

**FINANCIAL INNOVATIONS AND PERFORMANCE OF
DEPOSIT TAKING SAVING AND CREDIT COOPERATIVES
IN NAIROBI CITY COUNTY, KENYA**

OUMA A. AMABEL

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**A THESIS SUBMITTED TO THE SCHOOL OF BUSINESS IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
AWARD OF DEGREE OF MASTER OF SCIENCE (FINANCE) OF
KENYATTA UNIVERSITY.**

MARCH, 2019

DECLARATION

Declaration by Candidate:

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

.....

Signature

Amabel A. Ouma

D58/CTY/PT/27368/2014

.....

Date

Declaration by Supervisors:

We confirm that the work in this thesis was done by the candidate under our supervision.

.....

Signature

Dr. Job Omagwa,

Department of Accounting and Finance,

School of Business,

Kenyatta University.

.....

Date

.....

Signature

Mr. Dominic Ngaba,

Department of Accounting and Finance,

School of Business,

Kenyatta University.

.....

Date

DEDICATION

This research is dedicated to my beloved father Azariah Timothy Ouma and mother Jannette Prisca Ouma for their tireless efforts to educate me and show me the value of education. This thesis is also dedicated to my lovely son Xavier Tymon Mich. May this be a source of inspiration and challenge to you in future as you embark on your studies. Always remember that “The function of education is to teach one to think intensively and to think critically. Intelligence plus character—that is the goal of true education.”- Dr. Martin Luther King Jr., *The Maroon Tiger*, in 1947.

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OPERATIONAL DEFINITION OF TERMS

Deposit Taking SACCOs	These are SACCOs accredited and regulated by SASRA to provide banking services, and operate both front office savings account (FOSA) to their customers. They provide a range of financial services and expand their businesses to meet the changing market demands.
Financial Innovation	This is technological advancement of financial instruments that leads to emergence of new financial product / service, modification of existing financial product and new service process that enable a firm to keep abreast to ever changing financial market demand. In the study, new products, improved services and new service process are used as its indicators.
Financial Performance	This is the measurement in monetary terms of firm's activities in a period of time. In this study, capital adequacy, profitability and liquidity will be used as indicators of financial performance.
Firm Characteristics	These are firms' unique features that are linked with the capacity to adopt technological advances and innovative strategies in order to remain competitive within the volatile market. In this study, firm characteristics is a moderating variable, and SACCO's age, SACCO's size and market share are used as its determinants.
New product	Is a good or service that is perceived by potential customer as new though it may have existed in other sectors, institutions or countries however customers don't seem to know about it yet. Product innovations are introduced to respond better to changes in market demand or to improve the efficiency. This includes cheques, credit/ debit cards and modified FOSA activities.
New service process	Is the introduction of new business processes leading to increased efficiency and market expansion. This involves office automation and use of computers with accounting and client data management software. This includes EFTs and ATMs.
New organizational form	Is the carrying out of novel managerial methods in the firms' activities / undertaking, administration at workplace or external dealings. This may involve use of set system to sell financial services, cutting down barriers to financial service access, formalizing familiar finance systems, or setting up a completely new service structure. This includes mobile banking, internet-online banking and point of sale terminals.

ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine
CAMELS	Capital adequacy, Assets, Management capability, Earnings, Liquidity and Sensitivity rating.
CAR	Capital Adequacy Rating
CC	Core Capital
DTS	Deposit Taking Sacco
EFT	Electronic Funds Transfer
FOSA	Front Office Service Account
ICT	Information and Communication Technology
KEPSS	Kenya Electronic Payments and Settlement System
KNBS	Kenya National Bureau of Statistics
LA	Liquid Asset
M&M	Modiglian – Miller Proposition
MICR	Magnetic Ink Character Recognition
R&D	Research and Development
ROA	Return on Asset
ROE	Return on Equity
RTGS	Real Time Gross Settlement
SACCO	Saving and Credit Cooperative
SASRA	Sacco Societies Regulatory Authority
STL	Short Term Liability
TA	Total Asset
TDL	Total Deposit Liability
US	United States

ABSTRACT

With increasing varying business environment that is categorized by uneven markets, scientific advances, strategy changes, and increasing reliance on non-price rivalry has lured service sectors to be inventive to meet ever changing customers' demand, and equally ensure sustainability and growth of their firms. The enormous performance characterized by vast investment in financial innovations and training of workforce to handle the novel technologies by Deposit Taking Savings and Credit Cooperatives has raised a concern for an investigation on the relationship between financial innovations and performance to ascertain if performance of Savings and Credit Cooperatives Societies is manipulated by their financial innovations. The main objective of this study sought to determine the effect of financial innovations on performance of Deposit Taking Savings and Credit Cooperatives in Nairobi City County, Kenya. The specific objectives were: to assess effect of new products, new service process and new organizational form on financial performance, and to determine the moderating effect of firm characteristics on the relationship between financial innovations and performance of Deposit Taking Savings and Credit Cooperatives in Nairobi City County, Kenya. In view of the study specific objectives, four hypotheses were formulated and tested. The study was anchored on regulatory dialectic theory, regulation and taxation theory, pecking order theory and agency theory. The study adopted positivism research philosophy and employed use of both descriptive and explanatory research designs. The target population was licensed Deposit Taking Savings and Credit Cooperatives in Nairobi City County, Kenya while the accessible population was 19 Deposit Taking Saccos that had been operating and licensed by Sacco Societies Regulatory Authority between the years 2010 to 2014. Purposive sampling technique was employed and the sample size was 76 respondents of senior employees though only 68 responded. A structured questionnaire was self-administered to gather primary data while secondary data was derived from the financial statement of the Savings and Credit Cooperatives Societies. SPSS version 21 was used to analyze data using regression analysis. The study found that new products has a statistical significant relationship with liquidity ($p=0.000$) and capital adequacy ($p=0.006$). New service processes has a statistical significant relationship with liquidity ($p=0.011$) and capital adequacy ($p=0.001$) while new organizational form has a statistical insignificant relationship with profitability ($p=0.737$) and capital adequacy ($p=0.344$). The results from the study further indicate that firm characteristics have moderating effect on the relationship between financial innovations and performance ($p=0.000$). The study therefore concludes that both new products and new service processes have significant influence on performance. The study recommends that Savings and Credit Cooperative Societies to adopt financial innovations strategies to enhance efficiency in all their operations boost profitability and expand their market share focusing on firm characteristics as an additional advantage; management of Savings and Credit Cooperative Societies to embrace research and development to foresee new and innovative ideas to advance their performance; Sacco Societies Regulatory Authority to develop effective regulatory and surveillance structures that will ensure adoption of financial innovation strategies by Deposit Taking Saving and Credit Cooperatives focusing on their firm characteristics to enhance their efficiency and performance.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

A firm's financial performance predicts the firm's health and ultimately its survival probability within the market. It also reflects the management skills in utilizing the firm's scarce resources to yield great profits (Njeri, 2013). Therefore, it is presumed that great performance depicts competence and achievement of managerial team in sound decision making on firm's resources to attain profitability and growth and in turn raise the country's economy at large (Mutuku, 2014). Consequently, the financial stewardship are challenged to work effectively in order to boost SACCOs' wealth, sustain value and meet the shareholders' demands (Olando, Mbewa & Jagongo, 2012).

Diverse methods are adopted by different firms to measure their financial performance. The financial performance indicators can be measured in financial and nonfinancial terms (Bakar & Ahmad, 2010). The most common financial performance measures are Returns on investments (ROI), Return on Assets (ROA), and Return on Equity (ROE) while non- financial measures include learning and growth perspective, internal business processes perspective and customer perspective which are examined through a balance scorecard to ascertain financial success of an organization (Chumo, 2013). Hence, management of every financial institution is obligated to adopt a system for assessing financial performance which suits the firm's status and requirements (Ngumi, 2013).

In order to endure in the volatile and dynamic sector to attain its objectives within the competitive business environment, the SACCOs must adopt new innovative means to finance their activities rather than only relying on members' deposits (Maorwe, 2011)

and employ innovative strategies aimed at achieving competence in all operational levels by employing the most excellent practices that guarantee sustainability and growth (Mutuku, 2014). Grey (1996) observes that the present day customers' stresses on innovative products, prompt delivery and good service provision and all of these are determined by the means that can advance the financial performance of a firm. Kotler and Armstrong (2003) contend that change is inevitable and yesterday's determinants of success can be today's determinants of failure. Therefore, SACCOs must respond suitably to changes in their environment in order to survive and to attain strategic objective.

Several studies had not been consistent in documenting an affirmative relationship between financial innovation and financial performance. Most studies found a positive association with at least one or two financial performance measures such as; return on assets (ROA) (Njeri, 2013), return on equity (ROE) (Makur, 2014) and dividend per share and profitability (Tsuma *et al.*, 2015). In their findings, financial innovation had a significant influence on financial performance whereas Pooja and Singh (2009), and Francesa and Claeys (2010) found a negative correlation between financial innovation and financial performance. Hence, on this basis the study sought to address the knowledge gap associated with such inconsistencies.

In the provision of financial services within Kenyan economy, SACCO subsector stands out as a major player to both the households, and small and medium sized businesses. Thereby, verified by the SACCOs' membership which improved from 2.97 million in 2012 to 3.30 million in 2013 (SASRA, 2013). The total assets of the SACCO subsector stands at over 200 billion; the growth is mainly member deposit and share capital. The Deposit Taking SACCOs (DTS) account for three quarters (75%) of the

SACCO subsector's assets, deposits and membership which is attained by introduction of novel products, continued efforts to draw deposits from persistent antagonistic promotion and prompt adoption of innovations (SASRA 2013). These considerable developments have enabled convenient and efficient service access to the SACCOs' members (Njeri, 2013). Similarly, by embracing new approaches, DTS ability to manage risks, enforce leading contracts and reduce transaction costs of delivering credit have been reduced (Maina, 2011).

1.1.1 Financial Innovations

Bulut (2013) defines financial innovations as a preface or development of a product, service or practice which has benefits to the participants of any financial activity. The benefits can be reduction in costs, reduction in risks, increasing profits, increasing living standards, and provide improved services to the financial participants. In view of Solans (2003), financial innovation is both industrial developments which facilitate admission to information, trading and modes of payments and to the surfacing of novel and complete financial markets. Similarly, Frame and White (2002) contend that financial innovations can be grouped as new products / services, new production processes and new organizational forms.

New product is a good, service or idea that is perceived by some potential customers as new (Kotler & Armstrong, 2003). Kemp *et al.* (2003) posit that successful new products result to increased income that can be ploughed back into business to initiate other new products hence successful new products are viewed as engines of a firm's growth (Eluinn, 2000). Financial innovation has also increased new market players arising from new products in the financial market. These developments have increased the array of financing and investment opportunities accessible to economic agents (Noyer, 2007).

SACCOs are constantly re-branding their products/ services which are tailored to meet the ever- changing market demands for instance the FOSA services that meet the customers' regular transactions.

New service process is designing service in order to improve quality and interaction between the service provider and the customers (Steen & Koning, 2011). Improved service quality may increase economic competitiveness of a company (Goestch & Davis, 2014). Successful companies add benefits to their offering that not only satisfy the customers but also surprise and delight them (Salem, 2004). The major purpose is to design the service according to the needs of customers and to improve competence of service provider so that the service is user-friendly, competitive and relevant to the customers while being sustainable to the service provider (Feinberg & Briggs, 2010). The developments in the financial sector have led to high level of sophistication with new payment systems and asset alternatives to holding money (Nyathira, 2012). Similarly, Keah (2014) contends that adoption of ICT by SACCOs have resulted to improvements in disbursement, dispensation or decline in period of service due to the novel methods to convey electronically financial services to their clientele.

Brynjolfsson and Hitt (2000) posit that new organizational form is the carrying out of novel managerial methods in undertaking's company practises, workplace organization or exterior associations. Execution of new methods are mainly based on organization methods previously employed in the undertaking, changes in management strategy, merger and acquisition (Cummings & Worley, 2014). The key changes have been brought by organizational innovation not merely in management control methods and management labour relations but also, the technique in which goods and services are produced, and main changes in business practices (Laursen & Foss, 2003).

Organizational innovations incline the entire financial sector through igniting and transmitting amendments in business, legal and supervisory structures, and also introducing novel financial mediators (Jepkorir, 2011).

1.1.2 Firm Characteristics

Firm characteristics are the features or attributes of a firm (Nekhili & Gatfaoui, 2013). These characteristics can be influenced by both external environment and internal environment. External environments are visible / physical and social surrounding to the firm such as market power, technological opportunity and competition intensity (Nieto & Quevedo, 2005) while internal environments are the firm's demographic and managerial variables that comprise of the organization's internal environment (Nekhili & Gatfaoui, 2013) that makes the firm to act distinctly and enables it resist the volatility within the market such as quality of management, size and age (O'Sullivan *et al.*, 2009) and market share (Kigen, 2014).

Firm's size is measured by the natural logarithm of the book value of the total assets (Ben- Amar & Ameur, 2006). Based on the total assets of an individual Sacco, the licensed DTS are regarded as either large, medium or small (SASRA, 2013). Woodward (2011), indicates that the paramount signal of "bigness" of a firm is the size of the management group, and quality management (Abreu & Mendes, 2010) is competent to attain the dual goals of superior market allocation and higher profitability. Moeller and Harvey (2011) concur that administration characteristics and attributes such as the manager's level of education and work experience may possibly manipulate the altitude of firm's performance.

The age of the firm is considered by the number of years the firm has been in operation (Covin & Covin, 2007). This characteristic can manipulate management decision and

the marketing strategies adopted by a particular firm (Covin & Slevin, 2011). Improvement of firm performance is professed to be attributed by experience, thus older firms are hypothesised to perform better than newer firms (Ismail *et al.*, 2010). Similarly, Hite and Hesterly (2011) note that theoretically, composition of trade connections has been argued to be manipulated by a firm's age.

Market share is the percentage of a market (either in units or revenue) accounted by specific entity. Market share enables managers to evaluate entire market growth or decline as well as customers' trends in selection amid its rivals (Farris *et al.*, 2010). To grow market share as well as total market size, firms constantly reduce prices, entice larger demographics or thorough publicities (Kigen, 2014). Typically, profitability rises with expanding market share as shown by studies. Hence, numerous firms have sought increased market share to advance profitability. However, companies must realise that much profitability depends on their strategy for gaining increased market share (Kotler & Armstrong, 2010).

1.1.3 Financial Performance

Financial Performance is the practice of measuring the results of strategies, regulations and actions employed by a firm in monetary terms (Kaguri, 2013). It also measures the financial health and survival probability of a firm over a given period of time (Wanjiru, 2012) and can be used not only as a basis for comparison of related firms within similar industry but also to evaluate industries or sectors in aggregation. The financial soundness indicators of deposit taking SACCOs (DTS) are capital adequacy, asset quality, profitability / earnings and liquidity (SASRA, 2011-2014).

Profitability is always perceived as the corporate success and an essential indicator of economic performance (Porter & Kramer, 2011). It is also perceived as a valuable tool

to measure firm's performance in terms of financial success and efficiency of management (Keller *et al.*, 2011). A company's profitability can be measured by the return on equity (ROE) which is believed to be a ratio of net income to shareholders' equity (Sebhatu, 2012). It also assesses the firm's potential in earning income from every unit of shareholders' equity (Pandey, 2008). A different key ratio, Return on asset (ROA), also measures the profitability; a company's annual earnings relative to its total assets (Sebhatu, 2012). It indicates the efficiency of the management of a company in generating net income from all the resources of the institution (Khrawish, 2011). Hence, a higher ROA indicates that the company is more efficient in using its resources (Wen, 2010).

Capital adequacy is used as a measure of financial strength and stability of an organization. It is the percentage of a financial institution's primary capital to its assets (loans and investments) (Ariyoshi *et al.*, 2000). Every SACCO Society is obligated to maintain a level of capital which is adequate to protect or cushion member deposits and creditors against losses resulting from business risks. Thus as a measure of a financial institution's safety and soundness, adequate capital promotes public confidence in the institution (SACCO Society Act, 2008). The purpose of having minimum capital adequacy ratios (CAR) is to ensure that financial institution can absorb a reasonable level of losses before becoming insolvent and before depositors' funds are lost (Zulkafli *et al.*, 2010).

Liquidity is the business' capacity to meet its current liabilities as they become due and measured by different financial ratios such as current ratios, quick ratios, cash ratios, net working capital ratio (Delen *et al.*, 2013). Liquidity ratios measure the firm's strength and weakness and estimates future financial performance (Fresard, 2010).

Institutions having a good asset quality, strong earnings and sufficient capital may be unsuccessful if they do not maintain adequate liquidity (Omino, 2014) therefore, SACCOs should ensure that they have enough liquidity to enable them meet their daily obligations. Pandey (2008) affirms that lack of sufficient liquidity will result a firm into three situations: poor creditworthiness, loss of credit confidence or even in legal tangles resulting in the closure of the firm.

1.1.4 Deposit Taking SACCOs in Kenya

The establishment of SACCO's society Act 2008, places SASRA as the only authority with a mandate to license, regulate and supervise SACCOs to enable industry players to be innovative and entrepreneurial (SACCO Society Act, 2008). The authority has set up considerable resources in monitoring market behaviours, conformity and solvency issues thus have impact on efficiency and development of SACCOs. It also necessitates amendments in decisions on process adoption and investment plans, as well as, helps reduce compliance costs despite industry differences in terms of size, extent and complexity (www.sasra.go.ke). The development and execution of strategies by an institute or government to plan the future lane to be taken will increase the competitiveness of such firms operating in a competitive environment (Keller *et al.*, 2011).

