

**THE EFFECT OF ICT ADOPTION ON THE FINANCIAL PERFORMANCE OF
SAVINGS AND CREDIT CO-OPERATIVE SOCIETIES IN NAIROBI COUNTY**

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DECLARATION

I declare that this project is my original work and has not been submitted for academic purposes in this or any other University.

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

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DEDICATION

This research project is dedicated to my beloved wife Poline Wawira, my two sons Stanley Jeremmy Keah, Ian Benjamin Kiggira and my lovely daughter Abigael Mkambe for their love and moral support and also to my dear parents for the sacrifices they made in educating me.

ABSTRACT

SACCOs like other financial institutions have continued to grow their asset base and are coming up with more innovative products to meet their customers' demands. However, the level of their performance has been antecedent on the efficiency with which they provide their financial services to the customers which has made ICT adoption quintessential. The objective of the study is to establish the effect of ICT adoption, size and product diversification on the financial performance of SACCOs.

Descriptive research design was used targeting both deposit and non-deposit taking SACCOs in Nairobi County which were 45 and 1000 respectively. Purposive sampling technique was used in selecting 40 SACCOs and secondary data collected from their financial statements. Descriptive and inferential analysis techniques were used involving mean, standard deviation, median, minimum and maximum values. Inferential analysis through multiple linear regression analysis was also conducted.

The results indicate that an increase in ICT adoption leads to an increase in SACCOs financial performance. Adoption of ICT results to the improvement in payments, processing or reduction in service time due to the new ways to deliver financial services electronically to customers. Besides, Size of the SACCOs has 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. Increase in the growth of SACCOs assets increase their profitability. However, regulatory restrictions and requirements hinder the effect of ICT adoption on performance. SACCO assets provide collateral which enable them borrow funds from commercial banks to lend to its members. The result also revealed the joint effect of size and product diversification on financial performance.

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ABBREVIATIONS AND ACRONMYS

ATM	Automated Teller Machine
BOSA	Back Office Services Activity
FOSA	Front Office Services Activity
ICT	Information and Communication Technology
IMF	International Monetary Fund
KUSCCO	Kenya Union of Savings and Credit Co-operatives
SACCO	Savings and Credit Co-operative Society
SAP	Structural Adjustment Programme
SASRA	SACCO Society Regulatory Authority
WB	World Bank
WOCCU	World Council of Credit Union

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Eljelly (2004) defines profitability as the potential of a venture to be financially successful. Although it may be found that, one factor or a set of factors are not successful, abandoning the venture may not be the optimal solution. Profitability is considered to be the main objective of all business organization regardless of their sizes and aims at maximizing the shareholders wealth. Unless an organization operates as non-profit making, all other sectors would thrive to ensure that they generate enough revenue that would be able to meet the costs incurred and eventually make profits. The profits made could either be capitalized, kept as retained earnings or can be shared to members in form interest or dividends. In the SACCO sub-sector, members can have withdrawable or non-withdrawable deposits that would earn interest or can have share capital that would earn dividends at the end of the financial year. These would only be declared if profits are realized through the operations.

In the past, SACCOs perceived the sub-sector as closed and the market seemed isolated from other financial institutions and did not consider competition. In fact, SACCOs only operated on a common bond plat form. They operated in a more or less equilibrium state with supply and demand for their products and membership being more or less. As a result, today's environment is very different. Managers have been forced to view the sub-

sector as an open market where organizations buy and sell around and hence must compete so as to drive profitability.

There are several ways of measuring the profitability of a business. Some would look at the financial statements and compare the revenues generated against expenses incurred. The excess would attribute to profitability whereas if the revenues are less compared to expenses then this would be a loss to the business. With profitability of the business, then there would be an increase in asset base of the business. Widely used measures of a firm's size are total assets and equity.

Hirtle (2007) used total value of loans, total value of deposits and total assets as measures of institution size. Since a big component of the total assets of credit unions are in form of loans, the study will focus on total assets as obtained from annual financial statements of SACCOs as a measure of size. Hirtle (2007) defines branch network size as the number of full service; permanent branches held by the organization including both stand-alone and in store branches. Most SACCOs do not have extensive full service branches and therefore the study will not focus on branch network as a key consideration in assessing size.

SACCOs being financial institutions that are operated with an aim of making profits so that they give returns to their members, have to look at the factors that would enhance profitability. In this study, the factors that were looked at include, adoption of an ICT system, the size of the SACCO in terms of total assets and the products being offered.

Since the study will compare deposit taking SACCOs against non-deposit taking SACCOs the three factors were compared putting into consideration from the time when deposit taking SACCOs were licensed by SASRA. Most deposit taking SACCOs have adopted ICT systems, their asset base have tremendously grown and have innovated new products due to the FOSA's that they are operating. Majority of the non-deposit taking SACCOs have not adopted soft wares tailored specifically for SACCO operations, their asset base has not grown and have limited products.

Today, Information and Communication Technology (ICT) as an excellent prospect of technology plays a vital role in efficiency resulting in profitability of SACCOs through components such as cost reduction, cheaper distribution channels, and reduction in supply time, good customer services, production innovation, entering new markets, and increase in market share. Due to broad and deep ICT impact on global market and according to the importance of monetary and credit transactions in every economic and commercial activity, it requires that the tools and infrastructure of money and exchange are synchronized and be consistent with the growth of information technology.

With growth of membership which resulted in increased size of SACCOs, the needs of members also increased and required diversification of products. Several products had to be innovated to meet the demands of the clients. Most of the new products innovated by the SACCOs were meant to counter the opportunity created by the commercial banks. Members started operating accounts, including savings, current and even fixed deposits accounts. Other products like cheque clearance, salary processing, ATM services, salary

advances among others added to the pool of products available for members. We can therefore conclude that, some of the factors that improve on profitability include, adoption of ICT, the size of the SACCO and the number of products offered.

