policy makers to understand the tools that can be used to control efficiency.

The research was only centered on the DT-SACCOs in Nairobi. The study's recommendations are that additional studies be carried out on other SACCOs. Finally, as a result of regression models' limitations, other models including the Vector Error Correction Model (VECM) may be applied in explanation of the various relationships among variables.

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## APPENDICES

### Appendix I: Deposit-taking SACCOs in Nairobi County, Kenya

1. AFYA SACCO SOCIETY LTD
2. AIRPORTS SACCO SOCIETY LTD
3. ARDHI SACCO SOCIETY LTD
4. ASILI SACCO SOCIETY LTD
5. CHAI SACCO SOCIETY LTD
6. CHUNA SACCO SOCIETY LTD
7. COMOCO SACCO SOCIETY LTD
8. ELIMU SACCO SOCIETY LTD
9. FUNDILIMA SACCO SOCIETY LTD
10. HARAMBEE SACCO SOCIETY LTD
11. HAZINA SACCO SOCIETY LTD
12. JAMII SACCO SOCIETY LTD
13. KENPIPE SACCO SOCIETY LTD
14. KENVERSITY SACCO SOCIETY LTD
15. KENYA BANKERS SACCO SOCIETY LTD
16. KENYA POLICE SACCO SOCIETY LTD
17. KINGDOM SACCO SOCIETY LTD
18. MAGEREZA SACCO SOCIETY LTD
19. MAISHA BORA SACCO SOCIETY LTD
20. MENTOR SACCO SOCIETY LTD
21. METROPOLITAN NATIONAL SACCO SOCIETY LTD
22. MWALIMU NATIONAL SACCO SOCIETY LTD
23. MWITO SACCO SOCIETY LTD
24. NACICO SACCO SOCIETY LTD
25. NAFKA SACCO SOCIETY LTD
26. NATION SACCO SOCIETY LTD
27. NSSF SACCO SOCIETY LTD
28. NYATI SACCO SOCIETY LTD
29. SAFARICOM SACCO SOCIETY LTD
30. SHERIA SACCO SOCIETY LTD
31. SHIRIKA SACCO SOCIETY LTD
32. SHOPPERS SACCO SOCIETY LTD
33. STIMA SACCO SOCIETY LTD
34. TAQWA SACCO SOCIETY LTD
35. TEMBO SACCO SOCIETY LTD
36. UFANISI SACCO SOCIETY LTD
37. UKRISTO NA UFANISI WA ANGLICANA SACCO SOCIETY LTD
38. UKULIMA SACO SOCIETY LTD
39. UNAITAS SACCO SOCIETY LTD
40. UNITED NATIONS SACCO SOCIETY LTD
41. WANA – ANGA SACCO SOCIETY LTD
42. WANANDEGE SACCO SOCIETY LTD
43. WAUMINI SACCO SOCIETY LTD

Source: SASRA (2018)