SACCOs can be categorized into two main distinctions depending on the nature of services they provide to the members and regulatory establishment (SASRA, 2011). These include; Non-Deposit Taking SACCOs are registered and supervised under the Cooperative Services Act, CAP 490 authorizing them to provide both savings and credit products while The Deposit Taking SACCOs (DTS) are certified to offer basic banking services and FOSA in addition to basic savings and credit products. DTS are licensed

and supervised under the Sacco Societies Act of 2008. The general trend is that SACCOs start as non-deposit taking Sacco business and grow to deposit taking Sacco business to expand the range of financial services to members (SASRA, 2013).

Seventy five percent (75%) of the Sacco subsector's assets, deposits and membership are related for DTS which mainly achieved by continual antagonistic promotions and constant adoption of innovations to retain and attract more deposits. They have partnered with commercial banks to get connected to sacco-link and automated teller machines to expand their market share, and telecommunication industry to incorporate mobile financial services to their core sacco-systems to retain and guarantee ease in access to services every moment (SASRA, 2013). Maina (2011) contends that by embracing new approaches, SACCOs' ability to manage risk, enforce leading contracts and reduce the transaction costs of delivering credit have been enhanced.

There has been tremendous embracement of financial innovation since the year 2010 by DTS (SASRA, 2011). New products include cheques (paper money), credit and deposit cards, e-money balances (Nyathira, 2012) while new service process include ATMs, mobile banking, internet- online banking, internet payments, electronic billing and computerization of accounts (Njeri, 2013; Tsuma *et al.*, 2015) which have been introduced to enable the SACCOs to counter better towards the market changes, desires and to advance competence of the institution. Modified / improved products or services include FOSA accounts which are tailored to meet the customers' specific needs resulting to their satisfaction. Stima Sacco has initiated very striking and innovative products like M-pawa, which is a mobile app that allows the members to check balances, easy transmission of funds, get mini statements, locate the branches, modify pin, and access M-advance loan. The Twiga Savings account assists customers to plan

for their future financial needs and The Mustard account fills in the gap when an employee leaves a job (www.stima-sacco.com). Afya Sacco Society with M-Sacco, a product resulting from the integration with Safaricom's M-PESA to offer banking services through mobile money transfer (afyasacco.com). Mwalimu National Sacco for instance has been constantly re-branding its products which are tailored to meet ever-changing market demands for instance FOSA prime account takes care of customers' regular transactions, super loan and Vision 72 loan accounts are long-term loans designed to address customers' investment needs (www.mwalimunational.coop).

1.2 Statement of the Problem

The first phase of transition period under Sacco Society Act (2008) and Sacco Society Regulation (2010) ended in 2014 where DTS were obligated to comply with regulatory standards (SASRA, 2014). During this phase, the authority developed regulatory and surveillance structures to ensure effective implementation of its legal mandate and also, continued to review SACCOs' information technology infrastructure to ensure they develop the required ability to comply with regulatory requirements (SASRA, 2011). Most of the SACCOs embraced growth strategies including adoption of information and communication technology in their operations, research and marketing, partnerships in agency business and opening new branches (SASRA, 2012). Despite recording an improved performance of 16.6% increase in total assets, DTS demonstrated a rapid growth in the year 2013 from Kshs. 207.3 billion in 2012 to Kshs. 241.6 billion in 2013 which was largely steered by member deposits, share capital and retained earnings (SASRA, 2013) however, performance varies among different SACCOs thus raising concern of what could be affecting the performance of SACCOs? Therefore, the embracement of technology into service industries is becoming a strong trend as service providers are currently being urged to empower in financial technology

to advance their performance (Smith *et al.*, 2011). Hence, this study endeavours to determine the effect of financial innovations on performance of DTS in Nairobi City County, Kenya.

SACCOs in Kenya have undergone great challenges during the last decade; the sector has faced immense competition from other financial institutions (Tsuma *et al.*, 2015) like commercial banks and micro finances which have an ample financial potential to take the challenge by investing in faster and more competent systems, and reorienting towards innovative products with great quality that can suit customers' needs within the same market (Mutuku, 2014). These other financial institutions aim at low income earners who form the base of SACCO's membership (Njeri, 2013). This situation has geared an urge for greater degrees of efficiency and technological advancement among SACCOs which is believed to have caused better access to funds, elevated returns and enhanced financial services to financial participants. Nieto *et al.* (2010) contend that competitive pressure in the market has aroused desire particularly for small and medium sized firms for conducting R&D. Despite the significance of SACCOs to the Kenyan economy and the citizens, it remains unclear if financial innovations and SACCO characteristics have a significant effect on the performance of SACCOs. The study sought to establish the said relationship.

The concept of financial innovations, firm characteristics and their effect on financial performance has received significant attention in empirical literature. Different scholars have conceptualized the concept differently and assessed financial performance in different sectors resulting to contrasting findings hence making research conclusions ambiguous and varied. Naidoo (2010) observed that firm's specific features as age and size are not dynamic forces for a firm's survival rather than the principal technological

characteristics. While Mehjardi (2012) and Sharif (2012) found that size of a firm, age, investment and liquidity are the major drives of profitability. In these regards, the specific relationships between firm characteristics and performance have not been delineated explicitly. And this formed a reasonable basis to establish the link in this study.

Several studies have yielded mixed results in establishing a significant positive relationship between financial innovations and financial performance. Mwanja and Muganda (2011), Ngumi (2013), Korir *et al.* (2015) and Tsuma *et al.* (2015) observed that financial innovations had significant effect on performance whereas Pooja and Singh (2009), and Franscesa and Claeys (2010) found that financial innovations had a weak impact on performance. There are a few studies, if any, that have attempted to show a link between financial innovations and SACCO's performance and the moderating effect of firms characteristics. It is on this basis that the study sought to address the knowledge gaps revised above.

1.3 Objectives of the Study

The study was informed by general and specific objectives captured hereunder.

1.3.1 General Objective

The general objective of this study was to determine the effect of financial innovations on performance of deposit taking SACCOs in Nairobi City County, Kenya.

1.3.2 Specific Objectives

The study was informed by the following specific objectives:

- 1) To determine the effect of new products on performance of deposit taking SACCOs in Nairobi City County, Kenya.

- 2) To assess the effect of new service processes on the performance of deposit taking SACCOs in Nairobi City County, Kenya.
- 3) To establish the effect of new organizational form on the performance of deposit taking SACCOs in Nairobi City County, Kenya.
- 4) To determine the moderating effect of firm characteristics on the relationship between financial innovations and performance of deposit taking SACCOs in Nairobi City County, Kenya.

1.4 Research Hypotheses

The following null hypotheses were tested in view of the study specific objectives:

H₀₁- New products do not have a significant effect on performance of deposit taking SACCOs in Nairobi City County, Kenya.

H₀₂- New service processes do not have a significant effect on performance of deposit taking SACCOs in Nairobi City County, Kenya.

H₀₃- New organizational form does not have a significant effect on performance of deposit taking SACCOs in Nairobi City County, Kenya.

H₀₄- Firm characteristics do not have a significant moderating effect on the relationship between financial innovations and performance of deposit taking SACCOs in Nairobi City County, Kenya.

1.5 Significance of the study

Regulatory and advisory body (SASRA) will have advantage to apply the recommendations that will be made at the end of this study on financial innovations information for regulation to the SACCOs on the necessity to craft and utilize sound

strategies geared towards constantly embracing innovativeness which leads to improved performance. Policy makers and other stakeholders will also be aided in assessing and identifying the success or failure of policy initiatives related to financial innovation and in essence the performance. The findings of the study will enable the stakeholders to improve their decision making by assessing and measuring degree of performance achieved by the top management through financial innovations decisions and its impact on the growth of their shareholding value. This study will also help top management to make informed decisions on effective financial innovations taking into the consideration on their firm's characteristics with the ultimate goal of ensuring that shareholders' wealth is fully utilized.

The study will also be of great significance to other SACCOs, to enable them make sound decisions on financial innovations focusing on their firm's characteristics as a competitive tactic with the main goal of improving their firm's performance. In addition, it will also help firms to understand the importance of creating a better working environment that stimulates, as well as, challenges the employees to innovative reasoning in their operations to utilize firm's scarce resources and competitive advantage with the motive to increase growth and performance of their firms. The study will also help provide information to potential and current scholars with regard to the association of financial innovations, firm's characteristics with performance of cooperative societies (SACCOs). In addition, future researchers may apply the study results as a source of reference to advance research on the same area or a different service sector with the same aim and objectives or use the research to bridge the knowledge gap in financial innovations.

1.6 Scope of Study

The study focused on the financial innovations and performance within SACCO sector. It is apparent that most studies have been done on banking sector and very few in the locale of SACCOs however not in an inclusive manner. This study incorporated all the three groups of financial innovations and the major measures of performance of DTS thus, making the study more inclusive. The study focused on the DTS head office situated in Nairobi City County despite the branches which were wide spread within the country. This was in view of the fact that financial innovations are determined by policies which are set at the head offices and financial reports are also consolidated at the head offices. The study collected data from 19 DTS in Nairobi City County that had been in operation and licensed by SASRA between 2010 to 2014. Performance was measured using both primary data and secondary data to be collected over a five year period (2010 to 2014).

1.7 Organization of the study

The thesis comprises five chapters. Chapter one outlines the background of the study, a concise explanation of the study's key variables, the statement of the research problem, objectives, study hypotheses, the significance of the study and the scope of the study. Chapter two presents theoretical foundations of the research, theoretical and empirical review of relevant literature on financial innovations, firm's characteristics and financial performance. A summary of the knowledge gaps acknowledged in the literature, and the conceptual framework. Chapter three outlines the methodology employed in the research, the study questions, research philosophy, study design, population and sample of the study. The data collection methods, measurement of research variables and the data analysis techniques are included. Chapter four presents study findings and their subsequent interpretations. Finally, chapter five summarizes

the entire study, makes conclusions for each objective and derive recommendations from the study findings as well as areas for further research and the limitations encountered in the course of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant theoretical and empirical literature. It also chapter presents theories anchoring the study, the literature linking financial innovations and firm characteristics, and how they affect performance. The chapter concludes by providing a summary of selected studies highlighting the knowledge gaps, and a conceptual framework used to address the knowledge gaps.

2.2 Theoretical Review

A theory is a methodical justification of the relationship among phenomena and provides a generalized explanation to an incidence (Dawson, 2009). In the literature of financial innovation, there are extensive theories that have been developed by various scholars. These include Regulatory Dialectic Theory (which explains financial innovation as an institutional reaction to financial costs shaped by technology), Regulation and Taxation Theory (which contributes to financial innovation attempts to alter the amount and timing of taxable income), Pecking Order Theory (which explains that companies prioritize their sources of financing according to the cost of financing) and Agency Theory (which explains the relationship between principal and agent in business and addresses the problems that arise when the desires or goals of the principal and agent are in conflict). Hence, this section reviewed the theories in detail.

2.2.1 Regulatory Dialectic Theory

This theory was first proposed by Kane in 1984. Kane observed financial innovation as an institutional reaction to financial costs shaped by changes in technology, market

needs and political forces, particularly laws and regulations (Awrey, 2011). In his model, Kane focuses on the US evolution that took place during 1960s and 1970s where there occurred the regulatory dialectic between the federal banking regulation and the exogenous market forces such as technological change, changing banking environment and increasing uncertainty about future financial developments (Jones, 2015). Consequently, Kane refers to the interactive process of regulation that follows institutional avoidance and innovation as dialectical process.

The theory was further upgraded by Sinkey in 1992 where he relates regulatory dialectic model to exclusionary rules especially regulations that results into emergence of non-contestable markets obligated on the financial institutions (Currie, 2002). This is when the regulatory goals in controlling financial institutions hamper entry or exit of firms. Kane (1984) affirms that in the course of entry or exit, market structure adapts in serving customers' demand at least costs. Thus, existence of regulatory intrusions in the market such as related averting costs and obligatory entry restrictions on specific firms slows the adaptation rate (Holmes, 2004). On the same note, struggle concept conforms with exclusionary rules that commend attempts to elude such restrictions. The evasion costs are the incremental costs of creating an unregulated alternative / substitute product and service or institution arrangement such as derivatives provided over the counter markets (Sinkey, 1992).

New regulations emerged and caused incentives to innovate in order to exploit profits by discovering novel mechanisms to circumvent the constraints such as interest rates, products, capital adequacy (Pol, 2009). Within the new financial instruments created to conquer government regulations, there were lethal innovations favourable (after several years and in combination with other factors) to financial crisis (Mishkin, 2006). This in

turn incited a new emergence of regulation. This theory was essential for better understanding of why regulatory changes that were intended to control the operations of SACCOs within the economy may have been hindered by regulatory dialectic practices and contestability levels of the markets with the SACCOs' major aim to survive and maximize profits through continuous financial innovation within the competitive environment.

2.2.2 Regulation and Taxation Theory

This theory was founded by Miller in 1986. Miller assumes that the major impulses to successful financial innovation have come from regulation and taxes (Epstein & Epstein, 2009). Most governments desired to keep varying their structures thus altering the internal rate differentials and creating novel opportunities for financial innovation. Miller believes that each innovation that does its job successfully earned an immediate reward for its adopter in the form of tax money saved (Tufano, 2003). Miller also contends that financial innovations are consequences of regulatory barriers and aspiration of financial firms to evade the impact of regulatory constraints (Miller, 1986). This theory is further supported by the M&M proposition II that states that taxes and regulations are the mere reasons for investors to heed what security firms issue whether debt, equity or any other security (Dybicz & Uddbäck, 2006).

In 2003, Tufano expounded on this theory by contending that the ultimate stimulus for financial innovation is strong, arising from the interface of changing regulatory environment, increasing technology, volatile markets and increasing competition among financial institutions. Growth in markets and advancement in new products amid financial institutions is steered and fostered by competition. Rajan (2011) contend that policies that cause hindrances to open flow of resources and competition such as interest

rate ceilings amid financial institutions stimulated the improvement of fiscal products and trading strategies to go about the set restrictions. Tufano also assumes that the global pattern of financial assets transforms financial markets from local markets into globally internationalized financial markets (Tufano, 2003).

With intense volatility in financial market, necessitates certain market participants to shield themselves against unfavourable consequences, which calls for new or more efficient ways of risk sharing in the financial market (Rajan, 2011). Financial products and trading strategies created by some market participants may had been novel and complex for other participants to exercise (Rajan, 2005), the intensity of market sophistication, mostly in terms of arithmetical understanding continues to increase, permitting reception of some complex products and trading strategies (Hall, 2013).

This theory held that investors were to be very alarmed about regulatory practices and taxation, and their impact on the kind of securities that were issued for trade by various entities in the financial markets. On the same note, Rajan (2005) concurs that financial innovation had some implications on the financial markets: cost reduction of financial intermediation that widens the choice of fiscal instruments in which to invest in. SACCOs could therefore strive hard to reduce cost as a drive for financial innovation. This could be achieved through reduction from improvement in payments, processing or reduction resulting from new technique to deliver financial services electronically to customers. However, regulatory limitations and requirements are also costly and some innovations were intended to avoid or reducing cost.

2.2.3 Pecking Order Theory

This assumption was founded by Donaldson in 1961 and was modified by Stewart C. Myers and Nicolas Majluf in 1984. The theory states that companies prioritize their

sources of financing according to the cost of financing, preferring to raise equity as a financing means of last resort (Teker, Tasseven & Tukel, 2009). Hence, internal funds are used first and when that is depleted, debt is issued and when it is not sensible to issue more debt, equity is used (Ahmad *et al.*, 2012). The theory holds that firms should take into consideration the methods of capital raising. In comparison to other external methods, debt is believed to be the most attractive and cheap option thus firms with high profitability are challenged to consider debt as the least option since they have less need to raise funds externally (McKinnon, 2010).

The theory assumes the existence of asymmetric information as managers know more about their companies' prospects, risks and value than outside investors (Myers, 2001). Asymmetric information affects the choice between internal and external financing and between the issue of debt or equity (Myers & Majluf, 1984). Consequently, in order to invest in novel projects, pecking order exists. This theory could be adopted by SACCOs' management for they needed to adhere to a hierarchy of financing sources for their financial innovations decisions in order to keep abreast to the new trends in the financial market with the aim to survive and remain profitable within the volatile and dynamic sector.

2.2.4 Agency Theory

This theory was founded by Ross and Mitnick in 1970s. Ross and Mitnick explained how best organized relationships in which one party (principal) determined the work while another party (agent) did the work (Fayezi *et al.*, 2012). Agency theory assumes both the principal and agent were motivated by self interest. Consequently, if both parties were stirred by self interest, agents are prone to pursue self interested objectives that deviate and even conflict with the goals of the principal (Mauer & Sarkar, 2005).

However, agents were supposed to act in the sole interest of their principals to maximize wealth. This assumption of self interest dooms the organization to inevitable intrinsic agency problems namely adverse selection and moral hazard (Schwarcz, 2009). Adverse selection is a condition where the principal cannot determine whether the agent perfectly represents his capability to perform the duty while moral hazard is a situation in which the principal cannot ascertain if the agent had put forth maximal efforts in his performance (Njuguna, 2010).

Despite clashing interests amid the shareholders and managers of the organization, subsequently there should be a convergence of interest between the shareholders and the managers (Mauer & Sarkar 2005). One way is for the shareholders to allow the managers to take up some of shareholding by allocating for them the shares so that they become owners (Meckling, 2006). The shareholders may also pay the management very good package in order to motivate them hedge some of the risks in the organization (Koller *et al.*, 2010).

2.3 Financial Innovations and Performance

Financial innovation is an essential component for economic evolution of a nation and competitiveness of an industry (Beaver, 2002). Innovation is also seen as the main essential competitive weapon and usually viewed as a firm's core value of potential (Sandvik, 2003) and consequently measured as an effective way to advance firm's productivity due to the resource limitation facing a firm (Chesbrough, 2006). Therefore, there is no optimal size of a venture that is mostly designed to exploit innovation; it simply calls for instinctive intelligence and considerable research.