1.1.1 Size, ICT and Product Diversification

According to Bugamelli and Pagano (2004), the delay as of 1997 was not so much due to a production specialization skewed toward more traditional sectors (which tend to invest less in ICT) as much as to the scarcity of qualified workers and the high costs associated with implementation, especially as regards reorganizing business activities. Schivardi and Trento (2005) came to similar conclusions when they examined firm-level data for 2001, noting that the size of a firm as well as the availability of qualified personnel were determining factors in the decision to adopt ICT. Local presence of big businesses also tended to have a favorable impact on the likelihood of ICT investments, possibly because coordination between firms, favored by the presence of a “big player”, can help overcome investment hesitations during a changing phase of the technological paradigm.

Bugamelli and Pagano (2004) explains that a productive system based primarily on small and medium sized firms is not able to stay abreast of the uses of ICT because of reasons that are varied and interconnected. Given their specificity, these technologies are capable of changing a firm’s internal organization. Empirical studies focusing on US and Italy show how production gains were superior for those firms that adopted ICT and at the same time, changed their internal organizations, reducing the number of hierarchy levels and moving toward more horizontal structures Bugamelli and Pagano (2004). This would

suggest that the potential for organizational improvements is higher in more organizationally complex firms that, thanks to ICT, can efficiently reduce their scale.

It again looked at large sized firms that typically have a high level of standardization to start with. Smaller firms, instead, can still count on the use of “informal” exchanges rather than standardized procedures. Diversifying into related product markets produces higher returns than diversifying into unrelated product markets, and less diversified firms have been argued to perform better than highly diversified firms (Rumelt, 1982). Some claim that the economies in integrating operations and core skills obtained in related diversification outweigh the costs of internal capital markets and the smaller variances in sales revenues generated by unrelated diversification. While they agreed that related diversification is better than unrelated diversification.

Roberts (2006) clarified that it is the insight and the vision of the top managers in choosing the right strategy rather than diversification per se, that is the key to successful diversification. Accordingly, it is not product-market diversity, but the strategic logic that managers use, that links firm diversification to performance, which implies that diversified firms without such logic may not perform as well. However, others argue that it is not management conduct so much, but industry structure, which governs firm performance.

1.1.2 Profitability

Lazaridis and Tryfonidis (2006) looks at profitability in many different ways based on its measurement. They state that statistically significant relationship between profitability,

measured through gross operating profit, and the cash conversion cycle and its components (accounts receivables, accounts payables, and inventory). They suggested that managers can create profits for their companies by correctly handling the cash conversion cycle and by keeping each component of the conversion cycle (accounts receivables, accounts payables, and inventory) at an optimal level. Afeef (2011) analyzed the impact of working capital management on the profitability of small and medium companies in Pakistan. Profitability was measured by the return on assets (ROA) calculated basing on earnings before interest and taxes to total assets, and the operating profit to sales. Working capital was represented in that study by current ratio and cash conversion cycle. Cash conversion cycle was used for measuring the efficiency of working capital management.

An efficient management of working capital does have a substantial impact on the profitability of small and medium-sized companies listed at Karachi Stock Exchange. The weak but significant relationship was found between the inventory conversion period and the operating profit to sales and a highly significant negative relationship was found between the receivable collection period and the operating profit on sales Afeef (2011). The payable deferral period and cash conversion cycle had no significant link with the profitability variable. No relationship was found between working capital indicators and ROA.

1.1.3 Effect of Size, ICT and Product Diversification on Profitability

The relationship between Firm size and profitability is well documented. Tornatzky and Fleischer, (1990) show that in 1987, the gross output per employee in U.S. manufacturing plants with 0-9 employees was 62 per cent of that of all manufacturing plants, while the gross output per employee in plants with 500 or more employees was 126 per cent of that of all manufacturing plants. Evidence for Canadian manufacturing suggests a similar or even stronger relationship than in the United States. Shipments per employee in plants with 100 or fewer employees is 62 per cent of the industry average, while shipments per employee in plants with more than 500 employees is 165 per cent that of the industry average.

The importance of firm size for aggregate profitability levels and growth has not been widely studied. Research using longitudinal micro data has tended to focus on decomposing changes in aggregate profitability into parts due to within-firm growth, reallocation across surviving firms and the contributions of entry and exit. To emphasize the role of size, each component of firm decomposition could be further split by firm size. Although many studies abound on the diversification-performance relationship (Juhakam, 2003) and why firms diversify or refuse to diversify.

Choi and Russel (2004) found that the profitability growth rate of undiversified firms was lower than that of diversified firms. In contrast, Ofori and Chan (2000) found that undiversified firms have performed better by remaining focused despite the perceived risks and uncertainties resulting from inherent fluctuations. Furthermore, Teo and

Runeson (2001) found that substantial proportions of firms are not prepared for diversification; rather, they elect to operate in one market only despite the advantages of diversification.

A review of the empirical literature from finance broadly reveals that the empirical evidence is inconclusive; models, perspectives and results differ based on the disciplinary perspective chosen by the researcher; and the relationship between product diversification and profitability is complex and is affected by intervening and contingent variables such as related versus unrelated diversification, the type of relatedness, the capability of top managers, size of the firm and the mode of diversification Pandya and Rao (1998).

Markides (1992) indicates that synergy theories suggest that a firm may achieve benefits from low to moderate levels of diversification through the sharing of activities or leveraging of competencies among its business units up to a point and then would be faced with higher marginal costs with respect to the increased marginal benefits.