## Appendix II: Research Data

COMPANY	Year	Efficiency	Real estate	Govt securities	Fixed deposit	shares	Liquidity	Firm size	Age
AFYA SACCO SOCIETY LTD	2014	0.0826	6.753	6.3019	8.174	7.743	0.7526	8.2162	1.4150
	2015	0.1139	6.925	6.1457	7.928	8.070	0.7788	8.2177	1.4314
	2016	0.1465	6.809	6.0191	7.225	8.347	0.9003	8.2509	1.4472
	2017	0.1945	6.641	5.8371	8.497	8.646	1.2190	8.2695	1.4624
	2018	0.1736	6.365	5.7469	7.709	8.555	0.7812	8.3168	1.4771
AIRPORTS SACCO SOCIETY LTD	2014	0.2410	6.326	5.6270	6.725	8.917	1.5348	8.3379	0.4771
	2015	0.1590	6.697	5.3740	6.837	8.575	1.2537	8.4239	0.6021
	2016	0.0644	6.454	5.4209	8.194	7.674	1.8550	8.4141	0.6990
	2017	0.0604	6.415	5.4217	8.293	7.774	1.6321	8.4557	0.7782
	2018	0.0310	6.589	5.3781	8.056	7.114	3.2957	8.4859	0.8451
ARDHI SACCO SOCIETY LTD	2014	0.0279	7.040	5.4126	6.394	7.157	0.6206	8.2067	1.1761
	2015	0.0248	7.084	5.5978	7.480	6.900	0.6118	8.2879	1.2041
	2016	-0.0139	6.835	5.7740	7.123	7.727	1.1138	8.3768	1.2788
	2017	0.0019	6.625	5.8853	8.507	7.763	1.0363	8.4253	1.2553
	2018	-0.1050	6.501	5.9063	8.171	7.731	1.5372	8.4516	1.2788
ASILI SACCO SOCIETY LTD	2014	0.0840	6.441	5.9986	8.180	7.780	1.4935	7.5576	1.7324
	2015	0.1331	6.727	6.1176	7.136	7.837	1.1013	7.6198	1.7404
	2016	0.1709	6.500	5.9353	6.372	7.848	0.7508	7.5878	1.7482
	2017	0.0574	6.498	6.0461	8.187	7.899	0.8794	7.5652	1.7559
	2018	0.1230	6.485	5.9460	7.086	7.911	1.1345	7.5406	1.7634
CHAI SACCO SOCIETY LTD	2014	0.0887	6.519	6.3176	8.448	7.709	0.5897	8.0577	1.7243

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2015	0.0937	6.515	6.3186	8.069	7.706	0.6198	8.1238	1.7324
	2016	0.0986	6.519	6.3321	6.725	7.709	0.5994	8.1659	1.7404
	2017	0.0999	6.360	6.4957	8.307	7.396	0.7079	8.2286	1.7482
	2018	0.1514	6.661	5.7372	7.100	7.823	0.5240	8.3287	1.7559
<b>CHUNA SACCO SOCIETY LTD</b>	2014	0.0609	6.957	6.0416	5.914	7.867	1.8238	8.5767	1.5185
	2015	0.2966	6.613	5.8811	8.411	7.932	1.5769	8.6278	1.5315
	2016	0.2323	6.554	5.6185	8.378	7.942	1.1119	8.6514	1.5441
	2017	0.2298	6.738	5.5269	6.821	7.977	1.2749	8.6986	1.5563
	2018	0.1657	6.607	5.4140	8.331	8.002	1.3443	8.7303	1.5682
<b>COMOCO SACCO SOCIETY LTD</b>	2014	0.0105	6.541	6.1917	5.951	8.130	0.9830	8.0019	1.6021
	2015	0.0572	6.457	6.1127	8.221	8.123	1.0618	8.0506	1.6128
	2016	0.0125	6.711	6.1461	8.111	8.134	1.7404	8.0485	1.6232
	2017	0.0912	6.627	5.3416	7.889	8.038	1.2006	8.1428	1.6335
	2018	-0.0185	7.000	5.4274	6.952	8.036	0.9407	8.1599	1.6435
<b>ELIMU SACCO SOCIETY LTD</b>	2014	0.1863	6.339	5.7233	8.383	8.143	1.3215	7.9815	1.2553
	2015	0.0950	6.142	5.6772	7.508	8.171	0.7600	8.0263	1.2553
	2016	0.1526	6.426	5.6478	7.290	8.192	0.6879	8.0767	1.3010
	2017	0.1072	6.356	5.6537	8.438	8.199	0.9920	8.1894	1.3222
	2018	-0.0096	6.328	5.6339	7.957	8.189	1.0697	8.2824	1.3424
<b>FUNDILIMA SACCO SOCIETY LTD</b>	2014	0.0175	6.446	5.6871	8.276	6.449	0.2677	8.0201	1.3222
	2015	0.0041	6.016	5.2371	8.411	5.087	0.3491	8.0438	1.3424
	2016	0.1415	6.770	5.0918	7.843	7.854	0.3323	7.9725	1.3617
	2017	0.1548	6.646	5.3793	8.277	7.893	0.2661	7.9744	1.3802