Innovation is crucial to the continuing success of any organization (Kimberly, 1979). Hence, the ability of any organization to rapidly adapt to a new technology enables it

to stay a pace ahead of competition (Shapiro, 2009). The developments in the financial sector have brought affirmative changes within the economy like increased number of financial institutions, development in level of sophisticated and new payment systems, and asset alternatives to holding money (Nyathira, 2012) and (Cherotich *et al.*, 2015) tailored to meet demands of financial participants.

Financial innovation is the catalysts behind the developing financial services, industry and restructuring of financial markets (George & Prabhu, 2000). It represents the efficient process of change in instruments, institutions and operating policies that establish the structure of financial system. Tufano (2002) argues that for centuries, the economic landscape has been formed by financial innovations despite being restricted in the last few decades. Freeman and Soete (1997) concur that over 60% of all economic growth is due to technological advancement rather than improvement in productivity.

Financial innovations occur due to numerous reasons such as, tax advantages, reduced regulatory costs (Partnoy, 1996), reduction in moral hazard, transparency, customization and reduction in bankruptcy costs (Gorton & Metrick, 2010; Batiz-Lazo & Woldesenbet, 2006). An extremely hostile condition leads to thriving novelty creating an exclusive competitive position and aggressive gain which results to an advanced performance (Roberts & Amit, 2003). This is achieved and maintained by constant modernization as well as, development of the creation and the procedure (Porter, 2004).

Financial innovation enhances potentiality of a business as well as, creates an array of competitive positions at the marketplace (Naidoo, 2010). On the same note, Yildirim and Philippatos (2007) concur that with intensified aggression, the trait and delineation of products is improved, as well as, stimulation of financial innovation by introducing

additional technologies, modern skills, and administrative techniques. To start up a variety of innovative projects, diversification of business risk is a necessity made easier by size of the firm (Corrocher, 2006). Thus innovation is a vital event in every segment of a modern economy.

Firms face severe rivalry in the modern universal market, and to achieve a sustainable competitive gain through innovation, they have no option but to implement actions and systems for advancement of novel products as well as, improvement of the existing products (Udegbe & Udegbe, 2013). Organizational performance and product development are positively influenced by the innovation process' quality (Udegbe & Udegbe, 2013). However, the innovation process has been underpinned by the extensive and ready electronic access to news and information on economic and financial developments and on market responses (Ngumi, 2013).

Successful new products are engines of a firm's growth (Eluinn, 2000). Kemp *et al.* (2003) concur that additional income that results from successful new products can be used to initiate manufacture of other new products. However, new-product failure rate is high - ranging from 33% to over 60% - and has not improved in the last decades (Cooper, 2003). Furthermore, a firm may fail to benefit economically from successful new products due to huge development cost, initiation costs and swift imitation by rivals within the market (Vogel, 2005).

Conversely, the efficient-market perception, a firm's future income may be challenging to the investors to instantly and accurately anticipate all the times (Malkiel, 2007). Investors may possess prospect of the firm's general potential in the initiation of new product though, there is a generally doubt in achievement of every particular introduction in the market (Kline, *et al.*, 2010). Steen and Koning (2011) contend that

the success probability of new product and the profit levels allied to the product are the two main uncertainties investors should precisely consider.

Product development decisions ought to be made swiftly taking into account that products are designed to suit the requirements of customers. Hence, it is essential to comprehend that the players must toil with one force and a necessity for every hand to be on the desk when it concerns product development (Kotler & Armstrong, 2010). Product improvement is an action that requires assistance almost from the entire units within the firm. Conversely, these units: marketing, design and manufacturing are quiet vital to a product development effort (Ulrich & Eppinger, 2007).

Goestch and Davis (2014) argue that there has been a call to focus on the new service process itself as the key to a more successful new product program. However, when the firm attempts to expand and adopt new technology or develop new products, it encounters numerous challenges, major amid them is ensuring there is adequate and sustainable human competence, knowledge and experience in place to accompany and complement the investment in new process development (Frame & White, 2004). Goestch and Davis (2014) posit that new service success is strongly linked to what activities (such as initial screening of the project, finance analysis, R&D, preliminary technical assessment and so on) are carried out in the new service process, how well they are executed and the completeness of the process.

Business organizations and their workforce have benefited from the changes that result from organizational innovation (Kanter, 2003). The changes offer business with customs to function extra flexible to advance efficiency, product value and reliability thus customer satisfaction and rapid response to variable economic and marketing conditions (Zim *et al*, 2013). Whereas, employees benefit since change grants them

enormous possibility to be greatly engaged in the daily preparation and organization of production in traditions that create their job much exciting and satisfying (Koller *et al.*, 2010).

2.4 Firm Characteristics and Performance

In the oligopoly model, Erickson (2009) contends that firm size is absolutely linked to a firm's capacity to generate technologically complex products which results to attention within the market. Such markets are supplied by few competitors and are therefore, more profitable. Hence it is believed that, larger firms have access to the most profitable market segments than small firms. Luo and Tung (2007) indicate that competitive advantages such as market power and access to capital markets are associated with bigger firms due to their efficiency that grants them investment opportunities within the market than the smaller firms. On the same note, Keah (2014) concurs that size of the SACCO has a positive effect on the financial performance as large SACCOs generate superior performance due to their diversified capabilities and ability to exploit economies of scale fully.

Nekhili and Gatfaoui (2013) contend that firm size has been seen to be related to industry- sunk costs, concentration, vertical integration and overall industry profitability. On the same note, large companies are most prone possess improved speciality and competency, added layers of management, centralized authority, more departments and greater bureaucracy than small firms (Moeller & Harvey, 2011). The way management and control are organized affect the company's performance and its long run competitiveness. This determines the conditions for access to capital markets and the degree of investors' confidence level (Luo & Tung, 2007). Thus, these firms ascertain what they are best in and gain knowledge on how to do things better. Firms

will specialize in regulating and improving quality of their products, as well as discover means to cut production costs, control and hasten production process (Kotler & Armstrong, 2003).

Firm's age has also been argued theoretically to manipulate the composition of their business network (Hite & Hesterly, 2011; Huang, Li & Ferreira, 2003). Older firms may gain larger knowledge and resources to build their business relations with diverse agents who may serve as good referrals of its resource base, acquired legitimacy and corporate strategy. Similarly, Ericson (2009) note status or goodwill older firms have gained in the market may offer them opportunities to benefit from better margins of sales while new firms are alleged as riskier and having failure rates than recognized firms (Covin & Covin, 2010).

However, Liargovas and Skandalis (2008) posit that inertia and bureaucracy comes handy with age hence older firms are greatly exposed; constant routines which are obsolete to transformation in the market setting hence resulting to a conflicting connection between age and profitability or growth. It is quiet difficult and very expensive for a firm with inertia to create change (innovation) as well as retaining it (Starbuck, 1985) consequently; large SACCOs may also be exposed to difficulties to sustain an atmosphere of constant change than small SACCOs.

Large firms tend to gain market power hence, possess healthy information about the markets that they function in and encompass the capacity to utilize the information as a competitive gain to generate advanced value for their clientele (Kapferer, 2012). Kotler and Armstrong (2003) indicate that firms that operate according to the marketing concept generate profits through customer satisfaction. The marketing concept as a business philosophy is where higher company performance is considered to be the

result of being more effective in anticipating and satisfying customer demands better than competitors (Kline *et al.*, 2010).

Hite and Hesterly (2001) and Wanjiru (2013) indicate that the propensity of a firm to ascertain business associations is a major competitive tactics for survival and expansion. Ferreira *et al.*, (2008) also indicate that firms' characteristics that determine firms' ability to form business relationships are characteristics related to firms' size, age, reputation and legitimacy, and to organizational factors such as transparency and control mechanisms that firms have in place. These give the firm a superior hand to obtain admittance to various types of resources, information, market access, and innovation opportunities (Lipparini & Sobrero, 1994; Jack & Anderson, 2002). Hence, size and age, maybe among other characteristics, which highly influence firms' scope and their network of distant business relationships.

Olando *et al.*, (2012) affirm that SACCOs in Africa are still crawling as they are new comers among those offering savings and credit facilities. They have small share in providing financial services, their market share is insignificant when compared to other players. A firm is obligated to shield its existing business against competitors' attack as it tries to expand its total market size (Kotler & Armstrong, 2003). Without efficient marketing strategy in the market, a firm is fated to remain small, may be mislaid from its existing market share or may be forced to exit its business. Thus, it is a great obligation to a firm with a small market share to exploit perfect marketing strategies to enlarge its sales and market share (Whitford & Zeitlin, 2004). Hence, new and young firms will always strive hard to gain market share though faced with challenges such as trademark, weak financial status as well as business identification with older firms (Ferreira *et al.*, 2008)

A successful share gaining marketing strategy for smaller-share firm is one which doesn't directly attack a large competitor or does so only if the large competitor is vulnerable in some important way (Chesbrough, 2006). If this condition is fulfilled, a smaller-share firm's marketing strategy to be successful, it must: neutralize the competitor's ability to respond quickly to its marketing strategy, achieve a significant product or service difference (Kapferer, 2012) and use distribution strategy that will provide it with longer term protection against competition retaliation (Chesbrough, 2006).

In some industries, average costs are minimized when production is concentrated within a single firm - monopoly (Jean, 2014). Once there is possibility for rapid innovation, such a market will typically be dominated by the single firm only for a restricted era of time, until a new firm makes a superior innovation. While the dominant firm can earn provisional monopoly rents from pricing exceeding marginal cost, those rents may be a suitable price for society to pay in order to encourage innovation (Lemley, 2005). Conversely, the firms that have gained market power tend to create an imperfect market where by, they are liable to manipulate the security prices to their advantage (Malkiel, 2007). They always have an upper hand to attain new information including the risk involved in owning a particular security before it is made available to the market than their rivals (Pandher & Currie, 2013). Hence this leads to biasness and information asymmetry within the market.

In the industry life cycle, at the introduction stage many new firms lacking proper competitive strategies to exit industry and at the decline stage well established firms are also threatened to shakeouts therefore, innovation is essential to both new and well established firms for survival (Bergman, 2008; Hitt *et al.*, 2001). Martin and Sunley

(2011), in their study on the forces for a firm's survival - life cycle and technology, focused on structural features of the firm as major drivers for survival probability. From the empirical indication, technology and the phase of industry life cycle shaped the association of firm size and the chance to survival. Kotler and Armstrong (2003) argues that the major agents that drive innovation and the economy are the large companies that possess the capital to invest in R&D of new products and services and deliver them at a cheaper cost to customers, thus raising their lively hood.

2.5 Financial Performance and Saving and Credit Cooperatives

Financial performance measures the financial health and survival probability of a firm over a given period of time (Wanjiru, 2012). Hence diverse methods are adopted by different firms basing on their organizational goal. Njeri, (2013) also contends that a firm's goal may be financial (such as an increase in sales, profits) or non- financial (such as customer satisfaction, market expansion, financial viability, efficiency). Although, many firms, desire to implement only financial indicators to measure their performance nevertheless, financial elements are not merely indicator for measuring firm performance. A firm requires combining financial measurement with non-financial measurement in order to adapt to the changes of both internal and external environments (Voelpel *et al.*, 2006).

Profitability is always perceived as the corporate success and an essential indicator of economic performance (Porter & Kramer, 2011). It is also perceived as a valuable tool to measure firm's performance in terms of financial success and efficiency of management (Keller et al., 2011). Maximizing profits is an objective of all firms. Profits lead to an inducement to invest as well as to innovate. It is a yardstick that tests the efficiency of a firm thus the success of a firm can be judged by the extent of profit

earning capacity (Keller et al., 2011). Hence, SACCOs' management should strive to implement high standard of efficiency at all operational levels with the aim of maximizing profit.

A company's profitability can be measured by the return on equity (ROE), which is the ratio of net income to shareholders' equity (Sebhatu, 2012). It assesses efficiency of a firm in utilizing shareholder equity to generate maximum profits as well as, how investments are used to generate earnings growth by a firm. As with many financial ratios, ROE is mostly used to compare firms in the same industry (Pandey, 2008). Rasiah (2010), in his study on measuring profitability of commercial banks, observed that measure of profitability gives an indication of what the banks earns on the shareholders' investment.

Another major ratio that indicates the profitability of a company relative to its total assets is return on assets (ROA) (Sebhatu, 2012). It is expressed as a ration of a company's annual earnings to its total assets (Pandey, 1995). ROA takes into account the assets used to support business activities. It determines whether the company has the ability to generate a sufficient return on these assets rather than basically showing robust return on sales (Njeri, 2013). To determine efficiency of company's management in utilizing its assets to generate earnings, ROA provides a clue (Pandey, 1995). In other words, it shows how efficiently and effectively the scarce resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution (Khrawish, 2011). Wen (2010) posits that a higher ROA indicates that the company is more efficient in using its resources. On the same note, Rasiah (2010) affirms that the higher the ROA ratio, the better the SACCOs' profits and vice versa.

CAR serves to encourage the stability and efficiency of financial system by reducing the possibility of banks becoming insolvent (Levine, 2004). Financial institution's insolvency may lead to loss of confidence in financial system causing financial problems for other institutions and perhaps threatening smooth functioning of financial markets. By applying minimum CAR also gives some shield to depositors in the event of a winding up, depositors' funds rank in priority before capital (Allen & Wood, 2006). Depositors lose money if only the bank makes a loss which exceeds the amount of capital it has. The higher the CAR, the higher the level of protection available to depositors (Hardy, 2006). The regulatory framework requires DTS to maintain minimum core capital of Kshs 10 million, together with the following capital adequacy ratios: core capital to total assets and core capital to deposit liabilities at the ratios of 10% and 8 % respectively (SASRA, 2014).

A reasonable level of liquidity is essential to the survival of a company (Hurst & Lusardi, 2004). Therefore, companies are supposed to look for means to increase liquidity and improve cash flows. Thus suggested strategies like working capital management and cash management to be adapted within the firm to improve liquidity and cash flow for these are areas which are generally ignored during favourable business conditions (Pass & Pike, 1984). On the same note, Puneet and Parmil (2012) posit that adoption of liquidity risk management that entails forecast and controlling of current asset and liabilities in financial sector will result in eradicating the peril of failures to meet current obligations and to evade extreme investment in those assets. Consequently, it is essential for SACCOs to strike suitable balance between high liquidity and lack of liquidity.

SACCOs participate in a vital role of financial intermediation in Kenya's financial landscape focusing mainly on personal development, small and micro enterprise sector of the economy (Njeri, 2013) which demonstrated an increase from 2.97 million in 2012 to 3.30 million in 2013 in the membership served by the SACCOs. This accounted to 12 million relatives of the members that ultimately benefited from SACCOs (SASRA, 2013). SACCOs are required to file audited financial statements every fiscal year to their regulator to assess their financial stability and soundness (SASRA, 2011). In 2012, SASRA adopted the CAMELS performance rating framework to assess the financial soundness and stability of SACCOs focusing on prudential standards. Conversely, financial instability may cause major macroeconomic costs by interfering with production, consumption and investment. This eventually defeats the national goals of broader economic growth and development (Gray *et al.*, 2007).

In the year 2013, performance of DTS improved demonstrated by a raise of 16.6 percent on total assets from KShs. 207.3 billion in December 2012 to KShs. 241.6 billion in December 2013 which was generally funded by member deposits, share capital and retained earnings. Similarly, a 32.1 percent growth in turnover of Ksh.33.7 billion was also recognized from the Ksh.28.4 billion in 2012 leading to increased resources with better reserved surplus and additional capital by members (SASRA, 2013).

2.6 Empirical Review

The study reviews various relevant empirical literatures.

Njeri (2013) investigated the effects of financial innovation on the financial performance of deposit taking SACCOs in Nairobi County. The objective of the study was to establish effect of financial innovation (ATMs, mobile banking and branch network) on financial performance of deposit taking SACCOs. Descriptive research

design was employed. The study revealed that SACCOs had undertaken major innovations in the last 5 years (2008 – 2012) especially on their products; services and technological advancement. It further revealed that there was strong relationship between financial performance and branch network, expenditure in ICT, number of customers using mobile banking and the number of ATMs installed. The study recommended SACCOs to keep abreast with new trends in the financial market. The challenges experienced by the researcher were in terms of the financing the research and also the available time frame to fully conclude the entire data collection and make the best conclusions.

Tsuma *et al.* (2015) sought to determine the effects of new organizational processes (automation, computerization and ATMs) on financial performance of SACCOs in Kenya. The study adopted a descriptive research design in determining the relationship of variables and employed primary data. The findings of the study revealed that process innovations were positively correlated to financial performance. The study concluded that SACCOs in Kenya have introduced and embraced financial innovations therefore cutting down on operational costs. It further concluded that SACCOs are reaping the benefits of financial innovations particularly increased efficiency, improved service delivery, improved operational performance among many others.

Makur (2014) sought to assess the effect of financial innovation on commercial bank's financial performance as the key players in the banking sector over a period of 5 years (2009- 2013). The study used a casual research methodology and studied 16 commercial Banks registered with the central bank of South Sudan. The researcher found out that financial innovation was significant and had a positive impact on the financial performance of the commercial banks in South Sudan. The study therefore

concluded that adoption of financial innovation resulted in strong financial results of commercial banks in South Sudan.

Korir, *et al.*, (2015) studied the effect of financial innovations on performance of commercial banks in Kenya. They wanted to establish the effect of the three financial innovations (cheque, EFTs and RTGS) in the banking sector on financial performance for a 5 year period (2009- 2013). The bank innovations had significant influence on the ROE as revealed by the results and tests for significance also showed that the influence was statistically significant. Consequently, the researchers drew a conclusion from the findings that financial innovations positively influence financial performance of commercial banks in Kenya.