1.1.4 The Savings and Credit Co-operative Societies (SACCO) in Kenya

The SACCO sub-sector is part of the larger co-operative movement in Kenya. The two broad categories of co-operative societies are; Financial Co-operatives which are referred to as SACCO and the non-financial co-operatives which include farm produce and other commodities, marketing, housing, transport and investment co-operatives.

A SACCO is a member owned financial institution which is democratically controlled by its members and operate on the purpose of promoting thrift, providing credit and other

financial services to its members (MacPherson, 1999). As Fountain (2007) points out, members having a common bond: they are either working for the same employer, or belong to the same church, labor union, social fraternity or are living or working in the same community. Membership is open to all who belong to the group and agree to save their money together and to give loans to each other at reasonable rates of interest.

According to WOCCU (2012), there were 52,945 SACCO's in 100 countries around the world in 2012 which collectively served 188 million members and over saw US \$1.5 trillion in assets. Kenya today has 6,750 registered SACCO's which continue to play a key role in the development of our economy through the provision of financial access to many citizens who remain unbanked. As at December 2012, the total SACCO sub-sector assets stood at Kes. 293 billion, with a membership of 3 million people and total deposits of Kes. 213 billion and loans to members at Kes. 221 billion (SASRA, 2012).

Currently this sub-sector has mobilized domestic savings to a tune of Kes. 400 billion, that is 33% of the national savings and in fact, it is currently the leading source of the co-operative credit for socio-economic development in Kenya and contributes immensely to the mobilization of savings. As a result, co-operatives are now playing an important role in the achievement of Kenya Vision 2030 and Millennium development Goals.

Before 1990, most organizations including the financial institutions were under the government where there was control in terms of operations and rules of entry, thus enjoying monopoly of trade. Between 1989 and 1992, the Kenyan government was compelled by the International Monetary Fund (IMF) and the World Bank (WB) through the Structural Adjustment Programme (SAP) to introduce liberalization which opened the

economy. All organizations, whether large, medium, small or micro enterprises including SACCOs began to feel the effects of this. Most of the banks reviewed their conditions and as a result, increased their minimum operating deposits for their account holders. This drove off most of the customers who were unable to operate bank accounts. This created an opportunity for SACCOs to open Front Office Services Activity (FOSA), the banking arm of SACCOs, which contribute immensely to the profitability of SACCOs.

1.2 Research Problem

SACCOs like other financial institutions are today making huge profits. They have continued to grow their asset base and have come up with more innovative products so as to meet the demands of their customers. With the introduction of the regulator (SASRA) who would look at the deposit taking SACCOs, most of them have recorded higher profits due to good governance and using the prudential standards. This study would therefore compare the profitability of the deposit taking SACCOs which operate FOSA's and the non-deposit taking SACCOs. The model that was used in this study will give an estimation of the profitability of SACCOs looking at three factors namely; adoption of an ICT system, size of the SACCO in terms of total assets and products offered. The three factors greatly contribute to increase in revenue of the SACCO. Efficiency being increased by adoption of an ICT system, number of members contributing deposits increased and hence increase in total assets. Member deposits can be used by the SACCO in its operations and the number of products definitely increases the number of transactions resulting to increased revenue.

With the introduction of ICT, it is evident that, efficiency was harnessed, and SACCOs were able to record higher profits. Just like other financial institutions, SACCOs have embraced technology so that they are abreast with others. According to the Principal Secretary, Dr. Wilson Songa, the Ministry of Industrialization & Enterprise Development, which is the mother Ministry of SACCOs is developing an automated performance tracking system to help monitor the implementation of its projects and programmes. The system which is ICT based, is expected to turn around the way of doing business in the Ministry which will be able to identify grey areas where implementation of operations is dragging, the reasons and those responsible. The ICT systems that SACCOs are using have enabled them operate at levels where, management reports can be produced when needed unlike when processes were manual. A good ICT system would instantly generate a report that can be used in decision making.

To cater for the diverse needs of these members, more innovative products had to be introduced to ensure that, they meet their expectations. The deposit taking SACCOs therefore have to operate like other financial institutions. Products like salary processing, salary advances, savings accounts, current accounts, fixed deposit accounts, cheque clearance services, ATM services, Bankers cheques among others had to be introduced to add onto the already existing products. Past researchers focused on the factors affecting operations in SACCOs on management, governance and professionalism.

Kamwere (2013) looked at the Challenges of Strategy Implementation at Kimisitu SACCO Society Ltd. Jamhuri (2012) did a research on Marketing Strategies Adopted by

Deposit Taking SACCOs in Kenya. Olunja (2013) researched on the Adoption of Marketing Concept and Growth of Savings and Credit Co-operative Societies (SACCOs) in Kenya. Biomndo (2012) studied management of Strategic Change in Deposit Taking Savings & Credit Co-operatives in Kenya. Kilonzi (2012) conducted a study on the Impact of SACCO Societies Regulatory Authority (SASRA) Regulations on the Financial Performance of SACCOs in Kenya. Mathenge (2008) looked at the responses of Afya Co-operative Society Ltd to Non-Performing Loans. Mbai (2007) concentrated on Competitive Strategies Adopted by Mwalimu SACCO Society Ltd as a result of external environmental changes since 1997. A research done by Wambua (2012) mainly focused on the Strategy Implementation in Balozi SACCO Society Ltd while Wamalwa (2012) focussed on the Effect of Regulation on Financial Performance of Savings and Credit Co-operative Societies offering Front Office Services Activities (FOSA) in Kenya. Kimotho (2013), researched on Strategic Change Management Practises Adopted by Savings and Credit Co-operative Societies in the Public Sector in Kenya.