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2018	0.1681	4.317	5.6023	6.405	8.040	0.3119	7.9950	1.3979
HARAMBEE SACCO SOCIETY LTD	2014	0.0296	6.153	5.6305	7.990	6.785	1.1178	8.1877	1.6232
	2015	0.0382	6.190	5.6033	7.283	7.043	1.1099	8.2356	1.6335
	2016	0.0419	6.373	5.6095	7.703	7.141	0.9898	8.2709	1.6435
	2017	-0.0275	6.267	5.5803	8.075	7.999	0.8495	8.3291	1.6532
	2018	0.0570	6.377	5.6686	8.321	8.034	1.0610	8.3508	1.6628
HAZINA SACCO SOCIETY LTD	2014	-0.0402	6.078	5.6870	4.094	8.024	0.8533	8.3898	1.6435
	2015	0.0415	5.595	5.0182	8.102	8.025	0.9362	8.4802	1.6532
	2016	0.2296	6.568	5.8543	8.397	8.100	0.1414	8.5279	1.6628
	2017	0.2144	6.330	5.6767	7.319	8.122	0.1037	8.5719	1.6721
	2018	0.1606	6.389	5.7598	7.702	8.154	1.1535	8.6261	1.6812
JAMII SACCO SOCIETY LTD	2014	0.1440	6.252	5.5980	8.196	8.172	0.2616	7.2060	1.7924
	2015	0.1219	6.267	5.4353	7.412	8.182	0.2229	7.1988	1.7993
	2016	0.0957	6.446	5.4353	7.040	8.182	0.2479	7.2236	1.8062
	2017	0.2794	6.521	5.6499	8.233	8.182	0.2867	7.3186	1.8129
	2018	0.2788	6.460	5.4820	7.880	8.182	0.2803	7.3549	1.8195
KENPIPE SACCO SOCIETY LTD	2014	0.1096	8.029	5.9142	8.297	7.572	0.8533	7.7230	1.3979
	2015	0.0593	6.818	6.1389	8.260	7.654	0.9362	7.6766	1.4150
	2016	0.2438	6.937	6.1602	8.174	7.774	1.1535	7.5374	1.4314
	2017	0.1236	7.084	6.1906	8.500	7.826	0.5988	7.4993	1.4472
	2018	0.1261	7.080	6.3384	8.247	7.908	0.8328	7.4789	1.4624
KENVERSITY SACCO SOCIETY LTD	2014	0.1169	6.861	6.3794	7.837	7.971	0.9120	7.6874	0.3010

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2015	0.0870	6.784	6.3846	8.450	8.003	1.0407	7.7237	0.4771
	2016	0.0850	6.767	6.3937	7.167	8.040	0.6973	7.5611	0.6021
	2017	0.0769	6.688	6.4843	8.508	8.107	1.0418	7.6254	0.6990
	2018	0.0621	6.644	6.4367	8.385	8.112	0.9047	7.6188	0.7782
<b>KENYA BANKERS SACCO SOCIETY LTD</b>	2014	0.0665	6.608	6.4570	7.635	8.146	0.5927	8.2162	1.3617
	2015	0.0515	6.784	6.4809	8.355	8.174	1.1535	8.2177	1.3802
	2016	0.0227	6.781	6.6739	7.992	7.728	0.6937	8.2509	1.3979
	2017	0.0227	6.914	6.6186	7.479	7.731	0.7149	8.2695	1.4150
	2018	-0.2837	6.835	6.5795	7.915	7.794	0.5761	8.3168	1.4314
<b>KENYA POLICE SACCO SOCIETY LTD</b>	2014	0.0015	6.831	6.5619	7.236	7.784	1.1737	7.3921	1.3617
	2015	0.0337	6.809	6.4479	8.439	7.794	0.9834	7.3912	1.3802
	2016	-0.1402	6.932	6.6856	8.353	7.785	1.3268	7.4269	1.3979
	2017	-0.0819	6.811	6.5031	8.414	7.826	1.1912	7.4953	1.4150
	2018	-0.3061	7.026	6.7826	7.927	7.767	1.2957	7.6089	1.4314
<b>KINGDOM SACCO SOCIETY LTD</b>	2014	0.1685	6.702	6.4381	8.389	7.755	2.6058	7.7088	0.0000
	2015	-0.2919	6.420	5.7318	7.974	7.575	1.9871	7.7925	0.3010
	2016	-0.2136	7.205	6.1145	8.215	7.545	1.7572	7.7958	0.4771
	2017	-0.0041	7.121	6.2860	8.258	7.594	1.5740	7.8087	0.6021
	2018	-0.0041	6.551	6.2860	8.425	7.594	1.5548	7.7387	0.6990
<b>MAGEREZA SACCO SOCIETY LTD</b>	2014	-0.1179	6.213	7.3953	8.388	7.594	1.3073	8.1416	1.3222
	2015	-0.2618	6.770	5.5680	8.352	7.594	1.2215	8.2161	1.3424
	2016	0.1030	7.356	5.4419	6.504	7.950	2.6804	8.2482	1.3617