The Nyathira (2012) empirical review centred on financial innovation and its effect on financial performance of commercial banks in Kenya. Her study sought to assess the effect of financial innovation (particularly payment system such as cards and e-money balances, paper money, MICR, RTGS, KEPSS) on commercial banks' financial performance for a 4 year period (2008 - 2011). The study found that financial innovation has ensured ease, efficiency and safety to the clients increasing their demand for the new innovations while demand for traditional payment systems reduces as customers switch to the more effective payment systems. The study found that financial innovation in payment system resulted to positive influence on financial performance of commercial banks.

Malik (2011) assessed the determinants of profitability of Pakistan's insurance companies. In the study, firm specific factors were examined to determine their influence on profitability. The researcher used a study sample of 35 life insurance companies and 20 non-life insurance companies listed in the years 2005 to 2009. The

researcher found out that age of the company insignificantly influenced profitability and the results further revealed that size of the company had significant influence on profitability.

Kaguri (2013) sought to determine the relationship between specific firm characteristics and financial performance of life insurance companies in Kenya. The results revealed a statistically significant influence of the variables on financial performance of life insurance companies. The study therefore recommended the insurers to work towards improving the premiums earned to increase their profits. Higher profits would mean better reserves which would assist the insurer to operate in times of large unexpected claims and also help them maintain liquidity at all times.

Kigen (2014) investigated the influence of size on the profitability of insurance companies of Kenya. The study examined the effects of total assets, leverage and market share on profitability (ROA). A census study of 48 general and long term insurance companies which cover the period of 2009- 2013. The findings reveals a negative relationship between profitability and total assets of the insurance companies and existence of a significant positive association between size as measured by market share of the insurance companies and profitability. The result further showed that leverage had positive significance on profitability of insurance companies. Therefore, the study recommended that for general and long term insurance companies to increase their profitability, the companies should employ activities which will lead to increase in market share. This includes recruiting more agents and increase in marketing through print and social media.

Nguyen (2014) examined the validity of five chosen determinants (growth rate, firm's size, profitability, liquidity and interest coverage capability) within the scope of Finnish

technology firms. The study employed the quantitative research design and data was collected using both primary source (financial reports of 17 firms during the period of 2008 – 2012) and secondary source (books and journal). The results revealed a positive relationship between the firm's size and its capital structure, and negative relationships of the firm's profitability and liquidity with capital structure were clarified. While an insignificant correlation of growth rate and interest coverage ratio with capital structure.

Kisengo and Kombo (2014) sought to examine the effect of firm characteristics on the performance of the microfinance sector in Kenya. The study adopted correlation research design. A census was done on the 48 institutions registered with AMFI and operating in Nakuru. Primary data was collected using questionnaires. This was supplemented with secondary data. Data on firm characteristics and organizational performance was summarized using descriptive statistics. The relationship between firm characteristics and performance of MFIs was examined using correlation. The effect of firm characteristics on performance of microfinance was determined by regression analysis. Findings revealed that firm characteristics had a significant positive effect on performance of MFIs. Structure related characteristics had the greatest while capital related had the least effect on performance of microfinance. The study recommended that practitioners address and nurture firm characteristics to improve on performance of the sector.

2.6.1 Summary of the Empirical Studies

Table 2.1: Summary of Empirical Review

Author	Objective	Key findings	Research gaps	Focus on current study
Njeri (2013) Kenya	To establish the relationship between financial innovation and financial performance of 44 DTS.	The study revealed a strong relationship between the variables tested.	The study was limited to financial innovation focusing on the new service process and ROA as a measure of financial performance	The current study has incorporated firms' characteristics and expanded the performance measures and the other categories of innovation.
Tsuma <i>et al.</i> , (2015). Kenya	To examine the effects of new organizational processes on financial performance of Kakamega Teachers Cooperative Society Ltd.	The study revealed that process innovations were positively correlated to financial performance.	The study was limited to a single group of financial innovation, and dividend per share and profitability as financial performance measures.	The current study expanded the performance measures and the other two groups of innovation. It has also incorporated firms' characteristics.
Makur (2014) South Sudan	To assess the effect of financial innovation on commercial bank's financial performance of 16 banks.	The study revealed that financial innovation was significant and had a positive impact on the financial performance of the commercial banks.	The study was limited to payment systems as new production process within the banking sector and only ROE was used as a measure of performance.	The current study has incorporated firms' characteristics and expanded the performance measures and the other categories of innovation
Korir <i>et al.</i> , (2015)	To establish the effect of the three financial	The findings revealed that bank	The study was limited to payment	The current study has incorporated

Kenya	innovations (cheque, EFTs and RTGS) in the banking sector on financial performance	innovations had statistically significant influence on the ROE as a measure of financial performance	systems as new service process within the banking sector and only ROE was used as a measure of performance.	firms' characteristics and expanded the performance measures and the other categories of innovation (improved products and new inventions).
Nyathira (2012) Kenya	To assess the effect of financial innovation focusing on payment system on commercial banks' financial performance of 43 commercial banks.	The study found that financial innovation in new payment system resulted to positive influence on financial performance of commercial banks.	The study was limited to profit after tax as a measure of performance and also only new payment system was used as financial innovation to examine its effect on performance.	The current study has incorporated firms' characteristics and expanded the performance measures and the other groups of innovation.
Malik (2011) Pakistan	To examine the effects of firm specific factors (age of company, size of company, volume of capital leverage ratio and loss ratio) on profitability of. 35 listed life and non-life insurance 20 companies	The study revealed that there was insignificant relationship between profitability and age of the company but, there was a significant positive association between size of the company and profitability.	The study was limited to firm's characteristics that could be incorporated to examine the profitability of insurance companies.	The current study has expanded the firm's characteristics to determine its moderating effect on financial innovation and performance
Kaguri (2013)	To determine the relationship	The study findings	The study is limited to only	The current study has

Kenya	between firm characteristics and financial performance of 17 life insurance companies in Kenya.	indicate that the variables are statistically significant to influence financial performance of life insurance companies.	firm characteristics and profit as a measure of performance.	expanded on the performance measures. It has also incorporated financial innovation to examine moderating effect of firm characteristics on both innovation and performance
Kigen (2014) Kenya	To examine the effects of total assets, leverage and market share on profitability (ROA) of 48 insurance companies.	The study revealed that there is significantly positive relationship between size as measured by market share of the insurance companies and profitability.	The study was limited to three characteristics of the firm and also measured profitability in terms of ROA.	The current study has expanded on the firm's characteristics and other measures of performance.
Nguyen (2014) Finland	To examine the validity of five chosen determinants (growth rate, firm's size, profitability, liquidity and interest coverage capability) within the scope of Finnish technology firms.	The study revealed positive relationship between the firm's size and its capital structure and negative relationships of the firm's profitability and liquidity with capital structure. Insignificant correlation on growth rate and interest coverage ratio	The study was limited to capital structure as the only measure of performance.	The current study has expanded the other measures of financial performance. It has also incorporated financial innovation to measure the moderating effect of firm characteristics on financial performance.

		with capital structure.		
Kisengo and Kombo (2014) Kenya	To examine the effect of firm characteristics (age, size and ownership) on the performance (organizational performance) of the microfinance sector in Kenya	The study revealed that firm characteristics had a significant positive effect on performance of MFIs	The study was limited to only organizational performance as an indicator of performance.	The current study has incorporated several determinants of performance. It has also incorporated

Source: reviewed literature, 2019

2.7 Summary of Literature and Research Gaps

From the previous review of related literature, it is apparent that most researches have been done on the banking sector and very few in the locale of SACCOs' innovations however, not in an inclusive manner. All the literature reviewed shows that prior researchers merely focused on one category of innovation whereas this study has incorporated all the three categories of financial innovations that were omitted by earlier studies like new products (cheques, deposit cards and modified FOSA accounts), new service processes (electronic funds transfer systems and ATMs) and new organizational form (internet-online banking, mobile banking and point of sale terminals) therefore, making the study more inclusive.

From the literature reviewed, the researchers had different views on the subject of how financial innovations affected performance of firms. Most of the studies done on financial innovation and financial performance, found a positive relationship between one category of financial innovation and specific financial performance indicators of firms employing either descriptive or casual designs, as well as, a positive relationship between firm characteristics and a specific measure of financial performance of a firm. However, some researchers did not seem to find a direct relationship between specific

firm characteristics and financial performance. It is on this basis that the study sought to address the knowledge gaps revised above.

From review of relevant literature, few studies were established explicit to Kenya in relation to financial innovations and financial performances of DTS, as well as, moderating variables were omitted. Consequently, this study intended to fill these significant gaps in literature by studying the effects of financial innovations on selected main financial performance indicators (profitability, asset quality, liquidity and capital adequacy) and the moderating effect of firm characteristics on the relationship between financial innovations and financial performance of DTS in Nairobi County, Kenya.

2.8 Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Smyth, 2004). A conceptual framework for the current study showed the association of financial innovations on financial performance of SACCOs in Nairobi County and had been depicted in Figure 2.1 below which conceptualized that financial innovation (such as new products, new service processes and new organizational form) as an independent variable while financial performance (ascertained through profitability, capital adequacy and liquidity) as dependent variable. Firm characteristics (SACCO's size, SACCO's age and market share) as a moderating variable.

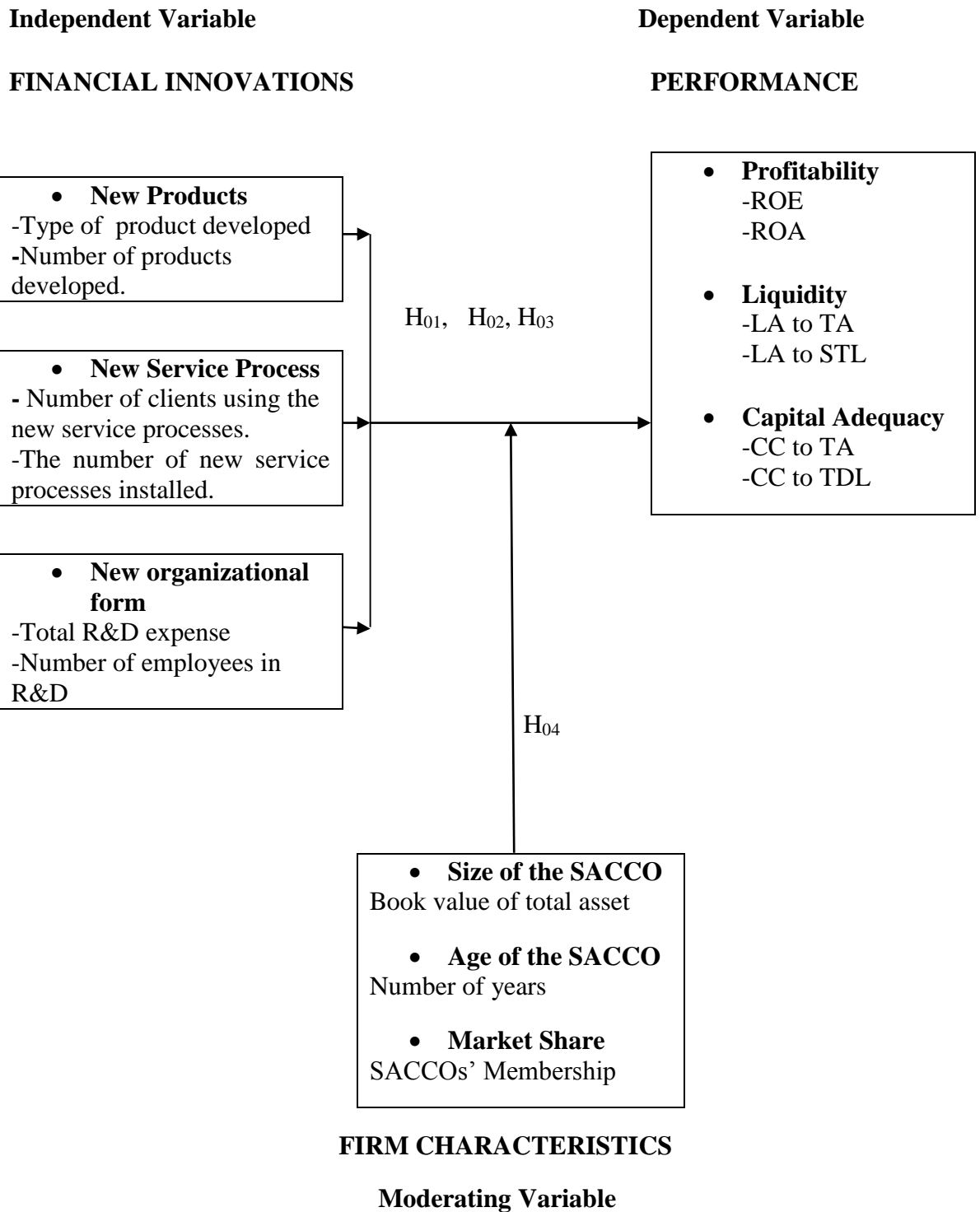


Figure 2.1: Conceptual Model
Source: Researcher, 2019

In view of the conceptual framework, financial performance was independently influenced by new products, new service processes and new organizational form (H₀₁, H₀₂, and H₀₃). Firm characteristics moderated the relationship between financial

innovations and performance (H₀₄). By embracing financial innovations by SACCOs, would enable them to address ever changing members' demand for prompt service delivery, new innovative products / services and improved service provision which would lead to improved performance due to repeat purchase by satisfied customers and would also act as reference for more membership. Firm characteristics such age, size and market share were linked to the firm's capacity to adopt innovation rapidly. This would enable them to keep a breast with new trends within the financial market with the major goal of increased profits and maximized shareholders' wealth.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the research methodology; it covered the target population of the study, the sample size, and sample design and technique. It also dealt with source and collection of data methods and procedures as well as data analysis. Mugenda and Mugenda (2003) concur that research methodology provides details regarding the procedures to be used in conducting the study.

3.2 Research Philosophy

Research philosophy relates to the development of knowledge and the nature of that knowledge contains important assumptions about the way in which people view the world including positivism, phenomenology (interpretivism), pragmatism, realism, idealism, rationalism, functionalism and objectivism amongst others (White, Woodfield & Ritchie, 2003). This study adopted positivism research philosophy. The focal point for positivism is on data gathered during direct observation experience. It is founded on ideals of reason, reality and authenticity and assessed empirically by quantitative methods and statistical analysis (Sarantakos, 2012). Positivist researchers deduce and formulate research through variables, hypotheses and operational definitions based on the existing theory (Ary *et al.*, 2013).

3.3 Research Design

Research design is a structure for carrying out an investigation. It focuses on the essential practices for gathering vital data to structure or unravel research problems (Malhotra, 2008). It also facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible, yielding maximal

information with minimal expenditure of effort, time and money (Kothari, 2004). The study adopted descriptive and explanatory research designs. A descriptive study was undertaken in order to ascertain and describe the characteristics of the variables of interest in a situation. Similarly, in descriptive research, the research variable is examined as it exists without investigator interference (Yin, 2008). The main objective of a descriptive study is to describe something in regard to who, what, where, when and how of a phenomena (Muijs, 2010).

Explanatory research design is also known as causal research design. It is conducted with the aim of identifying the extent and nature of cause and effect relationship (Kothari, 2004). Causal research focus on an analysis of a situation or a specific problem to explain the patterns of relationships between variables (Voss *et al.*, 2002). Hence, these designs were appropriate since the thrust of this study was to ascertain how financial innovations and firm characteristics influence financial performance of DTS in Nairobi City County.

3.4 Empirical Model

Multiple Regression Analysis (Standard) was used to analyze data for the purposes of hypotheses testing. Thus, the following Multiple Regression Analysis Function was formulated and utilized:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e \dots\dots\dots (i)$$

Where:

Y = Performance (Profitability, Liquidity and Capital Adequacy)

β_0 = Intercept

$\beta_1 - \beta_3 =$ Regression Coefficients

$X_1 =$ New Products

$X_2 =$ New Service Processes

$X_3 =$ New Organizational Form

$e =$ error term

The performance of the DTS was measured by computing profitability, capital adequacy and liquidity over a period of five years (2010 to 2014). The significance of the study hypotheses was examined by employing regression equations.

Objective 1: To determine the effect of new products on performance of deposit taking SACCOs in Nairobi City County, Kenya. The following multiple regression analysis equation was formulated.

$$Y_P = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad \text{Where: } Y_P = \text{Profitability}$$

Objective 2: To determine the effect of new service processes on the performance of deposit taking SACCOs in Nairobi City County, Kenya. The regression function was formulated as follows:

$$Y_L = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad \text{Where: } Y_L = \text{Liquidity}$$

Objective 3: To establish the effect of new organizational form on the performance of deposit taking SACCOs in Nairobi City County, Kenya. The following regression function was formulated.

$$Y_C = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad \text{Where: } Y_C = \text{Capital Adequacy}$$

Objective 4: To establish the moderating effect of firm characteristics on the relationship between financial innovations and performance of deposit taking SACCOs in Nairobi City County, Kenya.

Hierarchical Multiple Regression Analysis was employed to test for moderation. The following equation was subsequently formulated.

$$Y = \beta_0 + \beta_1X + \beta_2M + \beta_3X*M + e \dots\dots\dots (ii)$$

Where:

Y = Performance

β_0 = Intercept

$\beta_1 - \beta_3$ = Coefficients

X = Financial Innovations

M = Firm Characteristics

X*M = product of financial innovations and firm characteristics

e = error term

A composite index was computed for all the three dependent variables to capture performance of the deposit taking SACCOs as a 'single' variable.