Other studies done include, Ayuya (2013), on Challenges of Strategy Implementation in SACCOs in Nairobi County. Munga (2013), Challenges of Strategy implementation faces by SACCOs Society Regulatory Authority (SASRA). In this study, a research was done on SACCOs in Nairobi County, both licensed deposit taking and non-deposit taking SACCOs. This study will therefore form a springboard for other studies because it will provide information that is specific to SACCOs in Kenya. It will therefore produce knowledge that is hitherto been unavailable. The research questions are: How does ICT adoption influence profitability of SACCO Society in Nairobi County? How does size

affect profitability of SACCO's in Nairobi County? How does product diversification affect profitability of SACCO Society in Nairobi County?

1.3 Research Objective

The general objective of this study is to establish the effect of ICT adoption on the financial performance of both deposit and non-deposit taking SACCOs in Nairobi County.

The study specific objectives were:

- i. To determine the effect of ICT adoption on the financial performance of both deposit and non-deposit taking SACCOs in Nairobi County.
- ii. To evaluate the effect of SACCOs' size on the financial performance of both deposit and non-deposit taking SACCOs in Nairobi County.
- iii. To establish the effect of SACCOs' product diversification on the financial performance of both deposit and non-deposit taking SACCOs in Nairobi County.

1.4 Value of the Study

Lessons learnt from this study as well as the recommendations for the future will help the SACCOs management to understand the strategic and tactical ways of dealing with challenges in the adoption and implementation ICT systems which will finally boost organization success, profitability and market potential. The study will also show how the size of the SACCO and products offered contribute to profitability. The study will also provide the background information to research organizations and scholars who will want

to carry out further research in this area. The study will also facilitate individual researchers to identify gaps in the current research in this area.

The study will enhance the researchers' professional knowledge and assist him acquire skills that will enable him give ideas and practical ways of enhancing profitability in the competitive sub sector. Through this study, facts were discussed and results provided. Conclusion was drawn and recommendations made that will assist other SACCOs. The study will also provide results that can have significant impact of improved profitability and create more excellent opportunities that can be adopted by other institutions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will review the literature relevant to the study. SACCOs offer financial services to individual members and not groups or companies. Since Kenya aspires to become an industrialized nation by 2030 (Vision 2030), the financial market is critical in attainment of this objective. Some sectors of this market like SACCOs are extremely vibrant and if fully harnessed, can be crucial in accelerating economic development. Issues on the different theories on this study will also be critically reviewed.

2.2 Theoretical Review

The theoretical framework of a project research relate to the philosophical basis on which the research takes and will form the link between the theoretical aspects and the practical components of the investigation being undertaken. The theoretical framework therefore “has the implication of every decision being made in the research” (Mertens, 1998).

The theoretical framework helps to make logical sense of the relationship of the variables and factors that have been deemed important. It provides definitions of the relationships between all the variables so that the theorized relationship between them can be understood. The theoretical framework will therefore guide the research determining which factors to be measured and what statistical research will look for.

2.2.1 Adoption Theories for Information and Communication Technology

There are many theories used in information system research (Wade, 2009). The most used theories are the technology acceptance model (Davis, 1986; Davis, 1989; and Davis et al., 1989), theory of planned behaviour (Ajzen, 1985 and Ajzen, 1991), Unified theory of acceptance and use of technology (Venkatesh et al., 2003), DOI (Rogers, 1995) and the TOE framework (Tornatzky and Fleischer 1990). The Diffusion of Innovation and Technology Organization, and Environment framework are the theories that deal with firms.

Diffusion and Innovation is a theory of how, why and what rate new ideas and technology spread through cultures, operating at the individual firm level. Rogers (2003) stated that the innovation diffusion of new technology has situational or environmental factors that impact the adoption. The innovation diffusion theory (Rogers, 1995), has been extensively used in studying technology adoption and implementation as well as in the identification of the factors that facilitate or inhibit technology adoption and implementation (Grover and Goslar, 1993; Rangathan et al., 2004). The factors that affect information technology adoption and the external environment of the firm and the internal organizational environment.

2.2.2 Theory of Cost Reduction

Miller and Merton (1986) Cost reduction is however, a dynamic exercise, an all-out effort to reduce cost from whatever level they are. Nothing is assumed as “standard”, nor is anything accepted as “ideal”. Every element of cost is scrutinized, every operation is screened and every procedure is analyzed to identify the ways and means of reducing

costs. Further, cost reduction is not a “one-time” exercise. It is an attitude of mind, a habit, a philosophy. The approach for reduced cost must originate from the conviction of the need for it. Genuine cost reduction is essentially a function of cost consciousness on the part of persons involved and a cost reduction plan imposed upon without proper understanding among the employee will die a natural death without yielding any permanent contribution. Described equity swamps as an efficiency delivery method for multination’s investors.

Juhakam (2003) describe the theory of cost reduction as a driver for financial innovation. There are many examples of this such as reduction from improvement in payments, processing or reduction resulting from new ways to deliver financial services electronically to customers however, regulatory restriction and requirements are also a cost and some innovations are aimed at avoiding or reducing cost.

2.2.3 Organizational Theory

The theory explains the effect of firm size and age on firm performance. Baumunn and Kaenn (2003) came up with organizational theory to explain firm size in relation to profitability. The theory explains the relationship with organizational transaction costs, agency costs and span of control costs. Dean *et al.*, (1998) observed that a firm’s size is related to financial performance due to industry sunk costs, concentration, vertical integration and the overall industry profitability.