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2017	0.1341	7.307	5.7875	7.488	7.988	2.2625	8.2873	1.3802
	2018	0.0918	7.712	5.9054	5.628	8.002	0.6313	8.2934	1.3979
<b>MAISHA BORA SACCO SOCIETY LTD</b>	2014	-0.0045	7.816	6.0886	8.497	8.009	1.2513	7.0270	1.1761
	2015	0.0527	7.276	5.9390	7.991	7.358	1.0568	6.9998	1.2041
	2016	0.0538	6.744	5.7228	8.427	7.374	1.2442	6.9773	1.2304
	2017	0.0737	6.557	5.4827	7.083	7.684	0.9423	6.9368	1.2553
	2018	0.0201	6.900	5.6959	5.775	6.393	1.0481	6.9339	1.2788
<b>METROPOLITAN NATIONAL SACCO SOCIETY LTD</b>	2014	0.0475	6.510	5.6351	8.227	7.253	1.0131	6.8581	0.3010
	2015	0.0879	6.485	5.7545	7.212	7.885	1.1560	6.8614	0.4771
	2016	0.1244	6.504	5.5968	8.507	8.248	1.5957	6.9607	0.6021
	2017	0.0180	6.653	5.8361	7.675	6.324	1.3150	7.0390	0.6990
	2018	0.0180	6.737	5.5083	7.009	6.572	1.0811	7.1179	0.7782
<b>MWALIMU NATIONAL SACCO SOCIETY LTD</b>	2014	0.1605	6.743	5.5649	7.599	8.759	1.1535	8.3379	1.4624
	2015	0.1071	6.807	5.6185	8.434	8.340	0.7844	8.4239	1.4771
	2016	-0.0045	6.433	6.0203	8.522	8.026	1.0194	8.4141	1.4914
	2017	-0.0225	6.613	6.2731	6.486	8.058	0.8533	8.4557	1.5051
	2018	0.0400	6.642	6.1113	7.042	8.040	0.9362	8.4859	1.5185
<b>MWITO SACCO SOCIETY LTD</b>	2014	0.0397	6.557	5.9614	7.355	8.025	1.1157	8.3379	1.6232
	2015	0.0421	6.438	5.9300	7.569	8.032	0.0074	8.4239	1.6335
	2016	0.1185	6.323	5.9310	8.040	8.079	1.2995	6.7611	1.6435
	2017	0.0468	6.347	6.0746	8.317	8.107	1.1102	6.7943	1.6532