The regression coefficient (β_3) provided an estimate of the moderation effect. When β_3 is greater zero, moderation is believed to be statistically significant on the relationship of X (independent variable) and Y (dependent variable). SPSS version 21 was used to analyze the quantitative data as well as to aid in the analysis of multiple regressions.

3.5 Operational and Measurement of Variables

Table 3.1: Operationalisation and Measurement of variables

Variable	Type	Operationalisation	Measurement
Financial Performance	Dependent	Profitability	<ul style="list-style-type: none"> • Return On Equity (ROE) • Return On Asset (ROA)
		Liquidity	<ul style="list-style-type: none"> • Liquid Asset (LA) to Total Asset (TA) • Liquid Asset (LA) to Short Term Liability (STL)
		Capital Adequacy	<ul style="list-style-type: none"> • Core Capital (CC) to Total Asset(TA) • Core Capital (CC) to Total Deposit Liability (TDL)
Financial Innovation	Independent	New products	<ul style="list-style-type: none"> • Type of new products developed. • Number of new products developed.
		New service processes	<ul style="list-style-type: none"> • Number of clients using new service processes. • The number of new service processes installed
		New organizational form	<ul style="list-style-type: none"> • Total R&D expense • Number of employees in R&D
Firm Characteristics	Moderating	Size of the SACCO	<ul style="list-style-type: none"> • Book value of the Total Assets
		Age of the SACCO	<ul style="list-style-type: none"> • Number of years the SACCO has been in operation
		Market Share	<ul style="list-style-type: none"> • SACCOs' Membership

Source: Researcher, 2019

3.6 Target Population

A population is a whole crowd of persons, events or items having universal features that conform to a given condition/ specification (Saunders, 2003). Kothari (2004) posits that a population is the entire objects in any field of inquiry, and recognized as the universe too. In this study, target population was two fold. Firstly, the target population

of firms was deposit taking SACCOs located in Nairobi City County, Kenya that were licensed by SASRA to operate between the years 2010 to 2014. In Nairobi City County, there were 36 registered DTS (SASRA, 2014) while the accessible population was 19 DTS that had been licensed by SASRA and in operation between 2010 to 2014.

The second category consisted of the target population of respondents that was; Finance Managers and Research & Development Managers of the licensed DTS located in Nairobi City County and licensed by SASRA. The justification for choosing senior management employees was that they were accountable for performance of their individual SACCOs, they were obligated to set policies that determine the financial innovations to be adopted by their firms and had the ability to measure the influence of innovation on financial performance. In addition, they were liable for overseeing performance of their departments during the departmental budgets and action strategy.

Table 3.2: Number of licensed DTS in Nairobi County from 2010 to 2014

Year	2010	2011	2012	2013	2014
Number	19	28	34	36	36

Source: SASRA, 2010 – 2014

Hence, the study target population was 19 DTS that had been in operation between 2010 to 2014 and licensed by SASRA since then.

3.7 Sample Design

Kothari (2004) contends that sample design involves the methodology implicated in selecting items to be observed and analyzed. The study employed purposive sampling to select respondents. In purposive sampling, the researchers exercise their decision to prefer a sample that they deem based on previous information, will present facts they

require (Ary *et al.*, 2013). The samples were selected on the basis of the knowledge, connection and judgment of the researcher in the financial industry. A sample of 76 respondents comprised of 4 respondents drawn from Finance department and Research & Development department.

3.8 Data Collection Procedure

Data collection is gathering empirical facts with the aim of acquiring novel insights concerning a condition and answers the questions that prompt undertaking of a researcher. Data can be collected using various techniques such as questionnaire, interviews, observations (Mugenda & Mugenda, 2003). The researcher used both primary and secondary data to achieve the study objectives. Primary data was collected by administering questionnaires to senior management employees and drop-and-pick later technique was employed. In order to facilitate the follow-up of the administered questionnaires, two research assistants were employed. While secondary data was obtained from DTS financial statements. The data was recorded consecutively in a data collection sheet to allow computation of profitability, capital adequacy and liquidity. This study used annual time series cross-sectional data on performance of all licensed DTS by SASRA for five years (2010 -2014).

3.9 Data Collection Instruments

Research instruments are measurement tools such as questionnaires or scale which are designed to obtain data on a topic of interest from research subjects (Mugenda & Mugenda, 2003). In this study, primary data was gathered by administering a structured questionnaire with open and closed-ended questions which were based on research question and objectives of the study. A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from

respondents (Oppenheim, 2000). Questionnaire is used to aid the researcher to gather large amount of data in large areas within a short time (Kothari, 2004). While secondary data was obtained from the DTS' financial statements and the data was recorded in data collection sheet.

3.10 Validity and Reliability of Study Instruments

3.10.1 Validity

The instruments were tested for validity and reliability using appropriate methods. Validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study (Mugenda & Mugenda, 2003). To ensure content validity, the data collection instrument was subjected to a pre-test e.g. pretested questionnaire with 2 non-deposit taking SACCOs to verify for any weaknesses in design and development of the questionnaire after which the final questionnaire was constructed. During pre-testing of instrument, the researcher is able to assess the clarity of the instrument, ease of use of the instrument and time to be used to administer the instrument (Brislin, 1986).

3.10.2 Reliability

Mugenda and Mugenda (2003) define reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. To ascertain the reliability of the research instruments, Cronbach's Alpha was adopted. Cronbach Alpha assesses the internal consistency by determining how a set of items are closely associated as a group. It also examines scale reliability of an instrument (Terwee *et al.*, 2007). For the purpose of reliability assessment in the study, the value of Alpha coefficient ($\alpha \geq 0.7$) was considered as satisfactory.

3.11 Data Analysis and Presentation

Data was analyzed with respect to the study objectives using both Multiple Regression Analysis (Standard) and Descriptive Statistics (Mean, Percentages and Standard deviations). The association between the variables is examined by making use of the correlation and multiple regression analysis (Cohen *et al.*, 2013). Correlation analysis was used to ascertain the nature and strength of relationship between Financial Innovations and Performance while Multiple Regression Analysis (Standard) was used to measure the effect of Financial Innovations on Performance. The qualitative data which was measured using the Likert Scale was employed to understand the association of every predictor variable with the dependent variable.

The regression analysis findings were presented in three tables; model summary, ANOVA and coefficient. Model summary table focused on the simple correlation (R) amid study variables with coefficient of determination. ANOVA table ascertained the significance of the model overall. The analysis of variance tables show how statistically significant the independent variables predict the dependent variables (O'brien, 2007). While from the coefficient table, regression coefficient results (beta coefficients) reveals results on the quality of the association between every independent variable and the dependent variable.

3.12 Preliminary Diagnostic Test

The study performed several preliminary tests as a precursor to Multiple Regression Analysis.

3.12.1 Normality

Normality test establishes how well a data set is modelled by a normal distribution (Doornik & Hansen, 2008). The goodness of fit of a normal model data is determined

in the descriptive statistic. Whereas judgement is made not on any underlying variable, the fit is regarded as poor if the data is not well modelled in that respect by normal distribution (Gelman *et al.*, 1996). Shapiro- Wilk test was adopted in this study. The null hypothesis of the population in test is assumed to be normally distributed. Hence, null hypothesis is rejected when p-value which is less than or equal to alpha level (0.05) and the data tested are regarded not from a normally distributed population (Jones & Kenward, 2014).

When a model has an evidence of non-normality, the cause should be determined and appropriate action taken. In the case of non- normality in the model, a dummy variable is to be created as a new variable (Pesaran & Pesaran, 2010). Dummy variable is used to mutually classify data into exceptional categories. In a regression model, dummy variables are proxy variables or numeric stand-ins for qualitative facts (Chepkoech, 2014). Dependent variables can be influenced by both quantitative and qualitative variables in regression analysis.

3.12.2 Multicollinearity

Multicollinearity occurs where independent variables have relationships for instance where two independent variables are closely linear related (Chin, 1998). Similarly, Cohen *et al.*, (2013) contend that multicollinearity is an incident where two or more predictor variables in a multiple regression model are highly correlated. Existence of severe multicollinearity is identified when the correlation coefficient is greater than 0.8. Variance inflation factor (VIF) was used to test for multicollinearity. VIF provides an index that measures how much the variance of an estimated regression coefficient is increased because of collinearity (O'brien, 2007). Large standard errors affect the precision of either to reject or failure to reject the null hypothesis.

Multicollinearity may be dealt with by dropping highly correlated predictors from the model; they supply redundant information thus have high VIF. A VIF between 5 to 10 indicates high correlation that might be problematic. Partial Least Squares regression (PLS) would be applied to cut the number of predictors to smaller set of uncorrelated components (Pérez-Enciso & Tenenhaus, 2003).

3.12.3 Heteroscedasticity

Heteroscedasticity is predicted when the variance of a variable observed in a given duration are not even (Box *et al*, 2011). In the occurrence of non-constant volatility; when future periods of high and low volatility cannot be identified hence conditional heteroscedasticity is used while unconditional heteroscedasticity is used in existence of constant volatility (Benz & Trück, 2009). Levene's test was employed to test homogeneity of variables. It is an inferential statistic that determines the quality of variances for a variable considered for two or more groups. It also assesses the population variances determine if they are equal. When significance level (0.05) is greater than the Levene's test p-value, the null hypothesis of equal variances is rejected and it is concluded that there is a difference between the variances in the population (Vogt & Johnson, 2011).

In cross-sectional data, it is alleged that heteroscedasticity is expected hence, for prudent data analysis, it is essential to employ a method that corrects heteroscedasticity (Long & Ervin, 1998). To reduce effects of heteroscedasticity on inference White's heteroscedasticity – consistent standard error estimator (WHCSE) was employed. This method corrects for heteroscedasticity without altering the values of the coefficients (Hayes & Li, 2007).

3.13 Ethical Considerations

Mugenda and Mugenda (2003), ethics is a branch of philosophy which deals with one's conduct and serves as a guide to one's behaviour. In case of ethical issues, awareness will protect the integrity of the researcher and also ensure honest results (Bond, 2004). Throughout this study, ethical issues were considered. A letter of consent was sent through hand delivery to the SACCOs' headquarters to request for participation of top management employees in the research. Once the permission was approved, the study topic was introduced to participants individually. At the same time, they were assured of their confidentiality and solicited their consent after their agreement. The questionnaire was very clear that participation was voluntary. The research was purely for academic purposes and that confidentiality of participants was 100 percent assured

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATIONS AND FINDINGS

4.1 Introduction

The chapter presents study findings and subsequent interpretations with regards to the effect of financial innovations on performance of deposit taking SACCOs in Nairobi City County, Kenya. Data was presented in figures and tables at the discretion of the researcher. The study tested reliability and also regression analysis results were provided. Consequently, interpretations of the findings are made in line with the objectives and interacting them with relevant literature.

4.2 Response Rate

In total, 76 questionnaires administered; 68 were filled and returned, constituting a response rate of 89% while 8 questionnaires were rejected and barred from further testing given that, they had numerous unanswered questions thus regarded as incomplete as indicated in the Table 4.1 below. Mugenda and Mugenda (2003) concur that a 50% response rate is adequate for analysis and reporting, 60% good and above, while 70% rated very well. Consequently, for the purpose of data analysis, 89% response rate was deliberated sufficient based on hold from related empirical evidence on SACCOs' performance.

Table 4.1: Response Rate

	Freq.	Percentage
Issued Questionnaires	76	100%
Completely Filled Questionnaires	68	89%
Not Filled Questionnaires	8	11%

Source: Research data, 2018

4.3 General Information

The study targeted 19 deposit taking SACCOs in Nairobi County. Out of the targeted 19 SACCOs only 17 responded to the study with 68 respondents participating in the study.

4.3.1 SACCO Ownership Category

The research sought to establish the ownership category that described the SACCOs. This is critical to determine the SACCOs' category that adopted and complied with SASRA's regulatory standards developed to enhance growth strategies including adoption of ICT in all their operations. The presentation of study findings are shown in Table 4.2 below.

Table 4.2: SACCO Ownership Category

Ownership Category	Freq	Percentage
Community based	4	24%
Farmers based	1	6%
Government based	8	47%
Private Institution based	3	18%
Teachers based	1	6%
Total	17	100%

Source: Research Data, 2018

The study wanted to determine the ownership category of the SACCOs where the data was collected. From the results in Table 4.2 above, it is revealed that majority of the SACCOs were government based constituted by 47% while the least were teachers and farmers based SACCOs represented by 6% each. The results indicated that all the SACCOs were represented in the study which is a significant aspect in the study.

The study sought to find out the departments that the respondents worked in the selected SACCOs. This is essential in that estimation and measurement of the influence of innovations on financial performance is done by different departmental managers who are also accountable for managing performance in their respective departments. The study results are presented in Table 4.3 below.

Table 4.3: Respondent Designation

Respondents' Designation	Freq.	Percentage
Finance	32	47%
Human Resource	2	3%
Marketing	19	28%
Others	3	4%
Research Development	12	18%
Total	68	100%

Source: Research Data, 2018

The findings as shown in Table 4.3 showed that 47% of the respondents were from the finance department, 28% were from marketing department, 18% were from research development while the least were from the Human resource department represented by 3%. This showed that senior management employees in different departments undertake critical managerial decision in relation to performance.

4.3.3 Branch Network

The profitability of firms is assumed to be correlated to expansion of market share thus, study sought to determine the number of branches the SACCOs had across the country. However, most companies gain increased market share to improve their profitability. The study findings are shown in Table 4.4 below.

Table 4.4: SACCO Branch Network

Number of Branches	Freq.	Percentage
5-10 branches	2	12%
Less than 5 branches	12	71%
More than 10 branches	3	18%
Total	17	100%

Source: Research Data, 2018

The findings in Table 4.4 showed that 71% of the SACCOs had less than 5 branches within the country, 12% had 5-10 branches while 18% had more than 10 branches across the country namely, Kenpipe, Mwalimu National and Asili. This indicated that SACCO subsector was acquiring members in many parts of the country hence the need to offer the members services within their locale.

4.3.4 Employment Status

The study sought to find out the number of employees the SACCOs had employed permanently. This is vital since it depicts major human resource indicators and the capacity of the organization to build and harness the potential of staff. Table 4.5 below presents the study results.

Table 4.5: Employment Status

Number of Permanently Employed	Freq.	Percentage
11-20	4	24%
21-30	5	29%
31-40	1	6%
Over 50	7	41%
Total	17	100%

Source: Research Data, 2018

The research findings in Table 4.5 indicated that 41% of the SACCOs had more than 50 permanently employed employees, 29% had 21-30, and 24% had 11-20 while 6% had 31-40 permanently employed employees. The study findings indicated that the SACCOs had been in operation for some time and thus they had the need of employing employees permanently.

4.3.5 Review of Financial Innovations' Strategies

SACCOs are constantly rebranding their products / services to meet ever-changing market demand hence, the research sought to assess how often the SACCOs reviewed their financial innovation strategies. Table 4.6 below captures the study results.

Table 4.6: Innovation Strategy Review Distribution

Review of financial innovation strategies	Freq.	Percentage
Half yearly	6	35%
Quarterly	2	12%
Yearly	9	53%
Total	17	100%

Source: Research Data, 2018

Study findings revealed that majority of the SACCOs reviewed their financial innovations strategies on annual basis represented by 53% while 35% viewed their innovations strategies twice a year and 12% reviewed their strategies quarterly. The study results indicated that majority of the SACCOs reviewed their financial innovations strategies at least once a year to keep abreast to ever-changing financial market demands. This finding concurs with those of Njeri (2013) and Nyathira (2012) who found that embracement of technology by SACCOs is becoming a strong trend that leads to financial benefits to the financial consumers.

4.3.6 Preferred Financial Innovations' Categories

The research sought to investigate the most preferred category of the financial innovation by the SACCOs. This is essential in that the ability of any organization to rapidly adapt to new technology enables it to stay a pace a head of competition. Table 4.7 below presents the result.

Table 4.7: Financial Innovations' Category Distribution

Preferred category of financial innovations	Freq.	Percentage
New products	13	76%
New service process	4	24%
Total	17	100%

Source: Research Data, 2018

Study findings as shown in the Table 4.7 above revealed that majority of the SACCOs preferred new products while the least preferred the new service processes as their financial innovation strategies. Further, the study sought to examine types of financial innovations that the SACCOs had undertaken over the period of 2010-2014. Significant majority of the SACCOs indicated that modified FOSA accounts and cheques were the key new product that had been developed while internet and mobile banking were the major new service process undertaken over that period. The study further revealed that the new organizational form that had been developed was website portal in the same period. The study findings established that the SACCOs had developed new products and new service processes as the main financial innovation strategies. Korir *et al.*, (2015), Nyathira (2012) and Makur (2014) found that majority of the financial institutions had focused on new service processes as the major innovation approach.

4.3.7 Customers Base on specified Financial Innovations

The development in financial sector within the economy has brought affirmative technological advancement on financial products and new payment systems tailored to meet demands of financial participants consequently, study sought to establish the number of customers who were using the specified financial innovations from the SACCOs. Presentation of study results is done in the Table 4.8 below.

Table 4.8: Number of Customer using the specified Financial Innovations

S/No.	Financial innovations	2010	2011	2012	2013	2014
A	Cheques	0	175	250	328	435
B	Debit & Credit cards	0	0	0	0	0
C	Modified FOSA accounts	1200	2400	4000	4835	7150
D	Internet banking	0	1700	2015	2516	4897
E	Mobile banking	1198	3256	4978	6874	9476
F	EFTs	0	21	136	214	428

Source: Research Data, 2018

The study results shown that majority of the SACCOs had a significant number of customers using cheques, modified FOSA accounts, internet banking, mobile banking and ETFs. The study showed that there were no customers using debit and credit cards. This result concurs with Njeri (2013) and Nyathira (2012) who contend that financial innovations has increased clients demand for new and more sophisticated innovation which ensure ease, safety and efficiency to them.