According to Daft (1995) large sized firms have multi-layer levels of management, specialized skill and functions and more department. Management control is highly

centralized making large sized firms to be highly bureaucratic than small size firms. The large firms easily miss out on profitable opportunities. Organizational theories like Meyer and Tucker (1989); Miller and Chen (1994); Aldrich and Austen (1986) attribute firms' size and age to inertia. Inertia is an inadequate or slow adaptation to change or resistance to fundamental changes in conduction business which may cause the firm to miss profitable opportunities.

Penrose (1959) observed that large firms generate superior performance due to their diversified capabilities and ability to exploit economies of scale fully. They have a formalized procedure of conducting business and this makes implementation of operations more effective. Leibensten (1976) and Stephard (1986) held different views, they argued that the size of the firm is correlated to market power which leads markets power inefficiencies thus leading to inferior performance.

2.3 Determinants of Profitability

Fadzlan and Chong (2008) examined the determinants of Philippines banks profitability during the period 1990–2005. Their empirical findings suggest that all the bank-specific determinant variables have a statistically significantly impact on bank profitability. They also found that size, credit risk, and expense preference behaviour are negatively related to banks' profitability, while non-interest income and capitalization have a positive impact.

According to their analysis inflation has a negative impact on bank profitability, while the impact of economic growth, money supply, and stock market capitalization have not significantly explained the variations in the profitability of the Philippines banks.

Rahman and Farah (2012), did a study on Non-Bank Financial Institution's Profitability Indicators: Evidence from Bangladesh and examined the indicators of the profitability of firms in the Non-Banking Financial Institution (NBFIs) industry of Bangladesh. Their finding was profitability indicator variables have impact upon net profit. And there variable was Net profit as dependent variable and Current Asset, Financial Expense, Long term liability, Interest Income, and Operating revenue as independent variables. According to their report among the independent variables the Liquidity Condition and Operating Efficiency exert significant influence on Profitability of Non-Bank sector in Bangladesh.

Wamalwa (2012) studied the impact of regulation of SACCO performance and concluded that the SACCO performance has greatly improved following the compliance of the Governance rule, Prudential Regulations and Reporting requirements. Imran, Abdul *et al.*, (2012) investigated the role of IT on the efficiency of banks and also explored the existence of relationship between the investment in IT and bank efficiency measures. The result showed that investment in information system is contributing towards increase in market share, reducing operational costs, improved customer services and assisting the banks in introducing new products and services.

These are the major benefits of adopting an ICT system which are propelling many banks to invest in IT. That is the reason that most of the organizations in Pakistan are using IT as competitive tool. Gaitho (2010) surveyed on credit risk management practises by SACCOs in Nairobi County, findings revealed that, majority of SACCOs used credit risk management practises to mitigate risks as a basis for objective credit risk appraisal. She also found out that, majority of SACCOs relied heavily on the discretion and ability of portfolio managers for effective credit risk management practises as opposed to a system that standardizes credit and credit risk decisions.

Several studies have employed regression analysis to test the relationship between size and cost efficiency in financial institutions as observed in Ranganan *et al.*, (1998) and Kongiri (2012). Brooks (2008) argues that regression analysis is the most important tool at the econometrician's disposal. It is concerned with describing and evaluating the relationship between a given variable and one or more other variables. It can be viewed as an attempt to explain movements in a variable by reference to movements in one or more other variables (Brooks, 2008). This technique was used to test the relationship between size and cost efficiency of SACCOs with FOSA's in Kenya. Efficiency ratio is the dependent variable and the other independent variables comprise of total assets (Proxy of Size) while capital adequacy, management quality (staff costs), return on assets (ROA) and liquidity are control variables.

According to Demirgüç-Kunt and Huizing (1999), financial institutions with relatively high non-interest earning assets are less profitable. Margarida and Mendes (2000) observed that the loan to asset ratio has a positive impact on interest margins and

profitability. Customer deposit composition also influences levels of income. Guru and Shanmugan (1999) in their research noted that current account deposit was the most profitable probably because there is no direct interest paid on the deposits while time and saving deposits accounts tend to be less profitable. Njoroge (2001) in his research on relationship between dividend pay outs and financial ratios in Kenya came up with the conclusion that in making dividends decisions, the most important variable is the return on assets. A study done by Maina (2002), who sought to establish whether there is a relationship between dividend payments and investment decisions concluded that indeed a relationship existed.

2.4 Literature Review Summary

The study has found that little has been done on effect of ICT adoption, size and product diversification on profitability of SACCOs in Kenya. For instance, Fadzlan and Chong (2008) examined the determinants of Philippines banks profitability. They did not base their study on SACCOs and the study was not done in Kenya. Wamalwa (2012) studied the impact of regulation of SACCO performance and concluded that the SACCO performance has greatly improved following the compliance of the Governance rule, Prudential Regulations and Reporting requirements. He did not look at the effect size, ICT and product diversification has on SACCO profitability. In fulfilling this gap, this study will look at the effect ICT adoption on the financial performance on SACCOs.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter mainly focused on giving a detailed explanation on how the study was implemented. It outlined the research design, the target population of study, the sampling procedure and the determined size. Data collection entailing the data type, source, collection method and the research instrument was looked into. At the end of it all, give an explanation of the data analysis procedure.

3.2 Research Design

Descriptive research design was used because it provides information on the characteristics of a given population or phenomenon. The major purposes of descriptive research design is to describe the current state of affairs as it exists at present (Kothari, 1999).