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2018	0.0662	6.252	5.8160	8.421	8.090	0.8008	8.2879	1.6628
NACICO SACCO SOCIETY LTD	2014	0.1105	6.138	5.8407	7.333	8.112	0.9872	8.2067	1.5185
	2015	0.0800	6.265	5.9340	7.075	8.133	0.7481	8.2879	1.5315
	2016	0.0468	6.399	6.1279	6.161	8.178	0.7565	8.3768	1.5441
	2017	0.0759	6.623	6.0466	6.492	8.159	0.7018	8.4253	1.5563
	2018	0.2283	5.858	5.9581	8.171	8.329	0.6975	8.4516	1.5682
NAFAKA SACCO SOCIETY LTD	2014	0.2214	5.911	6.1117	8.372	8.334	0.6772	8.4859	0.9031
	2015	0.3650	5.905	6.2448	8.483	8.338	0.9922	8.3379	0.9542
	2016	-0.0561	6.850	6.8088	8.296	7.692	0.8564	8.4239	1.0000
	2017	0.0168	6.989	6.5125	7.562	7.597	0.3208	6.0724	1.0414
	2018	0.1243	7.178	6.3791	8.247	7.600	1.1535	6.5049	1.0792
NATION SACCO SOCIETY LTD	2014	0.1145	7.279	6.3602	7.963	7.707	2.5763	7.5107	1.3222
	2015	0.1364	7.257	6.1331	7.112	7.684	2.2844	7.5376	1.3424
	2016	-0.0400	6.929	6.5114	5.112	7.806	0.2538	7.5084	1.3617
	2017	0.0199	6.805	6.5276	7.433	7.803	0.2260	7.6403	1.3802
	2018	-0.0111	6.823	6.5702	7.481	7.810	0.2058	7.6508	1.3979
NSSF SACCO SOCIETY LTD	2014	-0.2872	6.876	6.6731	6.454	7.667	0.8533	8.3898	1.4314
	2015	-0.0267	6.745	6.3968	8.170	7.533	0.9362	8.4802	1.4472
	2016	-0.0035	6.773	6.3748	7.323	7.523	0.7533	8.5279	1.4624
	2017	-0.1599	6.987	6.4344	7.743	7.521	2.0736	8.5719	1.4771
	2018	-0.1599	6.836	6.4344	6.061	8.241	0.8535	8.6261	1.4914
NYATI SACCO SOCIETY LTD	2014	-0.1966	6.846	6.3874	7.041	8.238	1.3268	7.6734	1.0792
	2015	-0.2632	6.454	6.3567	8.416	8.528	1.1912	7.7973	1.1139

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2016	0.0323	6.682	6.5284	7.517	8.338	1.2957	7.6170	1.1461
	2017	0.0706	6.762	6.5696	8.248	8.371	2.6058	7.6754	1.1761
	2018	0.1038	6.879	6.5857	8.053	8.427	1.9871	7.6856	1.2041
<b>SAFARICOM SACCO SOCIETY LTD</b>	2014	0.1004	7.279	6.6214	7.830	8.483	1.7572	7.1251	0.6990
	2015	0.0773	7.160	6.5793	8.083	8.497	1.1535	7.0917	0.7782
	2016	0.0718	6.883	6.4968	7.469	8.496	1.1457	7.1023	0.8451
	2017	-0.0745	6.796	6.6515	7.244	8.494	1.3058	7.1695	0.9031
	2018	0.0365	7.008	6.5894	7.690	8.490	1.5680	7.1649	0.9542
<b>SHERIA SACCO SOCIETY LTD</b>	2014	0.0635	6.797	6.5597	8.390	8.499	1.6418	7.4691	1.5911
	2015	0.0277	6.667	6.5549	6.971	8.497	1.4860	7.4211	1.6021
	2016	-0.0882	6.779	6.6142	8.157	8.552	0.9118	7.4344	1.6128
	2017	-0.0327	6.842	6.6972	7.804	8.574	0.7956	7.4408	1.6232
	2018	-0.0327	6.686	6.6972	8.453	8.498	0.6188	7.4577	1.6335
<b>SHIRIKA SACCO SOCIETY LTD</b>	2014	-0.2284	6.686	6.2952	7.754	8.498	1.0494	7.1018	1.6812
	2015	-0.3270	6.655	6.6422	6.932	8.503	0.7956	7.0967	1.6902
	2016	0.2227	7.975	5.6973	8.029	8.843	0.6495	7.0904	1.6990
	2017	0.2210	7.840	5.6853	6.365	8.841	0.6850	7.1179	1.7076
	2018	0.2283	8.111	5.5991	7.796	8.891	0.8274	7.1249	1.7160
<b>SHOPPERS SACCO SOCIETY LTD</b>	2014	0.2175	8.424	5.8267	6.548	8.875	0.6214	7.1984	1.1461
	2015	0.2715	8.368	5.9044	7.996	9.117	1.2494	7.2791	1.1761
	2016	0.2842	8.135	5.8811	7.295	9.185	0.9985	7.3376	1.2041
	2017	0.2461	7.953	5.6447	6.804	9.038	1.4241	7.4162	1.2304
	2018	0.2692	8.191	5.7687	8.446	9.161	1.5200	7.4263	1.2553