4.3.8 Installation of Automated Teller Machines

The study sought to determine the number of ATMs the SACCOs had installed. Table 4.9 below shows the study findings.

Table 4.9: Number of ATMs Installed

Year	2010	2011	2012	2013	2014
Number of ATMs installed	12	24	30	36	43

Source: Research Data, 2018

The study revealed that the SACCOs had installed 12 ATMs in 2010, 24 in 2011, 30 in 2012, 36 in and 43 in 2014. The findings implied that SACCOs sought to provide their financial services within their clients' locales to save their time and travelling hustles. This was made viable through partnering with cooperative banks which has branches all across the country and other ATM service providers including Pesa point and money link.

4.3.9 Profitability Status

The study sought to determine the company's annual profits. Profitability offers clues about the firm's success and the ability to expand its activity. Table 4.10 below captures the study results.

Table 4.10: Yearly Profits

SACCOs' Yearly Profit	Freq.	Percentage
6,000,000-6,999,000	1	6%
Above 7,000,000	16	94%
Total	17	100%

Source: Research Data, 2018

From the results above, the study indicated that 94% of the SACCOs had a yearly profit of more than 7 million because of financial innovation use while only 6% had an annual profit of 6-6.9million. The study findings indicated that majority of the SACCOs had already started reaping the benefits of financial innovations. This result concurs with Njeri (2013) who posited that financial institutions are fully embracing new

technologies that will reduce their cost of production, better satisfy customers and yield greater profits.

4.3.10 Period of Operation

Theoretically, age of a firm is argued to manipulate the composition of their business network accordingly; the research sought to investigate the period the SACCOs had operated in Kenya. The findings are indicated in Table 4.11 below.

Table 4.11: Duration of Operation

Duration of Operation	Freq.	Percentage
11-15 years	1	6%
16-20 years	6	35%
Over 20 years	10	59%
Total	17	100%

Source: Research Data, 2018

Study findings revealed that 59% of the SACCOs had operated business in the country for more than 20 years and 35% had operated for 16-20 years while only one had operated for 11-15 years. This indicated that majority of these SACCOs had been in operation for many years hence gained business networks in the country, benefit from status or goodwill, and had embraced various financial innovations to remain competitive within the market.

4.3.11 SACCO Size

It is believed that the size of a firm influences the altitude of the firm's performance hence, the study sought to establish the size of the SACCO in terms of Total Assets. The study results are indicated in Table 4.12 below.

Table 4.12: Size of SACCOs

Name	2010	2011	2012	2013	2014
COMOCO	520,221,821	520,221,821	526,354,722	578,342,069	664,074,037
SAFARICOM	956,999,606	956,999,606	1,064,033,766	153,197,310	2,207,420,812
UN SACCO	1,931,888,930	2,816,444,571	3,918,857,881	7,526,193,776	8,820,121,311
SHERIA SACCO	1,379,585,860	1,638,779,977	2,324,091,802	2,835,831,928	4,125,135,039
MWALIMU SACCO	19,104,255,837	19,104,255,837	22,007,934,926	24,540,360,726	aprx 20b
CHAI SACCO	110,090,103	1,214,334,580	13,080,070,001	1,533,892,016	1,981,027,625
JAMII SACCO	1,079,349,412	1,260,229,954	1,521,935,446	1,802,016,744	2,156,623,933
WANANDEGE SACCO	1,044,528,757	1,205,940,715	1,204,999,335	1,179,389,844	133,134,929
KENPIPE	73,828,773	1,118,261,972	1,267,536,296	1,461,652,953	1,633,335,742
MWITO SACCO	520,090,950	616,755,315	726,611,777	878,845,468	10,018,552,980
HARAMBEE	10,900,000	15,909,438,522	16,911,028,098	17,833,141,570	19,857,988,032
KENYA POLICE	6,427,563,418	7,722,609,795	9,053,850,313	12,691,033	11,522,841
ASILI	750,000,000	1B	1.35B	1.6B	7.2B
NACICO	2,343,434,525	2,343,434,525	2,364,652,350	2,150,267,592	2,474,217,185
KINGDOM SACCO	146,392,615	187,489,676	293,820,392	537,513,126	580,208,028
STIMA SACCO	6,283,238,958	7,632,596,170	9,483,743	1,240,789	16,334,491
NATION SACCO	10,900,000	6,971,144,172	739,255,893	925,307,025	1,087,732,498
Total	2,511,368,798	4,451,183,576	4,813,407,296	3,996,867,748	3,717,828,632

Source: Research Data, 2018

The results in Table 4.12 above indicate that majority of the SACCOs had a total asset of more than 2.5 billion during the period 2010-2014. This could imply a positive business growth thus the overall performance of the SACCOs. These findings concur with those of Malik (2011), Kaguri (2013) and Nguyen (2014) who found that size of the firm highly influenced its scope and network thus resulted to higher performance.

4.3.12 SACCOs' Market Share

The study sought to determine the market share of the SACCOs in terms of membership. This is important in that, it enables the firm to determine its market growth

and trends of customer's attraction. In the Figure 4.1 below, the study results are presented.

Results in Figure 4.1 below indicate that majority of the SACCOs had a significant membership. From the Figure 4.1 below, it is revealed that Harambee and Mwalimu National SACCOs had the highest market share compared to others. Kigen (2014) found that raise in the profitability of a long term insurance was caused by an increase in the market share. The finding implied that the propensity to gain a big market share is a major competitive tactics for survival within the market and growth expansion.

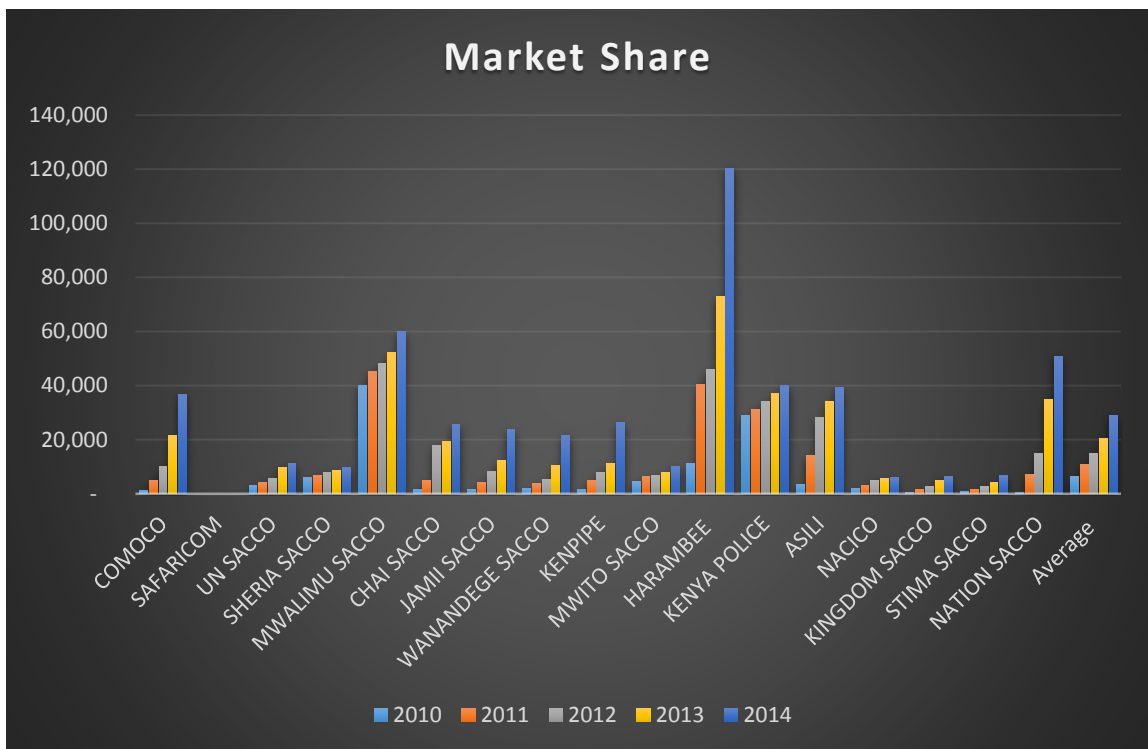


Figure 4.1: Market Share in terms of Membership

Source: Research Data, 2018

4.4 Descriptive Analysis

The summary statistics of the variables; the mean and standard deviation are presented in this section as used in the analysis.

4.4.1 Financial Innovations and Performance

The research sought to determine response rate to various aspects of financial innovations in the SACCOs. Table 4.13 below, represents the total figure for valid cases (N) and mean scores.

Table 4.13: Financial Innovations

Descriptive Statistics			
	N	Mean	Std. Deviation
Mobile banking has increased the customer base resulting to increased SACCO's membership and has minimal maintenance costs leading to elevated levels of profitability over their economic lifetime.	17	4.9364	.45681
Modifying and improving FOSA has attracted new customers and maintained the existing customers by meeting their market demands resulting to increased SACCO's asset quality management.	17	4.9156	.39754
Cheques have increased the customers' alternative demand for holding money leading to increased income to the SACCOs.	17	4.8235	.39295
Internet banking has increased the number of users due to reduction in service time hence resulting to increased SACCO's liquidity management.	17	4.8235	.52859
Investment in ATMs installation at different prime locations is backed by increased customer base and leads to SACCO's capital adequacy management.	17	4.7647	.56230
More customers have been attracted by ATM services for they can access their deposits with ease hence increase in SACCO's liquidity management.	17	4.7647	.43724
EFTs influence reduction of operational costs and hence better return on assets for the SACCOs	17	4.5882	.87026
Introduction of debit and credit cards has increased the number of customers resulting to a positive profitability to SACCOs annually.	17	4.1176	1.21873
Valid N (listwise)	17		

Source: Research Data, 2018

From Table 4.13 above, mobile banking emerged as the most important financial innovations adopted by majority of SACCOs since it scored high with mean of 4.936 compared to all the other financial innovations' factors though debit and credit cards had the highest standard deviation of 1.219. When the coefficient of variation is high, then it is assumed that variation between the real outcome and expected values are big.

The study findings were consistent to those of Njeri (2013), Korir *et al.*(2015), Tsuma *et al.*(2015) and Nyathira (2012) who found that financial innovations has ensured ease, efficiency and safety to clients increasing their demand for more effective payment systems.

The standard deviation is a measure of spread / dispersion of dataset from the mean. When the standard deviation is below 1.0, then the dispersion is close to the mean. From Table 4.13, the findings show that most of the respondents scored or ticked close to the mean with a standard deviation below 1.0 except for debit and credit cards that had a high standard deviation above 1.0 indicating that the respondents scored away from the mean. However, the general inference is that the data was normally distributed.

4.4.2 Effects of firm Characteristics on the Performance

The study wanted to determine the effects of firm characteristics on the performance of deposit taking SACCOs in Nairobi. Table 4.14 below presents the figure of valid cases (N), mean scores of every firm characteristics aspects and the dispersion of every aspect from the mean.

Table 4.14: Firm Characteristics

Descriptive Statistics			
	N	Mean	Std. Deviation
The age of a SACCO influences the composition of business network which in turn affects the SACCO's profitability.	17	4.8824	.48507
Gaining market share involves employing efficient marketing strategies by the firm to grow its customers' base hence resulting to higher return on asset.	17	4.8824	.48507
Most firms are increasing their market share with the main objective to improve their profitability	17	4.8824	.48507
The size of SACCO is related to the overall SACCO's profitability.	17	4.8824	.48507
The size of the firm affects the management and control of those firms which in turn affect the firm's performance.	17	4.6471	.86177
The age of SACCO has immense impact on the financial performance of SACCO.	17	4.5294	.87447
Valid N (listwise)	17		

Source: Research Data, 2018

The findings in Table 4.14 above, indicate that firm characteristic' factors; age of SACCO, market share and size of SACCO emerged as the most important firm characteristics that had effect on profitability with the highest mean of 4.882 as well as, the least coefficient of variation of 0.485 in comparison to their effect on other financial performance indicators. The study findings reveal that the dispersion of the dataset was close to the mean in that the standard deviation of the data was below 1.0 hence a normal distribution. This means that the firm characteristics significantly had apposite effect on the performance of deposit taking SACCOs in Nairobi. These findings concur with those of Kaguri (2013), Kigen (2014), Nguyen (2014) and Kisengo and Kombo (2014) who found that firm characteristics had significant influence on performance. However, the results were contrary to the finding of Malik (2011) who found an insignificant relationship between profitability and age of the company.

4.5 Diagnostic Tests

The section presents results on various preliminary tests that were carried out.

4.5.1 Reliability Test

Reliability test was done to establish if the instrument could measure consistently including the accuracy and precision of questions included in the questionnaire. In validation process, reliability test is generally considered as the initial action. During this process, the level to which the instrument is free from random errors is captured. Cronbach's Alpha is known for fine assessment of item homogeneity. Internal consistency is a crucial although not adequate condition for assessing homogeneity in a sample of experimental items. Table 4.15 below shows the results.

Table 4.15: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
.895	.917	8

Source: Research Data, 2018

From the Table 4.10 above, the results reveals that the 8 selected items have ($\alpha = 0.895$) which is high and considered good hence satisfactory for reliability assessment. When the value of Alpha is increased, the items in a test are considered correlated to each other. Where alpha coefficient ($\alpha \geq 0.9$) is regarded excellent, ($\alpha \geq 0.8$) is considered good, ($\alpha \geq 0.7$) is deemed suitable, whereas ($\alpha \geq 0.6$) the correlation is questionable. When ($\alpha = 0.5$) is considered poor while ($\alpha \leq 0.5$) is regarded undesirable.

4.5.2 Normality Test

Normality test carried out to establish whether the data was normally distributed. Considering that multiple regression analysis was employed as the prime data analysis method, thus, normality test in the data distribution was alleged to be relevant in this study. Table 4.16 below shows the results.

Table 4.16: Test for Normality

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Performance	.197	17	.112*	.939	17	.341
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Source: Research Data, 2018

Result in the Table 4.16 indicates that the data plotted was normally distributed with $p = 0.341$ ($.341 > 0.05$). Dytham (2011) posit that, from Shapiro-Wilk test, when ($p > 0.05$) the test is alleged to be non-significant thus, distribution of the sample is assumed to be a normal distribution. On the contrary, when ($p < 0.05$) the test is said to be significant hence, distribution is considered non-normal (Field, 2009).

4.5.3 Multicollinearity Test

Multicollinearity is the assessment of the relationship between independent variables in a study. The variables ought not to be extremely correlated in multiple regression analysis. In the occurrence where the variables are correlated, the correlation must not be perfect (Cohen *et al.*, 2013). Consequently, the study carried out a test for multicollinearity to find out if there was a problem of collinearity in the study. The study results are presented in the Table 4.17 below.

Table 4.17: Test for Multicollinearity

Coefficients										
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics		
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
1	(Constant)	-1.517	1.626		-.933	.362	-4.898	1.865		
	New Products	.721	.204	.571	3.535	.002	.297	1.145	.870	1.150
	New service process	.066	.311	.036	.213	.833	-.580	.713	.810	1.235
	New organizational form	.622	.269	.378	2.317	.031	.064	1.180	.853	1.172
	Firm characteristics	.106	.197	.085	.538	.596	-.303	.515	.909	1.100

a. Dependent Variable: Performance

Source: Research Data, 2018

From the Table 4.16 above, the tolerance values are greater than 0.1 and VIF range from 1.100 to 1.235 indicating very low correlation among the study variables. For tolerance, value less than 0.1 suggest multicollinearity while values of VIF that exceed 10 are often regarded as indicating multicollinearity. A VIF beyond 5 is an indication very high correlation thus, the researcher may consider dropping one of the variables (Kothari, 2010).

4.5.4 Homoscedasticity Test

To evaluate whether the collected data had errors with constant variance, Levene's test was employed. The test is aimed to investigate the null hypotheses that the population variances are equivalent. If the P-value of Levene's test is less than the significance level, then the null hypotheses of equal variance is not supported meaning that there is

a difference between the variances in the population (Erceg-Hurn & Mirosevich, 2008).

Table 4.18 below presents the study results.

Table 4.18: Homoscedasticity Test

Levene's Test of Equality of Error Variances^a			
Dependent Variable: financial performance			
F	df1	df2	Sig.
.	13	4	.
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + IV1 + IV2 + IV3 + IV2 * IV4			

Source: Research Data, 2018

From the Table 4.18 above, shows the Levene's test p-value of zero (p=0.000) which is smaller than significance level 0.05 implying that the null hypothesis of equal variances will be rejected and it is concluded that there is a difference between the variance in the study population.

4.6 Regression Analysis

The study sought to know the relationship between financial innovations and the performance of deposit taking SACCOs in Nairobi. Inferential statistics was done on the variables. Multiple linear regressions were done to obtain the R coefficient and R-square that determined the relationship. A summary of the results is presented below.

In the Table 4.19 below, the modelling of regression function was formulated by taking financial innovations' indicators as predictor variable and profitability as the dependent variable.

Table 4.19 Model Summary – Financial Innovations and Profitability

Model Fitness				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.642 ^a	.412	.276	.53104
a. Predictors: (Constant), New Products, New services process, New Organizational form				

Table 4.19 above, indicates that the success of the model in examining the significance of financial innovations on profitability of deposit taking SACCOs in Nairobi City County, Kenya. The Pearson’s correlation coefficient (R) of 0.642 indicates a fairly strong positive correlation between financial innovations and profitability. The coefficient of determination (R-Square of 0.412) indicates that financial innovations explain 41.2% of the variations in profitability of deposit taking SACCOs in Nairobi City County, Kenya.