3.3 Population

Borg and Gall (1996), define population as all members of a real set of people, event or objects to which a researcher wishes to generalize the results of the study. The population for the study was both deposit taking and non-deposit taking SACCOs in Nairobi County. As per the Ministry's database, there are 45 deposit taking SACCOs and over one thousand non-deposit taking SACCO's in Nairobi County making a target population of 1045 deposit and non-deposit taking SACCOs.

3.4 Sample Design

Strydom and Venter (1996) describes sampling as the process of taking a portion of a population as a representative of that population. The researcher used purposive sampling technique to sample SACCOs in Nairobi County. Purposive sampling is done on the basis of the researchers own knowledge of the population, its elements and the nature of the research objective.

Purposive sampling procedures draws a representative sample, from whose findings generalizations to the bigger population can be made and that people who do not fit the requirements are eliminated and it is less expensive as it involves lesser search costs (Gillham, 2000). The sample size was 40 SACCOs in Nairobi County.

3.5 Data Collection

The researcher used secondary data to determine the cost of ICT adoption, size of the SACCO, as well as the number of products being offered. Data was gathered from SACCOs financial statements to determine the cost of ICT installation, value of assets, and inventories.

3.6 Data Analysis

This is the categorizing, ordering and summarizing of the data collected to obtain answers to the research questions.

3.6.1 Test of significance

To test for statistical significance in ICT adoption on financial performance of SACCOs, the 't' statistic was used. The test of significance was done at the 20 deposit taking SACCOs and 20 non-deposit taking SACCOs and then compared. The research study used 95% significance level. The 95%, a significance of $p = 0.05$ was used since it is the generally accepted conventional level in social sciences research.

This indicates that 95 times out of 100, the researcher was sure that there is a true or significant correlation between the two variables, and there is only a 5% chance that the effect does exist. The data was analyzed using both quantitative and descriptive statistics tools which include, percentages, mean, mode and median. The identified independent variables were analyzed through review of existing documentation. Quantitative data was coded and the data was entered in SPSS for analysis. The results were presented in form of tables, for ease of understanding.

The profitability function below was used;

$$y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + e_i$$

Where y is the Financial Performance (profitability) of the SACCO, *measured by way of having computation of the return on assets over a period of four (4) years from 2010 to 2013 and to find the relative rate of growth in comparison with the SACCO's adoption of ICT.*

b_0 , is the y-intercept (a constant),

b_1 , b_2 , and b_3 are the regression co-efficient to be determined.

X_1 = Cost of adopting an ICT system (ICT COST), measured as;

Cost of ICT adoption/Total SACCO Income

X₂ = Size of the SACCO (SACCO SIZE), measured as;

Total Equity/Total Assets

X₃ = Number of products offered by the SACCO (PDT), measured as;

Products Total Income/Total SACCO Income

e_i = is the error term Size and Product Diversification are control variables.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The main objective of the study was to investigate the effect of ICT adoption on the financial performance of savings and credit co-operative societies. The study targeted 40 deposit taking SACCOs where the study used descriptive and inferential analytical techniques to analyze the data obtained.

The study used Ordinary Least Squares (OLS) regression models. However, before running the regressions, descriptive statistics and correlation analysis were calculated. Correlation analysis shows the relationships between the different variables considered in the study. The correlation matrix presented simple bivariate correlations not taking into account other variables that may influence the results.

4.2 Descriptive Statistics

Table 4.1 presents the descriptive statistics and the distribution of the variables considered in this research: Cost of ICT adoption, Size of the SACCOs assets and the number of products offered. The descriptive statistic considered were minimum, maximum, mean, standard deviation and measures of skewness and kurtosis.

Table 4.1: Descriptive Statistics

	Min	Max	Mean	Std Deviation	Skewness		Kurtosis	
					Statistic	Std Error	Statistic	Std Error
ICT COST	0.4530	0.6568	0.3024	1.60114	-1.492	0.289	2.105	0.570
ASSET SIZE	5	55	35	10.36099	2.520	0.304	10.109	0.599
PRODUCT	0.2723	0.5801	0.3707	0.65285	1.451	0.289	3.779	0.570

Source: Research Findings

Table 4.1 shows descriptive statistics based on the analysis of the independent variables. From the analysis, the mean ICT cost for the 40 SACCOs was 0.3024 which when calculated as a percentage was approximately 30.24%. This implies that the proportion of cost of ICT adoption to Total SACCO income being less than 0.5, denoted that ICT adoption was more effective than the cost of using manual systems.

From the study summary it was established that SACCOs had been in operation for a maximum of 55 years with the youngest SACCO being 5 years since their inceptions. The mean of products total income in relation to adopting ICT systems in SACCOs was calculated to be 0.3707 which when made as a percentage was 37.07%. This implies that more than a third of SACCOs income is from product sales.

4.3 Correlation Analysis

The study sought to establish the relationship between ICT adoption and the financial performance of savings and credit co-operative societies. Pearson Correlation analysis was used to achieve this end at 99%, 95% and 90% confidence levels. The correlation

analysis enabled the testing of study's hypothesis that ICT adoption has a significant effect on SACCOs profitability. Table 4.2 illustrates significant, positive but low linear relationships between SACCOs and: ICT COST($R = 0.33$); PDT ($R = 0.24$) and ASSET SIZE ($R = 0.41$). The first hypothesis stated that ICT cost has a negative impact on SACCOs profitability. The study's established positive coefficient between ICT adoption and SACCOs profitability ($p = 0.33$) points at rejection of the null hypothesis of insignificant relationship. This depicts that an increase in ICT adoption increase financial performance of SACCOs.