<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
STIMA SACCO SOCIETY LTD	2014	0.3188	7.937	5.7221	8.310	9.347	0.5531	6.5049	1.1761
	2015	0.3282	8.183	5.7497	7.580	9.407	0.7350	7.5107	1.2041
	2016	0.3134	8.604	5.6337	8.386	9.372	0.5475	7.5376	1.2304
	2017	0.0600	6.899	6.4987	5.170	7.880	0.8323	7.5084	1.2553
	2018	0.0642	6.897	6.5179	6.650	8.076	1.2338	7.6403	1.2788
TAQWA SACCO SOCIETY LTD	2014	0.0383	6.864	6.5836	3.932	7.562	0.8533	7.6508	1.2788
	2015	0.0409	6.895	6.6131	6.515	7.631	0.9362	8.3898	1.3010
	2016	0.1052	8.378	6.5854	8.279	7.695	0.7038	8.4802	1.3222
	2017	0.1249	8.191	6.5556	4.883	7.952	1.5759	8.5279	1.3424
	2018	0.1203	8.102	6.4466	7.508	7.916	1.5392	8.5719	1.3617
TEMBO SACCO SOCIETY LTD	2014	0.2358	8.272	6.3284	6.937	8.659	2.2120	8.6261	1.3617
	2015	0.1874	7.838	6.4621	8.508	8.553	2.2265	7.6734	1.3802
	2016	0.1596	7.597	6.4433	7.611	8.434	2.2665	7.7973	1.3979
	2017	0.1253	7.318	6.3632	8.339	8.215	3.0110	7.6170	1.4150
	2018	0.1372	7.349	6.2831	7.963	8.325	1.2633	7.6754	1.4314
UFANISI SACCO SOCIETY LTD	2014	0.0661	6.962	6.2711	8.059	7.606	1.1535	7.6856	1.6902
	2015	0.0758	6.892	6.1630	7.450	7.743	1.0683	7.1251	1.6990
	2016	0.0722	6.930	6.2397	7.731	7.728	0.7225	7.0917	1.7076
	2017	0.0795	7.051	6.1349	7.220	7.821	0.5202	7.1023	1.7160
	2018	0.0795	6.455	6.1349	7.939	8.057	1.1515	7.1695	1.7243
UKRISTO NA UFANISI WA ANGLICANA SACCO SOCIETY LTD	2014	0.0868	6.466	6.0178	7.334	8.146	0.9985	7.1649	1.9823