Table 4.20 below presents results on the model overall in terms of significance.

Table 4.20 ANOVA- Financial Innovations and Profitability

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.569	3	.856	3.037	.067 ^b
	Residual	3.666	13	.282		
	Total	6.235	16			
a. Dependent Variable: Profitability						
b. Predictors: (Constant), New Organizational form, New Products, New services process						

The results in Table 4.20 above, model overall does not seem to be a good fit since $p > 0.05$ ($p = 0.067$). Hence, we fail to reject the null hypothesis of the study and find that financial innovations collectively are not a good measure of profitability of DTS in Nairobi City County, Kenya.

The regression coefficients in Table 4.21 below indicate the significance of each financial innovation's indicators on profitability.

Table 4.21 Coefficient - Financial Innovations and Profitability

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.257	1.285		.978	.346	-1.520	4.033
	New Products	.320	.164	.449	1.947	.073	-.035	.675
	New services process	.452	.289	.383	1.563	.142	-.173	1.076
	New Organizational form	-.074	.215	-.084	-.343	.737	-.538	.390

a. Dependent Variable: Profitability

$\alpha = 0.05$

The Table 4.21 above, the results indicates new products ($\beta=0.320$, $p=0.073$), new service processes ($\beta=0.452$, $p=0.142$) and new organizational form ($\beta= -0.074$, $p=0.737$) and profitability do not seem to be statistically significant. With model overall being not statistically significant, the regression function is hereby not formulated.

Regression of coefficients results in Table 4.21 above indicate that new products and profitability are positively and insignificantly related ($\beta=0.320$, $p=0.073$). This indicates that new products is statistically insignificant at 0.05. Hence, new products seem not have effect on profitability of SACCOs. The result however, is contrary to Korir, *et al.*, (2015) who studied the effects of the three financial innovations in banking sector on financial performance and found that the innovations had significant effect on the ROE.

The result in the table above, indicates that new service processes and profitability are positively and insignificantly related ($\beta=0.452$, $p=0.142$). This is an indication that new service processes do not have effect on profitability of SACCOs at 0.05. However, the finding was in contrary to Njeri (2013) who investigated the effects of the financial innovations on ROA of deposit taking SACCOs and Nyathira (2012) who equally found that financial innovation resulted to positive influence on financial performance of commercial banks.

It was further indicate that new organizational form and profitability are negatively and insignificantly related ($\beta= -0.074$, $p=0.737$). This indicates that new organizational form is statistically insignificant at 0.05 thus seems not to have effect on profitability of SACCOs. Conversely, the finding was in contrary to Tsuma *et al.*, (2015) who determined the effects of new organizational processes (automation and computerization) on ROA and dividend per share of SACCOs. Nyathira (2012) found that financial innovation in payment system resulted to positive influence on financial performance of commercial banks.

The Table 4.22 below, modelling of regression function involved by taking financial innovations as predictor variables and liquidity as dependent variable.

Table 4.22 Model Summary - Financial Innovations and Liquidity

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.740 ^a	.548	.540	.02668
a. Predictors: (Constant), New Organizational form, New Products, New services process				

Table 4.22 above presents the success of the model in determining financial innovations' influence on liquidity of DTS in Nairobi City County, Kenya. The

Pearsons correlation coefficient (R) of 0.740 indicates a strong positive correlation between financial innovations and liquidity. The coefficient of determination (R-Square) indicates that financial innovations collectively explain 54.8% of the variations in liquidity of DTS in Nairobi City County, Kenya.

Table 4.23 below presents results on the model overall in terms of significance.

Table 4.23 ANOVA- Financial Innovations and Liquidity

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.369	3	1.123	18.221	.000 ^b
	Residual	0.789	13	0.061		
	Total	4.158	16			
a. Dependent Variable: Liquidity						
b. Predictors: (Constant), New Organizational form, New Products, New services process						

From Table 4.23 above, the finding reveals that model overall is a good fit. Since $p < 0.05$ ($p = 0.000$), model overall is regarded to be statistically significant. Consequently, we reject the null hypothesis of the study and find that financial innovations collectively are a good measure of liquidity of DTS in Nairobi City County, Kenya.

The regression coefficients in Table 4.24 below indicate the significance of each financial innovation's indicators on liquidity.

Table 4.24 Coefficient - Financial Innovations and Liquidity

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.167	.982		3.224	.007	1.045	5.289
	New Products	.039	.005	.482	2.062	.000	.302	.896
	New services process	.014	.005	1.037	2.857	.011	.015	.529
	New Organizational form	.128	.230	.278	.557	.050	.086	.425

a. Dependent Variable: Liquidity

$\alpha = 0.05$

The regression model below is formulated as captured below:

$$Y_L = 3.167 + .039X_1 + .014X_2 + .128X_3$$

Where:

Y_L = Liquidity

X_1 = New products

X_2 = New service processes

X_3 = New organizational form

From results in Table 4.24 indicates that new products and liquidity are positively and significantly related ($\beta=0.039$, $p=0.000$). This indicates that a unit increase in new products, leads to an increase in liquidity by 0.039 units. The table further indicates that new service processes and liquidity are positively and significantly related ($\beta=0.014$, $p=0.011$). This indicates that a unit increase in new service processes, leads to an increase in liquidity by 0.014 units. While new organizational form and liquidity are

equally positively and significantly correlated ($\beta=0.128$, $p=0.050$). This indicates that a unit increase in new organizational form, lead to an increase in liquidity by 0.128 units.

The finding above conforms to general literature reviewed that liquidity can be influenced by the short-term businesses, maturity pattern of customer loans and investment portfolios which could be more liquid than those secured by real estate (Eljelly, 2004). Omino (2014) equally affirmed that liquidity is more important because it has to do with the immediate survival of the company. Similarly, Rajan (2005) contends that liquidity is the top priority of the management to ensure availability of the sufficient funds to meet future demands of the providers and borrowers at a reasonable cost.

The regression equation above, implied that embracing of new products, new service processes and new organizational form by DTS at 95% confidence interval all Else held constant, liquidity of the SACCO's would rise by 3.167. A unit increase in new products would raise liquidity by factors of 0.039; an increase of new service processes by a unit would raise liquidity by factors of 0.014, and an increase of a unit in adoption of new organizational form would lead to an increase in liquidity of the SACCO by a factor of 0.128.

From Table 4.25 below, the modelling of regression function was formulated by taking financial innovations as predictor variable and capital adequacy as dependent variable.

Table 4.25 Model of Summary - Financial Innovations and Capital Adequacy

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.898 ^a	.807	.763	.24830
a. Predictors: (Constant), New Organizational form, New Products, New services process				

Table 4.25 above indicates the success of the model in examining the effect of financial innovations on capital adequacy of deposit taking SACCOs in Nairobi City County, Kenya. The Pearson's correlation coefficient (R) of 0.898 indicates a strong positive correlation between financial innovations and capital adequacy. The coefficient of determination (R-Square) indicates that financial innovations collectively explain 80.7% of the variations in capital adequacy of DTS in Nairobi City County, Kenya.

Table 4.26 below presents results on the model overall in terms of significance.

Table 4.26 ANOVA- Financial Innovations and Capital Adequacy

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.352	3	1.117	18.124	.000 ^b
	Residual	.801	13	.062		
	Total	4.154	16			
a. Dependent Variable: Capital adequacy						
b. Predictors: (Constant), New Organizational form, New Products, New services process						

In Table 4.26 above, the model overall presents a good fit with $p < 0.05$ ($p = 0.000$) hence an indication that the model overall is a good fit. The finding above indicates that financial innovations have a significant effect on capital adequacy of DTS in Nairobi City County, Kenya.

The regression coefficients in Table 4.27 below indicate the significance of each financial innovation's indicators on capital adequacy.

Table 4.27 Coefficient - Financial Innovations and Capital Adequacy

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.540	.601		.899	.385	-.758	1.839
	New Products	.250	.077	.430	3.258	.006	.084	.417
	New services process	.554	.135	.575	4.099	.001	.262	.846
	New Organizational form	.099	.100	.138	.982	.344	-.118	.316

a. Dependent Variable: Capital adequacy

$\alpha = 0.05$

The regression model below is formulated as captured below:

$$Y_{CA} = .540 + .250X_1 + .554X_2$$

Where:

Y_{CA} = Capital Adequacy

X_1 = New products

X_2 = New service processes

The results from Table 4.27 above shows that new products and capital adequacy are positively and significantly related ($\beta=0.250$, $p=0.006$). This is an indication that a unit increase in new products, leads to an increase in capital adequacy by 0.250 units. Further, the results indicate that new service processes and capital adequacy are positively and significantly related ($\beta=0.554$, $p=0.001$). This is an indication that a unit increase in new service processes, leads to an increase in capital adequacy by 0.554

units. These findings are consistent with Rajan (2005) that innovative firms could more easily attract venture capital. More capital tends to absorb adverse shocks and thus reduces the likelihood of failure.

The table further revealed that new organizational form and capital adequacy are positively and insignificantly related ($\beta=0.099$, $p=0.344$). This indicates that new organizational form is statistically insignificant thus; it does not have any effect on the capital adequacy of the SACCOs. This finding contradicts Nguyen (2014) who posited that firms benefit from higher performance through development of organizational advancement.

The regression equation above, indicated that embracing of new products, new service processes and new organizational form by DTS at 95% confidence interval all else held constant, capital adequacy of the SACCO's would rise by 0.540 units. An increase of new products by a unit would raise capital adequacy by factors of 0.250 and an increase of new service processes by a unit would raise capital adequacy of SACCOs by factors of 0.554.

The study also sought to establish whether firm characteristics have a significant moderating influence on the relationship between financial innovations and performance. The SPSS hierarchical test for moderation was used to test the moderation of firm characteristics on the financial innovations-performance relationship. From Table 4.28 below, the final output is modelled by taking financial innovations as the predictor variable (in model 1) then financial innovations (new products, new service processes and new organizational form) while in model 2, firm characteristics are entered as independent variables, financial innovations entered as the control variable while performance taken as the dependent variable.

Table 4.28 Moderating Effect of Firm Characteristics on the relationship between Financial Innovations and Performance

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.244 ^a	.060	-.003	.44362	.060	.949	1	15	.345
2	.871 ^b	.758	.723	.23301	.698	40.370	1	14	.000
a. Predictors: (Constant), Financial Innovations									
b. Predictors: (Constant), Financial Innovations, Firm Characteristics									

Table 4.28 above, the results shows some quantum variation in R^2 (R^2 change= 0.698) by introducing firm characteristics into the model upon controlling financial innovations. The output indicates a very strong moderation between financial innovations (composite) and performance (composite) when the moderating effect of firm characteristics is introduced hence enhancing the R^2 change from 0.060 to 0.698 while only 72.3% of performance is explained by financial innovations. The change statistic for F ($p=0.000$) is smaller than the significance level of 0.05 hence indicating a statistical significance moderation effect of firm characteristics on the relationship between financial innovations and performance.

The regression coefficients in Table 4.29 below indicate the significance of firm characteristics on financial innovations' indicators and performance.

Table 4.29 Coefficient – Moderating Effect of Firm Characteristics on the relationship between Financial Innovations and Performance

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.184	.444		7.179	.000	2.239	4.129
	Financial Innovations	.338	.097	.667	3.465	.003	.130	.545
2	(Constant)	1.154	.541		2.064	.041	-.006	2.315
	Financial Innovations	.081	.046	.161	.641	.023	-.104	.267
	Firm Characteristics	.664	.148	.764	4.473	.001	.345	.982

a. Dependent Variable: Financial performance

$\alpha = 0.05$

The regression model below is formulated as captured below:

$$Y = 1.154 + .081X + .664M + .541$$

Where:

Y = Performance

X = Financial Innovations

M = Firm Characteristics

The results from Table 4.29 above shows that firm characteristics positively and significantly moderated the relationship between financial innovations and performance ($\beta=1.154$, $p=0.041$). This is an indication that a unit increase in firm characteristics, leads to an increase in moderating effect in financial innovations-performance relationship by 1.154 units.

The study finding is consistent with the empirical studies done by Kaguri (2013), Kigen (2014), Nguyen (2014), and Kisengo and Kombo (2014) who established a positive correlation between firm characteristics and performance. The studies therefore suggested that for general and long term companies to increase their profitability, those companies should employ activities which will lead to increased market share. However, this finding was in contrary to empirical findings of Malik (2011) who sought to investigate the firm specific's effect on profitability. The study revealed an insignificant association of company's age and profitability. Though, Ericson and Pakes (1995) contended that older firms may benefit from status or goodwill effects giving them upper hand to earn greater margins on sales.

The above findings indicate that adoption of new products has led to increased revenues and profits to DTS in Nairobi City County. The findings on test for moderation effects are in line with the authenticity of campaigns carried out by DTS in encouraging their clients to use cheques in conducting transactions and continuous improvement of existing FOSA accounts to suite the ever-changing market demands. Use of cheques by customers generates more returns for the DTS. Similarly, these moderation findings are consistent with the tendency that DTS in Kenya are engaging in partnerships with commercial banks to advance their revenues both directly or indirectly by relating ATM services and EFT within the country hence many SACCOs are attracted to develop such partnerships. Through offering money transfers services by SACCOs, their profitability has continually elevated.

The findings above are also in line with great SACCOs' use of mobile phones and internet services in marketing their numerous deposit products / services as a competitive gain to generate sophisticated value for their clients within the country

which is associated to SACCOs' size and market share. To update their clients on deposit offerings, many DTS send emails and messages through mobile phones. These DTS have also displayed their various deposit products / services in their websites, giving detailed benefits and interest rates linked with every product / service. Due to considerable cost reduction over time on internet charges, it has emerged as cost efficient service delivery channel.

4.7 Summary of Key Findings and Discussion

The study was based on four assumptions that DTS performance is not affected significantly with new products, new service processes, new organizational form and firm characteristics moderating the relationship. To investigate inference of the study hypotheses, regression equations were employed. Consequently, the study results are presented in this section focusing on the following study specific objectives:

4.7.1 H₀₁- New products do not have a significant effect on performance of deposit taking SACCOs in Nairobi City County, Kenya.

The rejection and acceptance criteria for null hypotheses were when p-value is 0.05 or greater, the H₀₁ is accepted however, if p-value is less than 0.05, the H₀₁ is rejected. In view of the first study objective, the null hypothesis (H₀₁) that new products do not have a significant effect on performance of DTS in Nairobi City County was tested. The results from Tables 4.21, 4.24 and 4.27 indicate that p-values of new products were $0.073 > 0.05$, $0.000 < 0.05$, $0.006 < 0.05$ in profitability, liquidity and capital adequacy respectively. This indicates that there is statistical significant relationship of new products with liquidity and capital adequacy. Hence, the null hypothesis that new products do not have a significant effect on performance of DTS was rejected at the significance level of 0.05.

This finding concurs with Kemp *et al.*, (2003) who contend that successful new products result to increased income. The study revealed that majority of DTS preferred new products as financial innovation strategy. This indicated that most DTS indulged in adopting new products to satisfy ever-changing customers' needs as well as to remain competitive within the market to boost their revenues. Eluinn (2000) also affirmed that successful new products are viewed as engines of a firm's growth.

4.7.2 H₀₂- New service processes do not have a significant effect on performance of deposit taking SACCOs in Nairobi City County, Kenya.

The rejection and acceptance criteria for null hypotheses were when p-value is 0.05 or greater, the H₀₂ is accepted however, if p-value is less than 0.05, the H₀₂ is rejected. In view of the second objective, the null hypothesis (H₀₂) that new service processes do not have a significant effect on performance of DTS was tested. The results from Tables 4.21, 4.24 and 4.27 indicates that p-values of new service processes were $0.142 > 0.05$, $0.011 < 0.05$, $0.001 < 0.05$ in profitability, liquidity and capital adequacy respectively. This implies that there is statistical significant relationship of new service processes with liquidity and capital adequacy. Thus, the null hypothesis that new service processes do not have a significant effect on performance of DTS was rejected at the significance level of 0.05.

This finding is consistent with empirical findings by Njeri (2013), Nyathira (2012) and Tsuma *et al.*, (2015) who found that most SACCOs and commercial banks have adopted financial innovation as a technique of rising efficiency and advance performance. These innovations have integrated immense branch network expansion, advancement of unique products that serve definite customers and automation of banking services that

have enabled customers to carry out banking transactions outside the confine of the banking premises, either on their phone or over the internet.

4.7.3 H₀₃- New organizational form does not have a significant effect on performance of deposit taking SACCOs in Nairobi City County, Kenya.

The rejection and acceptance criteria for null hypotheses were when p-value is 0.05 or greater, the H₀₃ is accepted however, if p-value is less than 0.05, the H₀₃ is rejected.

The null hypothesis (H₀₃) that new organizational form does not have a significant effect on performance of DTS in Nairobi City County was tested in view of the third study objective. The study finding revealed in Tables 4.21, 4.24 and 4.27 indicates that p-values of new organizational form were $0.737 > 0.05$, $0.050 \leq 0.05$, $0.344 > 0.05$ in profitability, liquidity and capital adequacy respectively. This indicates that the relationship of new organizational form with profitability and capital adequacy is not statistically significant. Thus, the null hypothesis that new organizational form does not have a significant effect on performance of DTS failed to be rejected at the significance level of 0.05.

This study finding was in consistent with Koller *et al.* (2010) who posited that organizational innovation grant employees' immense possibility to participate greatly in the daily planning and organization of production in traditions that create their job seriously fascinating and satisfying. Zim *et al.* (2013) concurs that the changes offer business with ways to function more flexible towards improvement of productivity, product quality and reliability. This implies that new organizational form is a cushion to the financial strength and stability of SACCOs.