The second hypothesis stated that there is no relationship between SACCOs size and profitability. The study established a significant positive coefficient ($p = 0.030$) between SACCOs size and profitability. Thus, the null hypothesis is rejected and alternative hypothesis of significant relationship accepted. This depicts that an increase in the ratio of total equity to average assets of SACCOs increase the financial performance of SACCOs.

The third hypothesis tested the relationship between the number of products being offered and profitability. The study established a positive coefficient significant at $\alpha=5\%$. Thus, the null hypothesis is also rejected. This implies that if the SACCOs are able to increase their product diversification it can improve its profitability.

Table 4.2: Correlation Analysis

	ICT COST	ASSET	PRODUCT
ICT COST	1		
ASSET SIZE	0.34	1	
PRODUCT	0.25	0.86	1

Source: Research Finding

4.4 Regression Models

4.4.1 Analysis of Variance

Analysis of Variance's (ANOVA) F-test was used to make simultaneous comparisons between two or more means; thus, testing whether a significant relation exists between variables (dependent and independent variables); thus, helping in bringing out the significance of the regression model. Since the value ($p=0.038$) were below 0.05, it can be concluded that the regression model is significant, strong and has a positive relation with the dependent variables.

Table 4.3 Analysis of Variance (ANOVA)

	Sum of Squares	df	Mean Square	F	F-Critical Value	Significance
Regression	52.55	4	14.93	18.33	88.33	0.00
Residual	3.34	19	4.22			
Total	55.89	23				

Source: Research Finding

NB: F-Critical Value 18.33 (statistically significant if the F-value is less than 88.33: from table of F-values).

- a. **Predictors: (Constant)**, Cost of adopting an ICT system (ICT COST), Size of the SACCO in terms of total assets and equity given ;(SACCO SIZE), Number of products being offered by the SACCO (PDT) given by products income and total SACCO income.

The value of the F statistic, 18.33 indicates that the overall regression model is significant hence it has some explanatory value i.e. there is a significant relationship between the predictor Cost of adopting an ICT system (ICT COST), Size of the SACCO in terms of total assets and equity given, (SACCO SIZE), Number of products being offered by the SACCO given by (PDT). (Taken together) and the dependent variable Financial performance (Profitability) of SACCOs.

4.4.2 Model Summary

R-square values present the strength of the relationship between profitability and independent variables. From the adjusted determination coefficients, generally moderately strong linear relationships were established between dependent and independent variables. Adjusted R-square value 0.419 was established. Their R-squared value of 0.423 was established and this implies that 42.3 % of the variation in dependent variable is attributed to the changes in the independent variables.

Table 4.4. Model Summary

	R	R-Square	Adjusted R-Square	Std Error of the Estimate	Durbin Watson
Model	0.526	0.423	0.419	1.2928	1.859

Source: Research Finding

The study also used Durbin Watson (DW) test to check that the residuals of the models were not auto correlated since independence of the residuals is one of the basic hypotheses of regression analysis. Being that the DW statistics were close to the prescribed value of 2.0 for residual independence, it can be concluded that there was no autocorrelation.

4.4.3 Regression Coefficients

Table 4.5 Regression Coefficients

	Unstandardized Co-efficients		Standardized Co-efficients	t	Sig (p)
	B	Std Error	Beta		
(Constant)	11.132	0.332		2.311	0.023
ICT COST	0.231	0.650	0.002	1.532	0.081
SACCO SIZE	0.321	0.332	0.076	1.256	0.022
PDT	0.553	0.273	0.063	1.599	0.053

Source: Research Finding

The study model will therefore be;

$$\text{Profitability} = 11.132 + 0.231(\text{ICT COST}) + 0.321(\text{SACCO SIZE}) + 0.553(\text{PDT})$$

According to the regression equation established, taking all factors into account (Cost of adopting an ICT system (ICT COST), Size of the SACCO in terms of total assets and equity given; (SACCO SIZE), Number of products being offered by the SACCO given by (PDT) will be 11.132. The Standardized Beta Coefficients give a measure of the contribution of each variable to the model. A large value indicates that a unit change in this predictor variable has a large effect on the criterion variable.

The t and Sig (p) values give a rough indication of the impact of each predictor variable – a big absolute t value and small p value suggests that a predictor variable is having a large impact on the criterion variable. At 5% level of significance and 95% level of confidence, Cost of adopting an ICT system (ICT COST) had a 0.231 level of significance; Size of the SACCO in terms of total assets and equity given;(SACCO SIZE) had a 0.321 level of significance and Number of products being offered by the SACCO given by (PDT) had a 0.553 level of significance.

4.5 Interpretations of the Findings

A positive coefficient was established between SACCOs ICT adoption and its profitability. This implies that a unit increase in SACCOs ICT adoption leads to 0.231 units increase in SACCOs profitability. The finding is consistent with the theory of adoption. Juhakam (2003) contends that adoption of ICT result to the improvement in payments, processing or reduction in service time resulting from new ways to deliver financial services electronically to customers however, regulatory restriction and requirements are also a cost and some innovations are aimed at avoiding or reducing cost.

Size of the SACCOs has positive effect on the financial performance. A unit increase in the size of the SACCO results to 0.321 units increase in the profitability. Penrose (1959) observed that large firms generate superior performance due to their diversified capabilities and ability to exploit economies of scale fully. They have a formalized procedure of conducting business and this makes implementation of operations more effective.