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2015	0.0940	6.412	5.8852	6.768	8.228	0.8278	7.4691	1.9868
	2016	0.0215	6.932	6.2113	7.935	6.365	0.8314	7.4211	1.9912
	2017	0.0961	7.214	6.1499	5.948	7.870	0.6253	7.4344	1.9956
	2018	0.0562	7.483	6.2627	7.209	7.513	0.9044	7.4408	2.0000
<b>UKULIMA SACO SOCIETY LTD</b>	2014	0.0812	7.445	6.0991	8.032	7.917	0.6952	7.4577	1.3802
	2015	0.0910	7.206	6.1259	7.637	8.049	0.7589	7.1018	1.3979
	2016	0.0507	7.153	6.0487	7.328	7.456	1.1507	7.0967	1.4150
	2017	0.0743	7.003	6.0380	7.894	7.851	0.4991	7.0904	1.4314
	2018	0.0581	7.109	5.9169	6.711	7.694	0.6157	7.1179	1.4472
<b>UNAITAS SACCO SOCIETY LTD</b>	2014	0.0650	6.916	5.9590	8.216	7.820	0.9182	7.1249	1.3617
	2015	0.0540	6.745	6.0077	8.468	7.639	1.3433	7.1984	1.3802
	2016	0.0468	6.756	5.8459	7.572	7.525	1.6103	7.2791	1.3979
	2017	0.0138	6.646	5.8486	7.696	6.302	1.8041	7.3376	1.4150
	2018	0.0138	6.714	5.8486	8.470	6.389	1.6465	7.4162	1.4314
<b>UNITED NATIONS SACCO SOCIETY LTD</b>	2014	0.3482	6.641	5.8512	8.500	9.618	1.3569	7.4263	0.6990
	2015	0.2536	6.687	5.8539	8.461	9.301	0.5875	8.2161	0.7782
	2016	0.0833	7.404	5.9611	8.327	7.666	1.0541	8.2482	0.8451
	2017	0.0851	7.070	6.1884	4.595	7.744	1.5925	8.2873	0.9031
	2018	0.0991	7.474	6.4400	8.407	7.996	2.1825	8.2934	0.9542
<b>MENTOR SACCO SOCIETY LTD</b>	2014	0.2214	5.911	6.1117	8.372	8.334	1.6103	7.0270	1.3010
	2015	0.3650	5.905	6.2448	8.483	8.338	1.8041	6.9998	1.3222
	2016	-0.0561	6.850	6.8088	8.296	7.692	0.8533	6.9773	1.3424

<b>COMPANY</b>	<b>Year</b>	<b>Efficiency</b>	<b>Real estate</b>	<b>Govt securities</b>	<b>Fixed deposit</b>	<b>shares</b>	<b>Liquidity</b>	<b>Firm size</b>	<b>Age</b>
	2017	0.0168	6.989	6.5125	7.562	7.597	0.9362	6.9368	1.3617
	2018	0.1243	7.178	6.3791	8.247	7.600	1.1110	6.9339	1.3802
<b>WANA – ANGA SACCO SOCIETY LTD</b>	2014	0.0912	7.820	6.5176	8.016	7.965	1.4241	6.8581	1.1461
	2015	0.1378	7.883	6.4079	8.205	8.389	1.5200	6.8614	1.1761
	2016	0.1111	7.638	6.4999	7.914	8.236	0.5531	6.9607	1.2041
	2017	0.0781	7.356	6.4921	8.487	7.993	0.7350	7.0390	1.2304
	2018	0.0672	7.494	6.5547	7.305	7.890	0.5475	7.1179	1.2553
<b>WANANDEGE SACCO SOCIETY LTD</b>	2014	0.0664	7.290	6.5547	8.222	7.910	0.8323	8.3379	1.1761
	2015	0.0664	7.349	6.6010	6.624	7.949	1.2338	8.4239	1.2041
	2016	0.0673	7.707	6.5836	8.231	7.976	0.8533	8.4141	1.2304
	2017	0.0547	7.549	6.6131	7.408	7.798	0.9362	8.4557	1.2553
	2018	0.0547	6.657	6.6131	8.517	7.817	0.7038	8.4859	1.2788
<b>WAUMINI SACCO SOCIETY LTD</b>	2014	0.0420	6.745	6.6145	6.290	7.573	1.5759	8.3379	1.2788
	2015	0.2936	6.731	6.6505	6.319	9.516	1.5392	8.4239	1.3010
	2016	0.1131	8.078	5.5268	7.782	8.400	2.2120	6.7611	1.3222
	2017	0.1881	7.871	5.6770	8.136	8.902	2.2265	6.7943	1.3424
	2018	0.2053	8.183	5.5768	7.936	8.995	2.2665	8.2879	1.3617