4.7.4 H₀₄- Firm characteristics do not have a significant moderating effect on the relationship between financial innovations and performance of deposit taking SACCOs in Nairobi City County, Kenya.

The rejection and acceptance criteria were when p-value is 0.05 or greater, the H₀₄ is accepted but if it's less than 0.05, the H₀₄ is rejected. In view of the fourth study objective, hierarchical multiple regression analysis was carried out to test the fourth null hypothesis (H₀₄). In Table 4.28, the output indicates a very strong moderation between financial innovations (composite) and performance (composite) when the moderating effect of firm characteristics is introduced hence enhancing the R-value from .060 to 0.698. The change statistic for F (p=0.000) is smaller than the significance level of 0.05 hence indicating that the change is statistically significant. Equally, the results from Tables 4.29 indicates that p-values of firm characteristics is 0.014 > 0.05 in the financial innovations–performance relationship. Consequently, the null hypothesis that firm characteristics do not have a significant moderating effect on the relationship between financial innovations and performance of DTS was rejected at the significance level of 0.05.

The study finding concurs with the studies done by Kaguri (2013), Kigen (2014), Nguyen (2014), and Kisengo and Kombo (2014) who established positive correlation between firm characteristics and performance. Nevertheless, the finding was in contrary to empirical findings of Malik (2011) who examined the firm specific's effect on profitability. The study had shown an insignificant association of company's age and profitability.

The research findings also conforms with general literature reviewed that the potential benefits of financial innovations that mount up to the financial structure that comprise increased customer base, reduced costs of financial intermediation and maintenances,

sensitivity to consumer desires arbitrage potential and wider access to credit. The manipulation of financial innovation on performance of an organization can be generally assessed as positive; however, the consequences differ depending on the trade line of every organization. In service companies, where competitors are capable to emulate array of services offered moderately easy, the innovations have almost instant effect which is limited within a short period.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

5.1 Introduction

The chapter presents a summary of the entire study with explicit focus on the statement of the problem, study objectives, methodology used and findings. It also documents conclusions derived from empirical results on every specific objective and highlights policy recommendations resulting from conclusions made. Finally, the chapter briefly documents limitations encountered and areas for further study arising out of gaps that were outcomes of the study efforts.

5.2 Summary of the Study

The vision 2030 of attaining high economic growth of 10% to be achieved by SACCO industry, high level of investments are required and increase in the national savings is therefore paramount. To achieve this, SASRA developed regulatory and surveillance structures to permit efficient operation of its legal mandate, as well as, to review SACCOs' ITC infrastructure to increase essential ability to conform to the regulatory requirements. The first transition period ended in 2014 recording a rapid growth in 2013 by DTS with total asset increasing by 16.6%. However, financial performance varies among these SACCOs thus raising great concern of what could be affecting the performance of these SACCOs? Consequently, a study on financial innovations on performance of DTS is required to elucidate the question.

To address this research problem, general objective was formulated to determine the effect of financial innovations on performance of DTS in Nairobi City County, Kenya. The study employed positivism research philosophy which takes a controlled and

structural approach in conducting research as well as descriptive and explanatory research designs to ascertain and describe the study variable, and to identify the extent and nature of cause and effect relationship. Purposive sampling technique was employed and data collected was analyzed with respect to the study specific objectives using both descriptive and inferential statistics. Multiple regression analysis was used to establish the association that exists between financial innovations (independent variable) and performance (dependent variable) while hierarchical multiple regression analysis to examine the moderating effect of firm characteristics in the study.

The study results from regression analysis were presented in three tables mainly: Model Summary, ANOVA and Coefficient. From the model summary table, the major focus is on Pearson's correlation (R) between the study variables and the Coefficient of determination (R^2). While the Coefficient of determination (R^2) depicts how much variation in the dependent variable is explained by the independent variable and it also presents the standard error. In the interpretations of study results, rule of thumb for simple regression analysis was observed.

From the ANOVA table, the study ascertains the significance of the model overall; regression functions were modelled only if the model overall was significant. As of the Coefficients table, results of the regression coefficients (beta coefficients) provide results on the nature of relationship between each predictor variable and the dependent variable; the beta values provide information on the significance of each of the predictors in explaining variations in the dependent variable. A positive beta sign mean a positive relationship between the independent variable and the dependent variable; a negative beta sign mean a negative relationship between the independent variable and the dependent variable.

The study findings were in line with the four research hypotheses and the study objectives. Both multiple regression analysis (standard) and hierarchical multiple regression analysis were employed to test all the four hypotheses at a significance level of 0.05. The test of hypotheses H_{01} and H_{02} found that both new products and new services processes had significant effect on performance of DTS. Similarly, the test of hypothesis H_{04} established that firm characteristics had significant effect on the relationship between financial innovations and performance of DTS. On the other hand, test of H_{03} found an insignificant effect of new organizational form on performance of DTS in Nairobi City County, Kenya.

5.3 Conclusion of the Study

The study makes several conclusions based on the findings in line with research objectives and hypotheses. In view of the test of first hypothesis, new products have significant effect on performance of SACCOs. This finding is consistent with other empirical studies hence concludes that, new products have a positive effect on the performance of DTS in Nairobi City County, Kenya. It further concludes that majority of SACCOs prefer to embrace new products as financial innovation strategy with the aim of remaining competitive in the market and increasing the market share thus resulting to increased revenues and profits.

The test of second hypothesis indicates that new service processes have significant effect on the performance of DTS which was also supported by the local studies. Thus, the study concludes that new service processes have positive influence on performance of DTS in Nairobi City County, Kenya. The study also concluded that adoption of new service processes by DTS have led to high level of sophisticated novel payment patterns

and asset alternatives to holding money, reduction in service time and reduction of operational costs resulting to increased income to the SACCOs.

In view of the third hypothesis, the test found that new organizational form has a statistical insignificant influence on performance of DTS. This study therefore concludes that new organizational form does not seem to have a major effect on performance of DTS in Nairobi City County, Kenya. It further concludes that new organizational form does not directly influence the performance of DTS but are novel practices that cushion the financial strength and stability of SACCOs.

The test of the fourth hypothesis indicates that firm characteristics have a moderating effect on the relationship between financial innovations and performance of DTS. This result was supported by empirical studies done locally within the country. This study concludes that firm characteristics have a positive influence on the relationship between financial innovations and performance. The study also concludes that firm characteristics are a fundamental aspect towards the improvement of DTS' performance in Nairobi City County, Kenya.

Lastly, from the study findings, profitability is the only measure of performance that was singly not influenced when testing for the first, second and third hypotheses (H_{01} , H_{02} , H_{03}) which was in contrary to empirical evidences. With the model overall for financial innovations- profitability being not statistically significant though a fairly strong positive correlation on the variables, the study concludes that there could be other factors outside the scope of this study that could be having a significant influence on the profitability of DTS in Nairobi City County, Kenya.

5.4 Recommendations of the Study

This study therefore concluded that financial innovations influenced performance of SACCOs in Nairobi City County while firm characteristics positively moderated the association of financial innovations with performance. Thus, this study recommends adoption of financial innovations strategies by various SACCOs operating in Kenya so as to enhance efficiency in all areas of operations, boost profitability and expand their market share focusing on firm characteristics as an additional advantage. Consequently, management of SACCOs should embrace research and development to foresee new and innovative ideas to boost their performance.

The regulator and advisory body (SASRA) ought to develop effective regulatory and surveillance structures that will ensure adoption of financial innovation strategies by various DTS focusing on their firm characteristics to boost their efficiency and performance. The study has scholarly findings on the association of financial innovations, firm characteristics with performance of DTS in Nairobi City County. Thus, academicians should obtain potential information on the study area. Lastly, the study findings should also be used by other researchers as a source of reference to for further research on the same area or different service sector with the same objectives to bridge the knowledge gap in financial innovations.

5.5 Limitations of the Study

This study encountered some limitations which are noteworthy. To begin with, there was challenge in accessing some respondents and firms. The researcher was denied access to gather study information by the management of one SACCO that felt the information about their institution was too sensitive to be disclosed to a third party though the researcher clarified the intention of the research and assured them of

confidentiality. Unfortunately, out of the 76 questionnaires administered, 8 were not completely filled and were rejected. This may have been that some respondents did not feel comfortable providing answers that present themselves in an unfavourable manner. However, the 68 completed questionnaires constituting a response rate of 89% were considered ample for the purposes of data analysis.

This study focused on SACCOs' head offices (leaving out the branches). Such branches may have great experience and knowledge on the research topic due to their size and geographical locations hence, limiting the results of the study. However, the head offices had reliable information and data of all branches, and possessed great knowledge on the study area thus, believed as a true representation of all the branches.

The study also relied on secondary data from SACCOs' financial reports and SASRA publications, nonetheless, it may have been prone to shortcomings such as the reliability and the information used may perhaps not be of quite high quality. Given that some errors associated with secondary data may go undetected. Though, the data was cleared and audited for accuracy.

5.6 Contribution to Knowledge

The study builds on to corporate finance theory on how financial innovations explain performance of deposit taking SACCOs in Nairobi City County, Kenya as well as the moderating role of firm characteristics. The findings of this study will form a basis of conducting future research where knowledge gaps were identified. The presence of moderating effect by firm characteristics is a clear indication that there could be different features that could moderate the relationship between financial innovations and performance. Recommendations derived from the findings of this study can be further subjected to empirical investigations to reinforce the findings.

5.7 Areas for Further Research

From the research effort, the study gaps acknowledged propose various bases for other empirical investigations. Firstly, from the regression coefficient results in Table 4.21, financial innovations is not statistically significant to profitability as a determinant of performance despite the moderately strong correlation that has been shown between the variables while some empirical studies from the Kenyan SACCO market recognized positive influence of financial innovations on these determinants in the country thus, giving a base for further enquiry.

Lastly, firm characteristics have positively moderated the relationship between financial innovations and performance in this study giving a clue that there may be other factors or firm characteristics' indicators (a part from age, size and market share) that may moderate the relationship between financial innovations and performance. Therefore, a study should be carried out to investigate other factors that may also moderate financial innovations-performance relationship.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Date
To: Chief Executive Officer
Name of the SACCO
P.O. Box
NAIROBI

Dear Sir / Madam,

RE: REQUEST FOR DATA FOR RESEARCH PURPOSES.

I am MSc (Finance) candidate at the Kenyatta University, in the School of Business, Department of Accounting and Finance. As part of the requirement for the award of the degree, I am expected to undertake a research study and I am seeking for your participation. The title of my study is **Financial Innovations and Performance of Deposit Taking SACCOs in Nairobi City County, Kenya.**

Embracement of innovation into service industries is becoming a strong trend as service providers empower in financial technology to advance their performance and to remain competitive within their markets. The purpose of the study is to determine the effect of financial innovations and firm characteristics on financial performance of DTS in Nairobi City County, Kenya.

The attached questionnaire will take approximately twenty minutes to complete. Kindly answer all the questions as completely as possible. The research results will be used for academic purposes only and will be treated with utmost confidentiality. Only summary results will be made public. Should you require the summary of study findings, kindly indicate so at the end of the questionnaire. Your co-operation will be appreciated.

Yours faithfully,

Amabel Ouma
Reg. No. D58/CTY/PT/27368/2014
amabel.ouma@gmail.com

APPENDIX II: QUESTIONNAIRE

This questionnaire is designed to collect data from top management employees of DTS which are registered with SASRA. This academic research is part of the effort to contribute to the study of financial innovation, firm characteristics and financial performance of DTS in Nairobi City County, Kenya. If you have reservations about a statement, please circle or put a tick to the response that most clearly approximates your feeling. The data and research findings provided will be solely used for academic purposes only and will be treated with strict confidence.

Thank you.

SECTION A: GENERAL INFORMATION

1. Which category best describes your SACCO?

Government based () Teachers based () Farmers based ()
Private Institution based () Community based () Others (please specify).....

2. Which department do you belong?

Executive () Finance () Marketing ()
Human Resource () Research & Development () Others (please specify)

3. How many branches does your SACCO have within the country?

Less than 5 branches () 5-10 branches () More than 10 branches ()

4. How many employees are permanently employed in your SACCO?

Up to 10 () 11-20 () 21-30 () 31-40 () 41-50 () Over 50 ()

SECTION B: FINANCIAL INNOVATION

Please indicate with a tick (✓) the extent to which your firm focuses on the following:

5. How often does your firm review its financial innovation strategies?

Quarterly () Half yearly () Yearly ()
Others (please specify).....

6. Which is the most preferred category of financial innovation by your firm?

New products () New service process () New organizational form ()

Others (please specify).....

7. Kindly indicate the types of financial innovation that your SACCO has undertaken over the period 2010 to 2014.

(a) New Product

.....

(b) New Service Process

.....

(c) New Organizational Form

.....

8. Kindly indicate (on average) the number of customers using the following financial innovation in your firm over the period 2010 - 2014.

	Financial innovation	2010	2011	2012	2013	2014
A	Cheques					
B	Debit & Credit cards					
C	Modified FOSA accounts					
D	Internet banking					
E	Mobile banking					
F	EFTs					

9. Kindly indicate the number of ATMs your firm has installed over the period 2010 - 2014.

Year	2010	2011	2012	2013	2014
Number of ATMs installed					

10. On average, what is your company's yearly profit (in Kenya shillings) as a result of your firm's financial innovation?

Below 5,000,000 () 5,000,000- 5,999,000 () 6,000,000- 6,999,000 ()
 Above 7,000,000 ()

Kindly indicate to what extent do you agree with the following statements on various innovations and its effects on the SACCO's performance on a scale of 1-5, (where 1- Strongly agree, 2- Agree, 3- Neutral, 4- Disagree, 5- Strongly disagree). Please tick as appropriate in the boxes using a tick (√).

	Statements	1	2	3	4	5
11	Cheques have increased the customers' alternative demand for holding money leading to increased income to the SACCOs.					
12	Introduction of debit and credit cards has increased the number of customers hence contributing positively to Sacco's annual profitability.					
13	Modifying and improving FOSA has attracted new customers and maintained the existing customers by meeting their market demands resulting to increased SACCO's asset quality management.					
14	Internet banking has increased the number of users due to reduction in service time hence resulting to increased SACCO's liquidity management.					
15	Mobile banking has increased the customer base resulting to increased SACCO's membership and enjoying high levels of profitability due to low maintenance costs over their economic lifetime.					
16	EFTs influence reduction of operational costs and hence better return on assets for the SACCOs					
17	More customers have been attracted by ATM services for they can access their deposits with ease hence increase in SACCO's liquidity management.					
18	Investment in ATMs installation at different prime locations is backed by increased customer base and leads to SACCO's capital adequacy management.					

SECTION C: FIRM CHARACTERISTICS

19. For how long has your SACCO operated in Kenya?

Less than 6 years () 6-10 years () 11-15 years () 16-20 years ()
Over 20 years ()

20. What is the size of your SACCO in terms total assets over the period 2010 – 2014?

Year	2010	2011	2012	2013	2014
Amount (Kshs)					

21. What is the market share of your SACCO in terms SACCO's membership over the period 2010 – 2014?

Year	2010	2011	2012	2013	2014
Amount (Kshs)					

This section has statements regarding the effect of size of the Sacco, age of the Sacco and market share on financial performance. Kindly respond with the response that matches your opinion on a scale of 1-5, (**where 1- Strongly agree, 2- Agree, 3- Neutral, 4- Disagree, 5- Strongly disagree**). Please tick as appropriate in the boxes using a tick (√).

	Statements	1	2	3	4	5
22	The size of SACCO is related to the overall SACCO's profitability.					
23	The size of the firm affects the management and control of those firms which in turn affect the firm's performance.					
24	Most firms are increasing their market share with the main objective to improve their profitability					
25	Gaining market share involves employing efficient marketing strategies by the firm to grow its customers' base hence resulting to higher return on asset.					
26	The age of a SACCO influences the composition of business network which in turn affects the SACCO's profitability.					
27	The age of SACCO has an impact on the financial performance of SACCO.					

Thank you for your participation!

APPENDIX III: DATA COLLECTION SHEET

Enter the annual data under the financial performance parameters and firm characteristics indicators provided in the form bellow and to enable calculation of profitability, asset quality, liquidity and capital adequacy for every panel of all licensed DTS by SASRA since 2010-2014.

Year	NI	SE	TA	AE	CC	LA	STL	TDL
2010								
2011								
2012								
2013								
2014								

Source: Researcher, 2018

Key:

Net Income (NI)

Shareholder's Equity (SE)

Total Assets (TA)

Annual Earnings (AE)


Core Capital (CC)

Liquid Asset (LA)

Short Term Liability (STL)

Total Deposit Liability (TDL)

APPENDIX IV: Research Authorization by NACOSTI


**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

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0713 788787, 0735404245
Fax: +254-20-318245, 318249
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Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref No. **NACOSTI/P/17/85101/19748** Date: **3rd November, 2017**

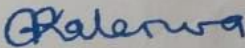
Amabel Amondi Ouma
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “*Financial innovations and performance of deposit taking SACCOs in Nairobi City County, Kenya*” I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **3rd November, 2018**.

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.


GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

National Commission for Science, Technology and Innovation (ISO9001:2008 Certified)

APPENDIX V: Research Permit by NACOSTI

THIS IS TO CERTIFY THAT:
MISS. AMABEL AMONDI OUMA
of **KENYATTA UNIVERSITY, 609-40300**
Homa Bay, has been permitted to
conduct research in *Nairobi County*

Permit No : NACOSTI/P/17/85101/19748
Date Of Issue : 3rd November, 2017
Fee Received :Ksh 1000

on the topic: **FINANCIAL INNOVATIONS
AND PERFORMANCE OF DEPOSIT
TAKING SACCOS IN NAIROBI CITY
COUNTY, KENYA**

for the period ending:
3rd November, 2018





Applicant's
Signature



Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
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