The number of products issued by SACCOs has a positive influence on the profitability. A unit increase in SACCOs products diversification will lead to 0.553 units increase in the profitability. With growth of membership which resulted in increased in size of SACCOs, the desires of members also increased and required diversification of products. Several products had to be innovated to meet the demands of the clients. Members started operating accounts, including savings, current and even fixed deposits accounts. Other products like cheque clearance, salary processing, ATM services, salary advances among others added to the pool of products available for members.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

This chapter presents discussions of the key findings presented in chapter four, conclusions drawn based on such findings and recommendations there-to. This chapter will thus be structured into conclusion, recommendations and areas for further research.

5.2 Conclusions

The result indicates that an increase in ICT adoption leads to an increase in SACCOs financial performance. Adoption of ICT results to the improvement in payments, processing or reduction in service time, resulting from new ways to deliver financial services electronically to customers however, regulatory restriction and requirements are also a cost and some innovations are aimed at avoiding or reducing cost. This study attempted to establish the extent to which ICT adoption contributed to the profitability of the SACCOs in Nairobi County.

ICT adoption has been growing, different applications and technologies have been adopted by some SACCOs to control costs, create efficiency and effectiveness in their operations, improve productivity, and increase outreach to the members. Some SACCOs are appreciating the benefits associated with ICT and in particular increased efficiency, improved service delivery, improved operational performance among many others. There has been barriers to ICT usage such as high costs of qualified personnel, high value added tax, and high costs of ICT equipment's and services that must be brought to the attention of the practitioners and policy makers for action so that ICT may continue influencing

positively to the SACCOs operations. The research has provided a benchmark that can be used for further research in developing countries. Size of the SACCOS has positive effect on the financial performance of the SACCOs. Large firms generate superior performance due to their diversified capabilities and ability to exploit economies of scale fully. They have a formalized procedure of conducting business and this makes implementation of operations more efficiently.

Size provides wider financial base and trust as people join SACCOs with established structures. Increase in the growth of SACCOs assets increase the profitability. The assets can be used as collateral which enable them borrow funds from commercial banks and lend to its members. The result has revealed the joint effect of SACCOs size and product diversification on SACCOs financial performance.

5.4 Limitation of the study

The time period captured in the study was limited to the time licensing of deposit taking SACCOs commenced that is (2010 – 2013). This meant that only data for 4 years was used. While all the data collected was used in the analysis, the limited period of time can potentially affect the interpretation of the findings. Though the study focused on both FOSA operating and non-FOSA operating SACCOs within Nairobi County, the results of the study therefore may not necessarily reflect the true position for the non-FOSA operating SACCOs due to the differences in their supervision and reporting. Most of the non deposit taking SACCOs have not fully adopted ICT system, they rely heavily on the normal computer application packages.

The cost of ICT adoption to them, did not contribute much to the total cost of the SACCO. This therefore could affect analysis of the results.

5.5 Areas for Further Research

The study suggests that similar studies should be done on other firms as the relationship adduced does not conform to the rule of thumb or one-size-fits-all mantra as different SACCOs have different operational environment. This might affect the relationship between annual sales, age, growth rate and profitability. There is need for further studies to carry out similar tests for a longer time period of time. This will help in observing the Sacco's and the relationship between age, size, growth rate and profitability after the establishment of SACCOs Societies Regulatory Authority.

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Nov 2012.

APPENDICES

APPENDIX I: Data Collection Letter



**UNIVERSITY OF NAIROBI
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Nairobi, Kenya

DATE 29TH AUG 2014

TO WHOM IT MAY CONCERN

The bearer of this letter KEAH WILLIAM MORRIS

Registration No. D61/63065/2011

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.



**PATRICK NYABUTO
MBA ADMINISTRATOR
SCHOOL OF BUSINESS**

APPENDIX II:

List of Licensed Deposit Taking SACCO's by SASRA as at 31st December 2013

1. Afya SACCO Society Ltd
2. Airports SACCO Society Ltd
3. Ardhi SACCO Society Ltd
4. Asili SACCO Society Ltd
5. Chai SACCO Society Ltd
6. Chuna SACCO Society Ltd
7. COMOCO SACCO Society Ltd
8. Elimu SACCO Society Ltd
9. Fundilima SACCO Society Ltd
10. Harambee SACCO Society Ltd
11. Hazina SACCO Society Ltd
12. Jamii SACCO Society Ltd
13. Kenya Bankers SACCO Society Ltd
14. Kenya Police SACCO Society Ltd
15. Kenpipe SACCO Society Ltd
16. Kenversity SACCO Society Ltd
17. Kingdom Securities SACCO Society Ltd
18. Lenga SACCO Society Ltd
19. Magereza SACCO Society Ltd
20. Maisha Bora SACCO Society Ltd
21. Mwalimu National SACCO Society Ltd
22. Mwito SACCO Society Ltd
23. NACICO SACCO Society Ltd

24. Nafaka SACCO Society Ltd
25. Naku SACCO Society Ltd
26. NASSEFU SACCO Society Ltd
27. Nation Staff SACCO Society Ltd
28. Nest SACCO Society Ltd
29. Orthodox SACCO Society Ltd
30. Reli SACCO Society Ltd
31. Safaricom SACCO Society Ltd
32. Sheria SACCO Society Ltd
33. Stima SACCO Society Ltd
34. Teleposta SACCO Society Ltd
35. Tembo SACCO Society Ltd
36. Transcom SACCO Society Ltd
37. Tumaini SACCO Society Ltd
38. Ufanisi SACCO Society Ltd
39. Ufundi SACCO Society Ltd
40. Ukristo na Ufanisi SACCO Society Ltd
41. Ukulima SACCO Society Ltd
42. United Nations SACCO Society Ltd
43. Wanaanga SACCO Society Ltd
44. Wanandege SACCO Society Ltd
45. Waumini SACCO Society Ltd

Source: SASRA Supervisory Report (2013).